

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

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**FORM 8-K**

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**CURRENT REPORT**  
Pursuant to Section 13 or 15(d)  
of the Securities Exchange Act of 1934

**Date of Report (Date of earliest event reported): December 9, 2016**

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**XG SCIENCES, INC.**  
(Exact name of registrant as specified in its charter)

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**MICHIGAN**  
(State or other jurisdiction of incorporation)

**333-209131**  
(Commission  
File Number)

**20-4998896**  
(IRS Employer  
Identification No.)

**3101 Grand Oak Drive, Lansing, Michigan**  
(Address of principal executive offices)

**48911-4224**  
(Zip Code)

**517-703-1110**  
(Registrant's telephone number, including area code)

**Not Applicable**  
(Former name or former address if changed since last report)

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Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

**Item 1.01 Entry into a Material Definitive Agreement.**

See Item 2.03, below.

**Item 2.03. Creation of a Direct Financial Obligation or an Obligation under an Off-Balance Sheet Arrangement of a Registrant.**

On December 7, 2016, XG Sciences, Inc. (the “Company”) entered into a draw loan note and agreement (the “Note”) with The Dow Chemical Company (the “Lender”). The closing of the transactions contemplated in the Note is contingent on certain matters, including approval by holders of at least 60% of the Company’s Series A Convertible Preferred Stock and holders of at least 60% of the Company’s Series B Convertible Preferred Stock (the “Closing Conditions”).

Under the Note and subject to the Closing Conditions, Lender would provide up to \$10 million of secured debt financing to the Company (the “Loan”), drawable upon the Company’s request as follows: (a) \$2 million drawable at closing upon satisfaction of the Closing Conditions (the “Initial Draw”); (b) up to an additional \$3 million drawable on or before December 1, 2017; and (c) up to an additional \$5 million drawable after December 1, 2017, but on or before December 1, 2019, if the Company has raised at least \$10 million of certain equity capital after October 31, 2016.

The Loan would be senior to most of the Company’s other debt, and will be secured by the Company’s assets and the assets of the Company’s subsidiary, XG Sciences IP, LLC pursuant to that certain Security Agreement, Intellectual Property Security Agreement and Pledge Agreement, by and between the Company and Lender and each dated \_\_\_\_\_, 2016 (collectively, the “Security Agreements”). The Loan would bear interest at a 5% annual rate payable quarterly in arrears, provided that higher interest rates may apply in certain circumstances and that the Company may elect to capitalize interest through January 1, 2019. The Loan’s stated maturity date would be December 1, 2021, subject to certain prepayment requirements based on the Company’s financing activities, to acceleration upon an event of default, and to certain other events.

In connection with each draw against the Loan, the Company would also issue a warrant to the Lender to purchase shares of the Company’s common stock (the “Warrants” and each a “Warrant”). For each \$40 drawn against the Loan, the related Warrant would entitle the Lender to purchase one share of the Company’s common stock. Therefore, the Lender would receive Warrants to purchase 50,000 shares of the Company’s common stock in connection with the Initial Draw, and in connection with subsequent draws may thereafter receive Warrants to purchase up to an additional 200,000 shares of the Company’s common stock. The Warrant issued in connection with the Initial Draw would have an exercise price of \$8.00 per share. Subsequent Warrants would have an exercise price equal to the lowest price per share paid to the Company in the arm's-length transaction for the Company’s common stock that precedes the issuance of the Warrant, excluding transactions involving warrants and options and excluding common stock that is issued upon the exercise of warrants or options. Warrants would be exercisable by the Lender by delivery, on or before the expiration date, of the warrant, certain related agreements, and the purchase price. Warrants would also be subject to cashless exercise. All Warrants would have an expiration date of December 1, 2023.

The Note would entitle the Lender to appoint an observer to the Company’s board of directors. The Lender would maintain its observation right until the later of December 1, 2019 or when the amount of principal and interest outstanding under the Loan is less than \$5 million.

The above summary of the Note, Warrants and Security Agreements does not purport to be complete and is qualified in its entirety by reference to the full text of such documents. Copies of the Note, Form of Warrant and the Security Agreements are attached as Exhibits 10.1, 4.1, 10.2, 10.3 and 10.4 to this Form 8-K and is incorporated herein by reference.

**Section 3 - Securities and Trading Markets****Item 3.02 Unregistered Sales of Equity Securities.**

See Item 2.03, third paragraph, above. The Company’s issuances of Warrants to the Lender would be exempt from registration pursuant to Section 4(a)(2) and/or Regulation D (Rule 506) under the Securities Act of 1933, as amended.

**Item 9.01 Financial Statements and Exhibits.**

**EXHIBIT**

<u>Exhibits</u>	<u>Description</u>
Exhibit 4.1	Form of Common Stock Purchase Warrant
Exhibit 10.1	Draw Loan Note and Agreement, dated as of December 7, 2016, by and between the Company and the Lender
Exhibit 10.2	Form of Security Agreement, by and between the Company and the Lender
Exhibit 10.3	Form of Intellectual Property Security Agreement, by and among the Company, its subsidiary and the Lender
Exhibit 10.4	Form of Pledge Agreement, by and among the Company, its subsidiary and the Lender.

**SIGNATURES**

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

XG SCIENCES, INC.

Dated: December 9, 2016

By: /s/ Philip L. Rose  
Chief Executive Officer

THIS WARRANT AND THE SHARES ISSUABLE UPON THE EXERCISE OF THIS WARRANT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED. EXCEPT AS OTHERWISE SET FORTH HEREIN NEITHER THIS WARRANT NOR ANY OF SUCH SHARES MAY BE SOLD, TRANSFERRED OR ASSIGNED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT FOR SUCH SECURITIES UNDER SAID ACT, OR PURSUANT TO AN AVAILABLE EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN ACCORDANCE WITH APPLICABLE STATE SECURITIES LAWS AS EVIDENCED BY A LEGAL OPINION OF COUNSEL TO THE TRANSFEROR TO SUCH EFFECT, THE SUBSTANCE OF WHICH SHALL BE REASONABLY ACCEPTABLE TO THE COMPANY.

XG SCIENCES, INC.

COMMON STOCK PURCHASE WARRANT

Certificate No: \_\_\_\_\_

Warrants to Purchase  
\_\_\_\_\_ Shares of Common Stock  
December \_\_, 2016

This Common Stock Purchase Warrant (this "Warrant") certifies that, for value received, **The Dow Chemical Company** or its registered assignees (the "Holder") is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after the date hereof (the "Initial Exercise Date") and on or prior to 5:00 PM Eastern Time on December \_\_, 2023, (the "Expiration Date") but not thereafter, to purchase from XG Sciences, Inc., a Michigan corporation with offices at 3101 Grand Oak Dr., Lansing, MI 48911 (the "Company"), up to \_\_\_\_\_ shares (the "Shares" and each, a "Share") of the Company's common stock, no par value per share (the "Common Stock"), at a price of \$ \_\_\_\_\_ per Share, as adjusted in accordance with Section 4 below (the "Purchase Price").

This Warrant is issued in connection with the Draw Loan Note and Agreement, dated as of December 7, 2016, by and among the Company, and Holder (the "Note Agreement"). Certain capitalized terms used herein that are not otherwise defined herein shall have the meanings set forth in the Note Agreement.

Section 1. Exercise of Warrants.

(a) Upon presentation and surrender at the principal executive office of the Company of this Warrant prior to the Expiration Date together with a check to the Company in the amount of the Purchase Price multiplied by the number of Shares of Common Stock being purchased, and compliance with the other requirements of Section 1(e) and this Warrant, the Company will issue to the Holder, Shares of Common Stock which in the aggregate represent the number of Shares of Common Stock being purchased. This Warrant may be partially exercised and, in the case of such partial exercise, the Company, upon surrender hereof, will deliver to the Holder a new Warrant representing the number of Shares which have not been exercised.

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(b) In lieu of exercising this Warrant, the Holder may elect to receive Shares equal to the value of this Warrant (or the portion thereof being canceled) by surrender of this Warrant at the principal office of the Company along with the other documents required by Section 1(e) and compliance with the requirements of this Warrant, in which event the Company shall issue to the Holder a number of Shares computed using the following formula:

$$X = \frac{Y (A-B)}{A}$$

"X" equals the number of Shares to be issued to the Holder.

"Y" equals the number of Shares purchasable under this Warrant.

"A" equals the fair market value of one Share on the date of determination.

"B" equals the per share Purchase Price (as adjusted to the date of such calculation).

(c) Fair Market Value. For purposes of this Section 1, the per share fair market value of the Shares means:

(i) If the Common Stock is publicly traded, the per share fair market value of the Shares shall be (a) the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the trading market (including, without limitation, the OTCQX and OTCQB markets maintained by the OTC Markets Group, Inc. and any successor-entities) which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a trading day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if the OTC Bulletin Board is not a trading market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the OTC Bulletin Board, (c) if the Common Stock is not then listed or quoted for trading on the OTC Bulletin Board and if prices for the Common Stock are then reported in the "Pink Sheets" published by Pink OTC Markets, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported; or

(i) If the Common Stock is not so publicly traded, the per share fair market value of the Shares shall be such fair market value as is determined in good faith by the Board of Directors of the Company after taking into consideration factors it deems appropriate, including, without limitation, recent sale and offer prices of the capital stock of the Company in private transactions negotiated at arm's length.

(d) If this Warrant shall be deemed "in the money" on the Expiration Date and the Holder has not exercised his, her or its rights hereunder, the Company shall automatically effect a cashless exercise of this Warrant on behalf of the Holder in accordance with the formula hereinabove, provided that the Holder must promptly thereafter comply with the other requirements of Section 1(e) and this Warrant.

(e) The rights represented by this Warrant may be exercised by the Holder, in whole or in part (with respect to Shares of Common Stock), subject to the conditions contained herein and at any time prior to the Expiration Date, by: (i) surrender of this Warrant for cancellation at the principal executive office of the Company (or at such other office or agency of the Company as it may designate by notice in writing to the Holder at the address of the Holder appearing on the books of the Company); (ii) payment to the Company of the Purchase Price for the number of Shares of Common Stock specified in the Notice of Exercise form; (iii) delivery to the Company of a duly executed agreement signed by the person(s) designated in the Notice of Exercise form to the effect that such person(s) agree(s) to be bound by all of the terms and conditions of this Warrant; (iv) delivery to the Company of a duly executed Notice of Exercise form attached hereto as Exhibit A and Investment Representation Statement form attached hereto as Exhibit D to the extent such Investment Representation Statement remains applicable; and (v) delivery to the Company of duly executed adoption agreements for the Shareholder Agreement and the Voting Agreement (each as defined in Section 2(b)) as and to the extent required by Section 8(g). This Warrant shall be deemed to have been exercised, in whole or in part to the extent specified, immediately prior to the close of business on the date on which all of the applicable provisions of this Section 1(e) are reasonably satisfied, and the person(s) designated in the Notice of Exercise form shall become the holder(s) of record of the Shares of Common Stock issuable upon such exercise at that time and date.

(f) As soon as possible after any full or partial exercise of this Warrant, but in any event no more than ten (10) business days, the Company, at its expense, will instruct its transfer agent to issue as soon as possible in the name of and delivered to the Holder of this Warrant, the number of fully paid and non-assessable Shares of Common Stock to which that Holder shall be entitled on such exercise. No fractional shares will be issued on exercise of this Warrant. If, on any exercise of this Warrant, a fractional share results, the Company will pay the cash value of that fractional share, calculated on the basis of the Purchase Price. The Company may issue certificates for Shares or, if consistent with the Company's generally applicable practice, may issue uncertificated Shares as permitted under the Michigan Business Corporation Act. Any certificates evidencing the Shares shall bear restrictive legends to the extent required by this Warrant.

Section 2. Legends.

(a) Until the date on which a registration statement filed by the Company under the Securities Act of 1933, as amended (the "Securities Act") covering the issuance and sale or the resale of the Shares is declared effective by the U.S. Securities and Exchange Commission (the "SEC"), any certificates evidencing the Shares shall bear a legend substantially in the following form:

"THESE SECURITIES HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR REGISTERED OR QUALIFIED UNDER APPLICABLE STATE SECURITIES LAWS AND MAY NOT BE OFFERED FOR RESALE OR RESOLD UNLESS REGISTERED PURSUANT TO THE PROVISIONS OF THE SECURITIES ACT AND REGISTERED OR QUALIFIED PURSUANT TO THE PROVISIONS OF APPLICABLE STATE SECURITIES LAWS, UNLESS AN EXEMPTION FROM SUCH REGISTRATION OR QUALIFICATION IS AVAILABLE."

(b) Any certificates evidencing the Shares shall bear legends to the extent required by the Company's shareholder agreement dated March 18, 2013 and amended effective as of April 13, 2016 (the "Shareholder Agreement") and the Company's voting agreement dated January 15, 2014 (the "Voting Agreement").

(c) Any certificates evidencing the Shares shall bear legends substantially in the following form to the extent reasonably required by the Company:

"THE SHARES OF STOCK REPRESENTED BY THIS CERTIFICATE ARE SUBJECT TO AGREEMENTS SET FORTH IN THE BYLAWS OF THE CORPORATION AMONG THE SHAREHOLDERS OF THE CORPORATION PURSUANT TO SECTION 488 OF THE MICHIGAN BUSINESS CORPORATION ACT. A COPY OF THE BYLAWS IS ON FILE WITH THE SECRETARY OF THE CORPORATION. BY ACCEPTANCE OF THIS CERTIFICATE, THE HOLDER HEREOF AGREES TO BE BOUND BY THE TERMS OF SAID AGREEMENTS."

(d) The Holder consents to the Company making a notation on its records and giving instructions to any transfer agent in order to implement the restrictions on transfer established in this Warrant (including in the foregoing contemplated legends), the Shareholder Agreement or the Voting Agreement. The Company will not be required to (i) transfer on its books any securities that have been transferred in violation of any provisions of this Warrant, the Shareholder Agreement, the Voting Agreement or applicable law, or (ii) to treat as owner of such securities, or accord the right to vote or pay dividends to any purchaser, donee or other transferee to whom such securities may have been so transferred.

Section 3. Charges, Taxes and Expenses. Issuance of Shares shall be made without charge to the Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Shares, all of which expenses shall be paid by the Company, and such Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that in the event certificates for Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder, the assignee, and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any expenses incidental thereto.

Section 4. Certain Adjustments.

(a) Stock Dividends and Stock Splits. If the Company, at any time after the date hereof: (A) shall pay a stock dividend or otherwise make a distribution or distributions on shares of its Common Stock in shares of Common Stock, (B) subdivide outstanding shares of Common Stock into a larger number of shares, or (C) combine (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares, then the Purchase Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock outstanding before such event and of which the denominator shall be the number of shares of Common Stock outstanding after such event. Any adjustment made pursuant to this Section shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification, and the number of Shares issuable upon exercise of this Warrant shall be proportionately adjusted such that the aggregate Purchase Price of this Warrant shall remain unchanged.

(b) Fundamental Transaction. If, at any time while this Warrant is outstanding, (A) the Company effects any merger or consolidation of the Company with or into another person, (B) the Company effects any sale of all or substantially all of its assets in one or a series of related transactions, (C) any tender offer or exchange offer (whether by the Company or another person) is completed pursuant to which holders of Common Stock are permitted to tender or exchange their shares for other securities, cash or property, or (D) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (in any such case, a "Fundamental Transaction"), then upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Share of Common Stock that would have been issuable upon such conversion absent such Fundamental Transaction, the same kind and amount of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of one share of Common Stock (the "Alternate Consideration"). For purposes of any such conversion, the determination of the Purchase Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Purchase Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. To the extent necessary to effectuate the foregoing provisions, any successor to the Company or surviving entity in such Fundamental Transaction shall issue to the Holder a new warrant consistent with the foregoing provisions and evidencing the Holder's right to exercise such warrant for the Alternate Consideration. The terms of any agreement pursuant to which a Fundamental Transaction is effected shall include terms requiring any such successor or surviving entity to comply with the provisions of this paragraph (b) and insuring that this Warrant (or any such replacement security) will be similarly adjusted upon any subsequent transaction analogous to a Fundamental Transaction.



Section 5. Transfer of Warrant. Subject to the requirements of this Warrant, compliance with the Securities Act and other federal and state law, and the Company's Articles of Incorporation and Bylaws, all rights hereunder are transferable, in whole or in part, upon surrender of this Warrant at the principal executive office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto as Exhibit B and the Investment Representation Statement attached hereto as Exhibit D to the extent such Investment Representation Statement remains applicable, duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued.

Section 6. Representations and Warranties.

(a) Common Stock. The Company hereby represents and warrants to the Holder that all Shares that may be issued upon the exercise of the purchase rights represented by this Warrant, and all securities, shall, upon issuance, be duly authorized, validly issued, fully paid and nonassessable, and free of any liens and encumbrances. The Company hereby agrees that it shall at all times reserve and keep available out of its authorized but unissued Common Stock, solely for the purpose of effecting the exercise of this Warrant, a number of shares of Common Stock equal to the number of shares as shall from time to time be sufficient to effect the exercise of this entire Warrant at the Purchase Price.

(b) Notice of Certain Events. If the Company proposes at any time (i) to declare any dividend or distribution upon its Common Stock, whether in cash, property, stock, or other securities and whether or not a regular cash dividend; (ii) to offer for subscription pro rata to the holders of any class or series of its stock any additional shares of stock of any class or series or other rights; (iii) to effect any reclassification or recapitalization of Common Stock; (iv) to merge or consolidate with or into any other corporation, or sell, lease, license, or convey all or substantially all of its assets, or to liquidate, dissolve or wind up, or to effect an acquisition; or (v) to offer holders of registration rights the opportunity to participate in an underwritten public offering of the company's securities for cash, then, in connection with each such event, the Company shall give Holder (1) at least 20 days prior written notice of the date on which a record will be taken for such dividend, distribution, or subscription rights (and specifying the date on which the holders of Common Stock will be entitled thereto) or for determining rights to vote, if any, in respect of the matters referred to in (i) and (ii) above; (2) in the case of the matters referred to in (iii) and (iv) above at least 20 days prior written notice of the date when the same will take place (and specifying the date on which the holders of Common Stock will be entitled to exchange their Common Stock for securities or other property deliverable upon the occurrence of such event); and (3) in the case of the matter referred to in (v) above, the same notice as is given to the holders of such registration rights.

(c) Investment Representation Statement. The Holder hereby makes to the Company each of the representations and warranties in the Investment Representation Statement form attached hereto as Exhibit D.

Section 7. Indemnification. Without limitation of any other provision of this Warrant or any other agreement between the Holder and the Company, the Company agrees to defend, indemnify and hold Holder, its respective affiliates and direct and indirect partners (including partners of partners and stockholders and members of partners), members, stockholders, directors, officers, employees and agents and each person who controls any of them within the meaning of Section 15 of the Securities Act, or Section 20 of the Securities Exchange Act of 1934, as amended (the "Exchange Act") (collectively, the "Holder Indemnified Parties" and, individually, a "Holder Indemnified Party") harmless from and against any and all damages, liabilities, losses, taxes, fines, penalties, reasonable costs and expenses (including, without limitation, reasonable fees of a single counsel representing the Holder Indemnified Parties), as the same are incurred, of any kind or nature whatsoever (whether or not arising out of third-party claims and including all amounts paid in investigation, defense or settlement of the foregoing) which may be sustained or suffered by any such Holder Indemnified Party ("Losses"), based upon, arising out of, or by reason of (a) any breach of any representation or warranty made by the Company in this Warrant, the Note Agreement, or any other agreement executed in connection herewith, (b) any breach of any covenant or agreement made by the Company in this Warrant, the Note Agreement, or any other agreement executed in connection herewith, or (c) any third party or governmental claims relating in any way to such Holder Indemnified Party's status as a security holder, creditor, director, agent, representative or controlling person of the Company or otherwise relating to such Holder Indemnified Party's involvement with the Company (including, without limitation, any and all Losses under the Securities Act, the Exchange Act or other federal or state statutory law or regulation, at common law or otherwise, which relate directly or indirectly to the registration, purchase, sale or ownership of any securities of the Company or to any fiduciary obligation owed with respect thereto), including, without limitation, in connection with any third party or governmental action or claim relating to any action taken or omitted to be taken or alleged to have been taken or omitted to have been taken by any Holder Indemnified Party as security holder, director, agent, representative or controlling person of the Company or otherwise, alleging so-called control person liability or securities law liability. The term "Losses" shall specifically exclude loss of profits and all punitive, incidental, consequential, special or indirect damages, except to the extent paid to a third party, and shall include diminution of value. The rights of the parties hereunder shall be in addition to, and not in lieu of, any other rights and remedies which may be available to it by law; provided, however, that the Company will not be liable to the extent that such Losses arise from and are based on conduct by a Holder Indemnified Party that constitutes fraud, gross negligence or willful misconduct.

Section 8. Miscellaneous.

(a) No Rights as Stockholder Until Exercise. This Warrant does not entitle the Holder to any voting rights, dividends or other rights as a stockholder of the Company prior to the exercise hereof.

(b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

(c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a business day (because it is a Saturday, Sunday or U.S. federal holiday), then such action may be taken or such right may be exercised on the next succeeding business day.

(d) Authorized Shares. The Company covenants that, during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares of Common Stock to provide for the issuance of the Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of executing stock certificates to execute and issue the necessary certificates for the Shares upon the exercise of the purchase rights under this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any trading market upon which the Common Stock may be listed. The Company covenants that all Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant and payment for such Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

(e) Warrant Shares Report. In each case of any adjustment or readjustment in the Warrant Shares issuable upon the exercise of this Warrant, the Company at its sole expense will upon request promptly compute such adjustment or readjustment in accordance with the terms of this Warrant and, upon request in connection with the preparation of the Company's quarterly financial statements, prepare a report setting forth such adjustment or readjustment and showing in reasonable detail the method of calculation thereof and the facts upon which such adjustment or readjustment is based, including a statement of (i) the consideration received or to be received by the Company for any additional shares issued or sold or deemed to have been issued, (ii) the number of shares of Common Stock outstanding or deemed to be outstanding, and (iii) the Purchase Price in effect immediately prior to such issue or sale and as adjusted and readjusted on account thereof. The Company will forthwith mail a copy of each such report to Holder and will, upon the written request at any time of Holder, furnish to Holder a like report setting forth the Purchase Price at the time in effect and showing in reasonable detail how it was calculated. The Company will also keep copies of all such reports at its principal executive office and will cause the same to be available for inspection at such office during normal business hours by Holder or any prospective purchaser or assignee of this Warrant designated by the Holder.

(f) Jurisdiction. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be determined in accordance with the laws of the State of Michigan.

(g) Restrictions. The Holder acknowledges that the Shares acquired upon the exercise of this Warrant, if not registered, will have restrictions upon resale and other matters imposed by state and federal securities laws, this Warrant, the Shareholder Agreement, and the Voting Agreement to the extent applicable upon and following exercise of this Warrant. The Holder agrees, as a condition to exercise of this Warrant, to become a party to and to be bound by the Shareholder Agreement and the Voting Agreement, and any subsequent amendments to either, to the extent applicable upon and following the exercise of this Warrant. The parties acknowledge that the Shareholder Agreement and Voting Agreement may contain provisions that terminate such documents upon the closing of a public offering of Common Stock, among other provisions. To the extent that any such agreement is terminated or no longer applicable, the Holder shall not be required to become a party to it or be bound by it.

(h) Nonwaiver. No course of dealing or any delay or failure to exercise any right hereunder on the part of Holder shall operate as a waiver of such right or otherwise prejudice the Holder's rights, powers or remedies.

(i) Notices. Any notice, request or other document required or permitted to be given or delivered to the Holder by the Company shall be delivered to the Holder at the address provided herein by Holder in Exhibit C, attached hereto. If the Holder has not provided contact information in Exhibit C, the Company shall be entitled to use the contact information of the Holder in the Company's books and records.

(j) Limitation of Liability. No provision hereof, in the absence of any affirmative action by the Holder to exercise this Warrant to purchase Shares, and no enumeration herein of the rights or privileges of the Holder, shall give rise to any liability of the Holder for the purchase price of any Common Stock or as a stockholder of the Company, whether such liability is asserted by the Company or by creditors of the Company.

(k) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance that a remedy at law would be adequate.

(l) Successors and Assigns. Subject to the terms of this Warrant and applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Shares.

(m) Amendment. This Warrant may only be modified or amended or the provisions hereof waived with the written consent of the Company and the Holder.

(n) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Warrant.

(o) Headings. The headings used in this Warrant are for the convenience of reference only and shall not, for any purpose, be deemed a part of this Warrant.

*(Signature Page Follows)*

**IN WITNESS WHEREOF**, the Company has caused this Warrant to be signed by its duly authorized officer and this Warrant to be dated as of the date first above written.

**XG SCIENCES, INC.**

By: \_\_\_\_\_  
Philip L. Rose, Chief Executive Officer

**EXHIBIT A**

**NOTICE OF EXERCISE**

TO: XG SCIENCES, INC.

(1) The undersigned hereby elects to purchase \_\_\_\_\_ Shares of the Company pursuant to the terms of the attached Warrant, and tenders herewith payment of the exercise price in full, together with the other items required by the Warrant.

(2) Payment shall take the form of (check applicable box):

- wire transfer in lawful money of the United States;
- cashier's check drawn on a U.S. bank; or
- in accordance with the formula set forth in Section 1(b), to exercise this Warrant with respect to the number of shares of Common Stock purchasable pursuant to the cashless exercise procedure set forth in Section 1(b).

The undersigned requests that the shares of such Common Stock be issued in the name(s) of, and delivered to, the person(s) whose name(s) and address(es) are set forth below:

---

(Please type or print name and address)

---

(Social Security or tax identification number)

and delivered to: \_\_\_\_\_

(Please type or print name and address)

and, if such number of shares of Common Stock shall not be all the Common Stock evidenced by this Warrant, that a new Warrant of like tenor for the balance of the shares of Common Stock subject to the Warrant be registered in the name of, and delivered to, the Holder at the address stated below.

The undersigned has executed, and delivers herewith, an Investment Representation Statement in a form substantially similar to the form attached to the Warrant as Exhibit D.

*[Signature page follows]*

[SIGNATURE OF HOLDER]

Name of Investing Entity: \_\_\_\_\_

*Signature of Authorized Signatory of Investing Entity:* \_\_\_\_\_

Name of Authorized Signatory: \_\_\_\_\_

Title of Authorized Signatory: \_\_\_\_\_

Date: \_\_\_\_\_

*[Signature page to Notice of Exercise]*



**EXHIBIT B**

**WARRANT ASSIGNMENT**

FOR VALUE RECEIVED, the undersigned holder of the warrant (the "Assignor") does hereby assign and transfer to \_\_\_\_\_, Federal Identification No. \_\_\_\_\_ (the "Assignee"), a warrant to purchase \_\_\_\_\_ shares of the capital stock of XG Sciences, Inc. represented by warrant certificate no. \_\_\_\_\_ (the "Warrant"), standing in the name of the undersigned on the books of said corporation. The Assignor does hereby irrevocably constitute and appoint \_\_\_\_\_, attorney to transfer the warrants of said corporation, with full power of substitution in the premises.

The Assignee agrees to take and hold the Warrant and any shares of capital stock of XG Sciences, Inc. to be issued upon exercise of the rights thereunder subject to, and to be bound by, the terms and conditions set forth in the Warrant (including the shareholder agreement and voting agreement referenced therein) to the same extent as if Assignee were the original holder thereof.

Assignee has executed, and delivers herewith, an Investment Representation Statement in a form substantially similar to the form attached to the Warrant as Exhibit D.

**ASSIGNOR:**

Dated: \_\_\_\_\_

[Assignor]

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

**ASSIGNEE:**

Dated: \_\_\_\_\_

[Assignee]

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

**EXHIBIT C**

**WARRANT HOLDER'S CONTACT INFORMATION**

Name: The Dow Chemical Company  
Address: 2030 Dow Center  
Midland, Michigan 48674  
Attention: Corporate Venture Capital  
Telephone Number: (989) 636-0571  
Email: \_\_\_\_\_

**EXHIBIT D**

**INVESTMENT REPRESENTATION STATEMENT**

INVESTOR: \_\_\_\_\_

COMPANY: XG Sciences, Inc., a Michigan corporation

SECURITIES: THE WARRANT ISSUED ON \_\_\_\_\_ (THE “**WARRANT**”) AND THE SECURITIES ISSUED OR ISSUABLE UPON EXERCISE THEREOF

DATE: \_\_\_\_\_

In connection with the purchase or acquisition of the above-listed Securities, the undersigned Investor represents and warrants to, and agrees with, the Company as follows:

1. **No Registration.** The Investor understands that the Securities have not been, and will not be, registered under the Securities Act of 1933, as amended (the “**Securities Act**”), by reason of a specific exemption from the registration provisions of the Securities Act, the availability of which depends upon, among other things, the *bona fide* nature of the investment intent and the accuracy of the Investor’s representations as expressed herein or otherwise made pursuant hereto.

2. **Investment Intent.** The Investor is acquiring the Securities for investment for its own account, not as a nominee or agent, and not with a view to, or for resale in connection with, any distribution thereof. The Investor has no present intention of selling, granting any participation in, or otherwise distributing the Securities, nor does it have any contract, undertaking, agreement or arrangement for the same.

3. **Investment Experience.** The Investor has substantial experience in evaluating and investing in private placement transactions of securities in companies similar to the Company, and has such knowledge and experience in financial or business matters so that it is capable of evaluating the merits and risks of its investment in the Company and protecting its own interests.

4. **Speculative Nature of Investment.** The Investor understands and acknowledges that its investment in the Company is highly speculative and involves substantial risks. The Investor can bear the economic risk of its investment and is able, without impairing its financial condition, to hold the Securities for an indefinite period of time and to suffer a complete loss of its investment.

5. **Access to Data.** The Investor has had an opportunity to ask questions of officers of the Company, which questions were answered to its satisfaction. The Investor understands that any such discussions, as well as any information issued by the Company, were intended to describe certain aspects of the Company’s business and prospects, but were not necessarily a thorough or exhaustive description. The Investor acknowledges that any business plans prepared by the Company have been, and continue to be, subject to change and that any projections included in such business plans or otherwise are necessarily speculative in nature, and it can be expected that some or all of the assumptions underlying the projections will not materialize or will vary significantly from actual results.

6. **Accredited Investor.** The Investor is an “accredited investor” within the meaning of Regulation D, Rule 501(a), promulgated by the Securities and Exchange Commission and agrees to submit to the Company such further assurances of such status as may be reasonably requested by the Company.

7. **Residency.** The residency of the Investor (or, in the case of a partnership or corporation, such entity’s principal place of business) is correctly set forth on the signature page hereto.

8. **Restrictions on Resales.** The Investor acknowledges that the Securities must be held indefinitely unless subsequently registered under the Securities Act or an exemption from such registration is available. The Investor is aware of the provisions of Rule 144 promulgated under the Securities Act, which permit resale of shares purchased in a private placement subject to the satisfaction of certain conditions, which may include, among other things, the availability of certain current public information about the Company; the resale occurring not less than a specified period after a party has purchased and paid for the security to be sold; the number of shares being sold during any three-month period not exceeding specified limitations; the sale being effected through a “broker’s transaction,” a transaction directly with a “market maker” or a “riskless principal transaction” (as those terms are defined in the Securities Act or the Exchange Act (as defined below), as amended, and the rules and regulations promulgated thereunder); and the filing of a Form 144 notice, if applicable. The Investor acknowledges and understands that the Company may not be satisfying the current public information requirement of Rule 144 at the time the Investor wishes to sell the Securities and that, in such event, the Investor may be precluded from selling the Securities under Rule 144 even if the other applicable requirements of Rule 144 have been satisfied. The Investor understands and acknowledges that, in the event the applicable requirements of Rule 144 are not met, registration under the Securities Act or an exemption from registration will be required for any disposition of the Securities. The Investor understands that, although Rule 144 is not exclusive, the Securities and Exchange Commission has expressed its opinion that persons proposing to sell restricted securities received in a private offering other than in a registered offering or pursuant to Rule 144 will have a substantial burden of proof in establishing that an exemption from registration is available for those offers or sales and that those persons and the brokers who participate in the transactions do so at their own risk. The Investor acknowledges that the Securities will have restrictions upon resale and other matters imposed by the Company’s shareholder agreement and voting agreement, to the extent applicable. The Investor agrees to become a party to and to be bound by the Shareholder Agreement and the Voting Agreement, and any subsequent amendments to either, to the extent applicable.

9. **No Public Market.** The Investor understands and acknowledges that no public market now exists for any of the securities issued by the Company and that the Company has made no assurances that a public market will ever exist for the Company’s securities.

10. **Brokers and Finders.** The Investor has not engaged any brokers, finders or agents in connection with the Securities, and the Company has not incurred nor will incur, directly or indirectly, as a result of any action taken by the Investor, any liability for brokerage or finders' fees or agents' commissions or any similar charges in connection with the Securities.

11. **Legal Counsel.** The Investor has had the opportunity to review the Warrant, the exhibits and schedules attached thereto and the transactions contemplated by the Warrant with its own legal counsel. The Investor is not relying on any statements or representations of the Company or its agents for legal advice with respect to this investment or the transactions contemplated by the Warrant.

12. **Tax Advisors.** The Investor has reviewed with its own tax advisors the U.S. federal, state and local and non-U.S. tax consequences of this investment and the transactions contemplated by the Warrant. With respect to such matters, the Investor relies solely on such advisors and not on any statements or representations of the Company or any of its agents, written or oral. The Investor understands that it (and not the Company) shall be responsible for its own tax liability that may arise as a result of this investment or the transactions contemplated by the Warrant.

The Investor is signing this Investment Representation Statement on the date first written above.

**INVESTOR**

[ \_\_\_\_\_ ]

\_\_\_\_\_  
*(Print name of the investor)*

\_\_\_\_\_  
*(Signature)*

\_\_\_\_\_  
*(Name and title of signatory, if applicable)*

\_\_\_\_\_  
*(Street address)*

\_\_\_\_\_  
*(City, state and ZIP)*

## DRAW LOAN NOTE AND AGREEMENT

\$10,000,000

December 7, 2016  
Midland, Michigan

**FOR VALUE RECEIVED**, the undersigned, **XG SCIENCES, INC.**, a Michigan corporation, of 3101 Grand Oak Drive, Lansing, Michigan 48911 ("**Borrower**"), promises to pay to the order of **THE DOW CHEMICAL COMPANY**, a Michigan corporation ("**Lender**"), of 2030 Dow Center, Midland, Michigan 48674, or at any other place that the holder of this Draw Loan Note and Agreement ("**Note**") designates in writing, the sum of \$10,000,000, or such other amount that Lender shall have loaned to Borrower under the terms of this Note, together with interest on the unpaid principal balance from time to time outstanding, for the period from the Initial Draw Date until the principal balance is paid in full, at the rates and on the dates and other terms set forth below.

1. **Definitions.** In this Note:

"**Affiliate**" of an individual or entity means any individual or entity that now or in the future controls, is controlled by, or is under common control with such individual or entity. An individual or entity "**controls**" another entity if s/he or it has, directly or indirectly, the power to direct or cause the direction of the management or policies of the entity.

"**Business Day**" means any day, other than a Saturday or Sunday, on which Lender is generally open for the transaction of substantially all of its business.

"**Borrower Security Documents**" means the security agreement in the form attached as **EXHIBIT A** to this Note and the pledge agreement in the form attached as **EXHIBIT B** to this Note, each dated as of the Initial Draw Date, given by Borrower in favor of Lender, and the intellectual property security agreement in the form attached as **EXHIBIT C** to this Note, dated as of the Initial Draw Date, given by Borrower and Subsidiary in favor of Lender, as they may hereafter be amended, restated, extended, supplemented, modified, renewed, or replaced from time to time.

"**Certifying Agent**" means an officer or other agent of Borrower who is satisfactory to Lender for purposes of delivering the certification contemplated by *Section 13(b)* of this Note.

"**Collateral**" means any properties or assets in or upon which Lender at any time holds a security interest, mortgage, or other lien to secure any Lender Indebtedness.

"**Collateral Documents**" means the Borrower Security Documents, the Subsidiary Security Documents, and each other security agreement, mortgage, pledge agreement, assignment, guaranty, negative pledge agreement, and every other agreement and document that has been or in the future is, or is required to be, given by Borrower or Subsidiary to secure any Lender Indebtedness.

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"CPAs" means the independent certified public accounting firm retained from time to time by Borrower.

"Draw Line" means Lender's non-revolving line of credit to Borrower with respect to the Draw Line Commitment.

"Draw Line Commitment" means, at any time, an amount equal to the sum of \$10,000,000 plus any interest actually deferred pursuant to *Section 4(a)* of this Note, subject to mandatory prepayment obligations set forth in this Note.

"Draw Line Loan" means each disbursement of loan proceeds from Lender to Borrower under the Draw Line.

"EBITDA" for any given period means Borrower's net income before interest, taxes, depreciation, and amortization, all calculated in accordance with GAAP.

"Event of Default" has the meaning specified in *Section 11* of this Note.

"Fixed Rate" means either (a) a fixed rate equal to 5.00% per annum, or (b) if Borrower elects to defer a prepayment required by *Section 4(c)(i)* or *Section 4(c)(ii)* of this Note, a fixed rate equal to 8% per annum.

"GAAP" means generally accepted accounting principles consistently applied.

"GAAP Exceptions" means typical year-end adjustments and a lack of footnotes otherwise required by GAAP.

"Indebtedness" means indebtedness for borrowed money, indebtedness representing the deferred purchase price of property (excluding indebtedness under normal trade credit for property or services purchased for use in the normal course of operations), any obligation under a note payable or draft accepted representing an extension of credit, and any indebtedness (whether or not assumed) secured by a mortgage, security interest or other lien on property.

"Initial Draw Date" means the date of Borrower's initial request for a Draw Line Loan under this Note.

"Lender Indebtedness" means any indebtedness, of whatever type and nature, now or later owing to Lender or any Affiliate of Lender by Borrower under this Note or the Collateral Documents.

"Loan Document" means this Note, each renewal, extension, and replacement of this Note, the Warrant, each Collateral Document, certificates in the form attached as **EXHIBIT F** and **EXHIBIT G** to this Note, and every other guaranty, agreement, instrument and document that has been or in the future is signed or delivered in connection with this Note or in connection with any Lender Indebtedness, or incorporates by express reference this Note or any Lender Indebtedness.

**"Material Adverse Effect"** means any material adverse effect upon (1) the validity, performance, or enforceability of this Note or any other Loan Document, (2) the properties, contracts, business operations, prospects, revenues after expenses, or condition (financial or otherwise) of Borrower or Subsidiary, (3) the ability of Borrower or Subsidiary to fulfill any obligation under any Loan Document, or (4) the ability of Lender to take possession of, collect, or otherwise realize upon any Collateral or other security for the Lender Indebtedness.

**"Maturity"** means the time when the entire remaining unpaid principal balance of this Note shall be or shall become due and payable for any reason, including acceleration under *Section 11* of this Note.

**"Overdue Rate"** means a rate per annum that is equal to the lesser of 18% per annum or the maximum rate permitted under applicable law.

**"Owner"** means any Person who holds an Ownership Interest in Borrower.

**"Ownership Interest"** means capital stock, membership interests, partnership interests, or other equity interests.

**"Payment Date"** means the first day of each fiscal quarter of Borrower, beginning January 1, 2017.

**"Permitted Lien"** means (1) a security interest, mortgage, or other lien in favor of Lender, (2) a lien for taxes that are not delinquent or, in a jurisdiction where payment of taxes is abated during the period of any contest, being contested in good faith by appropriate proceedings, if adequate reserves for it have been set aside on the obligated entity's books, (3) an inchoate construction, mechanics', workmen's, repairmen's, or other like lien arising in the ordinary course of business, if the obligation secured is not delinquent, and (4) Purchase Money and Lease Liens.

**"Person"** means an individual, sole proprietorship, corporation, partnership, limited liability company, trust, association, and any other entity.

**"Purchase Money and Lease Liens"** means liens arising in connection with (i) any financing lease obligations of Borrower (and attaching only to the property being leased), and (ii) liens that constitute purchase money security interests on any property securing debt incurred for the purpose of financing all or any part of the cost of acquiring such property, provided that any such lien attaches or previously attached to such property within 20 days of the acquisition thereof and attaches solely to the property so acquired, and that without the prior written consent of the Lender:

(A) during any period in which GAAP revenue of the Borrower is less than \$5 million for the preceding twelve months ending with the last fiscal quarter for which GAAP financial statements are available, Borrower will not have more than \$1,500,000 of Indebtedness outstanding from all financing arrangements relating to Purchase Money and Lease Liens;

(B) during any period in which GAAP revenue of the Borrower is greater than \$5,000,000 but less than \$10,000,000 for the preceding twelve months ending with the last fiscal quarter for which GAAP financial statements are available, Borrower will not have more than \$2,500,000 of Indebtedness outstanding from all financing arrangements relating to Purchase Money and Lease Liens; and

(C) during any period in which (1) GAAP revenue of the Borrower is greater than \$10 million for the preceding twelve months ending with the last fiscal quarter for which GAAP financial statements are available and (2) EBITDA of the Borrower is greater than \$0.00 for the preceding twelve months ending with the last fiscal quarter for which GAAP financial statements are available, Borrower will not have more than \$5 million of Indebtedness outstanding from all financing arrangements relating to Purchase Money and Lease Liens.



"**Subordinated Indebtedness**" means Indebtedness that Borrower owes to any individual or entity to the extent that its repayment is unsecured or subordinated to payment of the Lender Indebtedness in form and manner satisfactory to Lender.

"**Subsidiary**" means XG Sciences IP, LLC, a Michigan limited liability company.

"**Subsidiary Security Documents**" means the pledge agreement in the form attached as **EXHIBIT B** to this Note, the security agreement in the form attached as **EXHIBIT D** to this Note, dated as of the Initial Draw Date, given by Subsidiary in favor of Lender, and the intellectual property security agreement in the form attached as **EXHIBIT C** to this Note, dated as of the Initial Draw Date, given by Borrower and Subsidiary in favor of Lender, as they may hereafter be amended, restated, extended, supplemented, modified, renewed, or replaced from time to time.

"**Termination Date**" means December 1, 2021, or any later date that Lender agrees to in writing.

"**Unmatured Event of Default**" means an event, condition or circumstance that with the lapse of time or the giving of notice to Borrower, or both, would be an Event of Default.

"**Warrant**" means a warrant to purchase equity shares of Borrower's common stock from Borrower in favor of Lender that is issued pursuant to *Section 7* of this Note.

2. **Use of Proceeds.** Borrower shall use the proceeds of this Note for payment of trade credit indebtedness, market development, operations, working capital and other related activities as approved by the board of directors of Borrower ("**Permitted Purposes**").

3. **Loans.**

(a) As long as no Event of Default or Unmatured Event of Default exists, Borrower may, borrow the principal of this Note for Permitted Purposes in one or more installments, in amounts that will not at any time in the aggregate exceed the Draw Line Commitment, as set forth below:

(i) On the Initial Draw Date, \$2,000,000;

(ii) After the Initial Draw Date, but on or before December 1, 2017, upon at least ten (10) days' prior written notice to Lender, up to an additional \$3,000,000; and

(iii) After December 1, 2017, but on or before December 1, 2019, upon at least ten (10) days' prior written notice to Lender, if Borrower shall have raised at least \$10,000,000 of equity capital after October 31, 2016 (excluding equity capital under the Warrant), up to an additional \$5,000,000.

(b) Each Draw Line Loan shall be made upon Borrower's written request to Lender, each of which requests shall be signed by Borrower's President or Chief Financial Officer and shall constitute Borrower's representation and warranty that the representations and warranties of Borrower set forth in this Note are accurate and complete as of the date of the request, and that all applicable conditions to such Draw Line Loan have been satisfied. Lender shall make the proceeds of each requested Draw Line Loan available to Borrower within five Business Days of each request therefor by way of a wire transfer of immediately available funds pursuant to wire instructions provided by Borrower to Lender.

(c) Borrower authorizes Lender to note on Lender's books and records the date and amount of each Draw Line Loan and the amount of each payment or prepayment of this Note, which books and records shall constitute *prima facie* evidence of the information so noted. Lender's failure to make any such notation shall not relieve Borrower of its obligation to repay the outstanding principal amount of this Note and all accrued interest on, and other amounts payable with respect to, this Note in accordance with the terms of this Note.

(d) Lender shall have no obligation to make any Draw Line Loan unless and until each of the following conditions has been satisfied:

(i) holders of at least 60% of Borrower's Series A Convertible Preferred Stock shall have approved the transactions contemplated in this Note, evidence of which shall have been provided to Lender to Lender's satisfaction;

(ii) holders of at least 60% of Borrower's Series B Convertible Preferred Stock shall have approved the transactions contemplated in this Note, evidence of which shall have been provided to Lender to Lender's satisfaction;

(iii) Borrower and Subsidiary shall have signed and delivered to Lender each of the required Loan Documents;

(iv) each of Borrower's and Lender's representations and warranties set forth in this Note shall be accurate and complete; and

(v) No Event of Default or Unmatured Event of Default shall have occurred.

4. **Payments; Prepayments.** Borrower shall pay the principal of and accrued interest on this Note as follows:

(a) Beginning January 1, 2017, and continuing on each subsequent Payment Date, Borrower shall pay accrued interest only on the Draw Line Loans; provided, however, that upon at least 10 days' prior written notice to Lender, Borrower may elect to defer payment of such interest otherwise due on any Payment Date occurring on or before January 1, 2019. Any interest so deferred shall be capitalized when due, and such amount of capitalized interest shall be added to and become part of the principal amount of the Draw Line Loans without any further action on the part of Borrower or Lender. Borrower shall pay the unpaid principal of this Note and all accrued interest in full at the earlier of Maturity or the Termination Date.

(b) In addition to the foregoing payment obligations, if the aggregate principal amount of Draw Line Loans outstanding at any time exceeds the Draw Line Commitment, then Borrower shall immediately repay the amount of Draw Line Loans that is required to eliminate the excess.

(c) Borrower may prepay the principal of this Note in whole or in part at any time without penalty or premium. Borrower shall prepay the principal of this Note, plus accrued interest within 10 days of reaching the thresholds as set forth below:

(i) If after October 31, 2016, Borrower shall have raised a cumulative amount of equity capital that exceeds \$15,000,000 but is \$25,000,000 or less, Borrower shall prepay an amount equal to 30% of the amount raised over \$15,000,000 and under \$25,000,000 (not to exceed the balance of principal and interest outstanding on this Note); and

(ii) If after October 31, 2016, Borrower shall have raised a cumulative amount of equity capital that exceeds \$25,000,000, Borrower shall prepay an amount equal to 50% of the amount over \$25,000,000 (not to exceed the balance of principal and interest outstanding on this Note).

Borrower shall make any such mandatory prepayments on a monthly basis pro-rata as funds are raised over the applicable threshold. Notwithstanding the foregoing, Borrower may request Lender's consent upon at least 10 days' notice prior to the date of the capital raise to defer all or any part of such mandatory prepayment with Lender's written approval; provided, however, that if Borrower elects to defer any such prepayment, the Fixed Rate shall immediately increase to 8% for the remainder of the term of the Note. Any remaining amounts due will be payable in a balloon payment at Maturity. Any amounts that are prepaid may not be re-borrowed.

5. **Interest Rates.** Until Maturity, the unpaid principal of this Note shall bear interest at the Fixed Rate; *provided, however*, that during the continuance of an Event of Default (regardless of any subsequent cure), such principal balance shall bear interest at the Overdue Rate. After Maturity, such principal balance shall bear interest at the Overdue Rate.

6. **Method of Calculating Interest.** Interest on this Note and other amounts that are due under this Note shall be computed on the basis of a year consisting of 360 days and paid for actual days elapsed.

7. **Issuance of Warrants.**

(a) Upon receipt of each Draw Line Loan, Borrower will issue to Lender a Warrant, in the form attached as **EXHIBIT E** to this Note, to purchase that number of shares of common stock of Borrower computed using the following formula ("**Draw Warrant Shares**"):

$$X = \frac{Y \times A}{B}$$

Where X = Draw Warrant Shares

Y = 250,000

A = the amount of the Draw Line Loan (in U.S. dollars)

B = 10,000,000

Borrower will not issue a Warrant under this *Section 7(a)* with respect to interest that is capitalized under *Section 4 (a)* or after Borrower issues a Warrant under *Section 7(b)*.

(b) Upon an Event of Default, Borrower will issue to Lender a Warrant, in the form attached as **EXHIBIT E** to this Note, to purchase the number of shares of common stock of Borrower computed using the following formula (the "**Default Warrant Shares**"):

$$X = A - B$$

Where X = the number of Default Warrant Shares

A = 250,000

Y = the number of Draw Warrant Shares previously issued to Lender pursuant to *Section 7(a)* of this Note

(c) The Draw Warrant Shares issued on the Initial Draw Date will have an exercise price equal to Eight Dollars (\$8.00) per share. Thereafter, all Draw Warrant Shares and Default Warrant Shares will have an exercise price equal to the lowest price per share paid to the Borrower in the arm's-length transaction for common stock of Borrower that shall precede the issuance of such Draw Warrant Shares or Default Warrant Shares, excluding transactions involving warrants, options and excluding common stock that is issued upon the exercise of warrants or options. All Draw Warrant Shares and Default Warrant Shares will have an expiration date of December 1, 2023.

8. **Warranties and Representations of Borrower.** Borrower represents and warrants to Lender and agrees as follows, as of the date of this Note, the Initial Draw Date and the date of each Draw Line Loan (except for representations and warranties provided as of a particular date):

(a) Borrower is a corporation duly organized, validly existing, and in good standing under the laws of the State of Michigan. Borrower is duly qualified and authorized to do business, and is in good standing, in each jurisdiction in which the failure to be so qualified or authorized to do business could have a Material Adverse Effect.

(b) Borrower has all requisite power and authority and all necessary licenses and permits to own and operate its properties and to carry on its business as now conducted and as it contemplates that business to be conducted in the future. Borrower is in material compliance with all laws, rules and regulations that are applicable to Borrower, its operations, or its properties.

(c) Subsidiary is a limited liability company duly organized, validly existing, and in good standing under the laws of the State of Michigan. Subsidiary is duly qualified and authorized to do business, and is in good standing, in each jurisdiction in which the failure to be so qualified or authorized to do business could have a Material Adverse Effect.

(d) Subsidiary has all requisite power and authority and all necessary licenses and permits to own and operate its properties and to carry on its business as now conducted and as it contemplates that business to be conducted in the future. Subsidiary is in material compliance with all laws, rules and regulations that are applicable to Subsidiary, its operations, or its properties.

(e) The financial statements of Borrower that have been delivered to Lender have been prepared in accordance with GAAP, subject, in the case of financial statements that are not fiscal year-end statements, to GAAP Exceptions, and present fairly the financial position of Borrower as of the dates of, and the results of its operations for the periods covered by, those financial statements. Since the date of the most recent of those financial statements, no change has occurred in Borrower's financial condition or operations that could have a Material Adverse Effect.

(f) Neither this Note nor any financial statement referred to above nor any other written statement furnished by Borrower to Lender in connection with this Note contains any untrue statement of a material fact or omits a material fact necessary to make the statements contained in this Note, the financial statement or other written statement not misleading. Borrower does not have knowledge of any fact, not disclosed to Lender in writing that has, or in the future is likely to have, a Material Adverse Effect.

(g) There is no proceeding pending, or to the knowledge of Borrower threatened, before any court, governmental authority or arbitration board or tribunal, against or affecting Borrower or Subsidiary that, if determined adversely to Borrower or Subsidiary, could have a Material Adverse Effect. Neither Borrower nor Subsidiary is in default with respect to any order, judgment, or decree of any court, governmental authority, or arbitration board or tribunal.

(h) Borrower has full power and authority to execute, deliver, and perform the Loan Documents to which it is a party; the execution, delivery, and performance of such Loan Documents (1) have been duly authorized by appropriate action of Borrower, and (2) will not violate the provisions of its organizational documents or of any law, rule, judgment, order, agreement, or instrument to which Borrower is a party or by which it is bound; such Loan Documents have been properly signed and delivered by, and are the valid and binding obligations of, Borrower and are enforceable in accordance with their terms.

(i) Subsidiary has full power and authority to execute, deliver, and perform the Loan Documents to which it is a party; the execution, delivery, and performance of such Loan Documents (1) have been duly authorized by appropriate action of Subsidiary, (2) will not violate the provisions of its organizational documents or of any law, rule, judgment, order, agreement, or instrument to which Subsidiary is a party or by which it is bound, and (3) do not require any approval or consent of any public authority or other third party; such Loan Documents have been properly signed and delivered by, and are the valid and binding obligations of, Subsidiary and are enforceable in accordance with their terms.

(j) **Schedule A** attached to this Note sets forth all outstanding Indebtedness of Borrower and Subsidiary as of the date of this Note, excluding Lender Indebtedness.

(k) As of the date of this Note, the issued and outstanding Ownership Interest of Borrower and Borrower's Owners thereof are described on **Schedule B** attached to this Note, except as described on **Schedule B**. As of the date of this Note, there are not any outstanding options, warrants, or rights to purchase, and there is not any agreement for the subscription, purchase, or acquisition of, any Ownership Interests of Borrower, except as described on **Schedule B**.

(l) Borrower and Subsidiary have good and marketable title to all of the assets that they purport to own, including, as applicable, the assets that the financial statements referred to in *Section 8(e)* of this Note describe, free and clear from all liens, encumbrances, security interests, claims, charges, and restrictions, except Permitted Liens.

(m) Borrower and Subsidiary own, license, or otherwise control all of the patents, trademarks, service marks, trade names, copyrights, licenses, and rights that are necessary for the present conduct of its business and, to the knowledge of Borrower and Subsidiary, without any conflict with the rights of any other Person.

(n) Borrower and Subsidiary have each filed each tax return that it is required to file in any jurisdiction, and each has paid each tax, assessment, fee, and other governmental charge upon it or upon its assets, income, or franchises before the time when its nonpayment could give rise to a lien. Borrower does not know of any proposed additional tax assessment against it or Subsidiary.

(o) Except as identified on **Schedule C** attached to this Note, Borrower does not have any investments in the Ownership Interests of any Person.

(p) Immediately after the consummation of each Draw Line Loan: (i) Borrower will be able to pay its debts and liabilities, subordinated, contingent, or otherwise, as such debts and liabilities become absolute and matured; and (ii) Borrower will not have unreasonably small capital with which to conduct its business as now conducted and as contemplated that it will be conducted in the future.

(q) The Warrants when issued, sold and delivered in accordance with the terms of this Note will be duly authorized, validly issued, fully paid and non-assessable and will be free and clear of all liens, charges, restrictions, claims, and encumbrances; provided, however, that Warrants are subject to certain restrictions on transfer and otherwise as provided therein and under Borrower's shareholder and voting agreements and state and/or federal securities law. Based in part upon the representations of Lender in this Note, and subject to *Section 8(r)* below, the Warrants will be issued in compliance with all applicable federal and state securities laws.

(r) Based in part on the accuracy of the representations made by Lender in *Section 9* of this Note, no consent, approval, order or authorization of, or registration, qualification, designation, declaration or filing with, any federal, state or local governmental authority is required on the part of Borrower in connection with Borrower's valid execution, delivery, and performance of the Loan Documents to which it is a party, except for filings pursuant to Regulation D or the United States Securities Act of 1933, as amended, and the rules and regulations promulgated by the Securities and Exchange Commission thereunder (the "**Securities Act**"), and applicable state securities laws, which have been made or will be made in a timely manner.

9. **Warranties and Representations of Lender.** Lender represents and warrants to Borrower and agrees as follows, as of the date of this Note, the Initial Draw Date and the date of each Draw Line Loan (except for representations and warranties provided as of a particular date):

(a) Lender is acquiring this Note for Lender's own account, and not directly or indirectly for the account of any other person. Lender is acquiring the Note for investment and not with a view to distribution or resale thereof except in compliance with the Securities Act of 1933, as amended, and any applicable state law regulating securities.

(b) Lender has received and has had the opportunity to review the complete Articles of Incorporation, Bylaws and shareholder and voting agreements of Borrower, each as in effect on the date of this Note (together, the "**Borrower Organizational Documents**"). Lender has also had the opportunity to ask questions of, and to receive answers from, appropriate executive officers of Borrower with respect to the terms and conditions of the transactions contemplated hereby and with respect to the business, affairs, financial condition, and results of operations of Borrower. Lender has had access to such financial and other information as is necessary in order for Lender to make a fully informed decision as to investment in the Borrower, and has had the opportunity to obtain any additional information necessary to verify any of such information to which Lender has had access.

(c) Lender further represents and warrants that Lender (a) has a pre-existing relationship with Borrower or one or more of its officers or directors consisting of personal or business contacts of a nature and duration which enable Lender to be aware of the character, business acumen, and general business and financial circumstances of Borrower or the officer or director with whom such relationship exists, (b) was solicited to make the investment represented by this Note through such pre-existing relationship and not by the registration statement registering certain shares of Borrower's common stock for sale to the public, and (c) has such business or financial expertise as to be able to protect Lender's own interests in connection with the investment in the Note.

(d) Lender's investment in Borrower represented by the Note is highly speculative in nature and is subject to a high degree of risk of loss in whole or in part; the amount of such investment is within Lender's risk capital means and is not so great in relation to Lender's total financial resources as would jeopardize the financial needs of Lender in the event such investment were lost in whole or in part.

(e) Lender presently qualifies as an "accredited investor" within the meaning of Regulation D of the rules and regulations promulgated under the Securities Act.

10. **Security.** This Note and all obligations of Borrower under it are secured by the Borrower Security Documents, the Subsidiary Security Documents, and any Collateral Documents in the future that are given to Lender. Lender shall have all of the rights and powers set forth in the Collateral Documents as though they were fully set forth in this Note.

11. **Default and Acceleration.** Subject to cure as provided in this *Section 11*, each of the following shall be an "**Event of Default**" under this Note:

(a) If Borrower fails to pay any interest or principal of this Note or any other Lender Indebtedness within 10 days of when it shall be or become due and payable (whether at scheduled Maturity or by acceleration). This provision shall not be subject to any cure period, except with respect to prepayments under Section 4(c).

(b) If Borrower or Subsidiary fails to perform any other material obligation, covenant, or agreement to Lender under this Note or any other Loan Document, or if there occurs a material event of default, whether by Borrower or Subsidiary, under and as defined in any Loan Document (including, without limitation, any Collateral Document) or in any other agreement, document, or instrument that has been given or in the future is given to Lender to evidence or secure any Lender Indebtedness.



(c) If any warranty or representation that Borrower or Subsidiary has made or in the future makes to Lender in this Note or any other Loan Document, shall have been false in any material respect when made.

(d) If Borrower or Subsidiary dissolves, becomes insolvent, or makes an assignment for the benefit of creditors.

(e) If any Collateral Document shall for any reason fail to create a valid and perfected first priority security interest or mortgage lien on any Collateral, except as permitted by the terms of such Collateral Document or due to any act or omission by Lender; if any Collateral Document shall fail to remain in full force and effect without the consent of Lender; if Borrower, Subsidiary, or any Affiliate of Borrower or Subsidiary takes any action to discontinue or to assert the invalidity or unenforceability of any Collateral Document; or if any action by any other party successfully discontinues or successfully asserts the invalidity or unenforceability of any such Collateral Document, including, without limitation, if any guaranty that now or in the future secures payment of all or any part of the Lender Indebtedness is terminated or limited for any reason without the written consent of Lender.

(f) If any material provision in any other Loan Document shall for any reason cease to be valid, binding, and enforceable in accordance with its terms; if Borrower, Subsidiary, or any Affiliate of Borrower or Subsidiary takes any action to discontinue or to assert the invalidity or unenforceability of other Loan Document; or if any action by any other party successfully discontinues or successfully asserts the invalidity or unenforceability of any such Loan Document.

(g) If Borrower defaults in the payment of any Indebtedness that Borrower at any time owes to any third party aggregating more than \$5,000 and such default entitles the holder of the Indebtedness to accelerate Indebtedness of Borrower in excess of \$50,000.

If an Event of Default is capable of being cured, then Borrower may cure the same during the thirty-day period that begins on the date on which Borrower receives notice from Lender, or otherwise has actual knowledge, of the event (the “**Cure Period**”). An Event of Default will not be deemed to have occurred as a result of an event during the Cure Period for that event or, if the event is cured during the Cure Period, thereafter. Notwithstanding anything else, no notice shall be required, and Borrower shall have no cure rights, with respect to a failure to perform any obligation set forth in *Sections 13(c)(1), (n) or (o)* of this Note or any failure that is not capable of being cured.

Upon the occurrence of any Event of Default, at the option of Lender, all or any part of the Indebtedness that this Note evidences and all or any part of all other Lender Indebtedness and other obligations that Borrower then owes to Lender shall become immediately due and payable without notice or demand, which Borrower waives. If (1) a voluntary or involuntary case in bankruptcy, receivership, or insolvency is at any time begun by or against Borrower or Subsidiary and, if involuntary, is not dismissed within 60 days, or (2) any levy, writ of attachment, garnishment, execution, or similar process is issued against or placed upon any property of Borrower or Subsidiary (other than with respect to a Permitted Lien) and is not terminated or released within 60 days, then all Indebtedness that this Note evidences and all other Lender Indebtedness and other obligations that Borrower then owes to Lender shall automatically and without notice or demand, which Borrower waives, become immediately due and payable.

12. **Place and Application of Payments.** Principal and interest payments under this Note shall be paid by wire transfer of immediately available funds pursuant to wire instructions provided by Lender to Borrower. Each payment under this Note may be applied in the following order: accrued interest, principal, fees, charges, and advanced costs. If Borrower at any time owes Lender any Indebtedness or obligation in addition to the Indebtedness that this Note evidences and if any Indebtedness that Borrower owes to Lender is then in default, then any payment made by, or collected from, Borrower shall be applied first to amounts then due and payable under this Note, except as the parties otherwise agree.

13. **Additional Covenants.** Until the Lender Indebtedness is repaid in full and Lender has no obligation to advance loans to Borrower, Borrower shall:

(a) Furnish to Lender, within 120 days after the end of each of Borrower's fiscal years, beginning with its fiscal year ending December 31, 2016, an audited financial report prepared by CPAs in accordance with GAAP, containing: (1) Borrower's balance sheet as of the end of that year, its related profit and loss and reconciliation of surplus statements for that year, and its statement of cash flows for that year, together with any management letters that those CPAs prepare, and (2) all comments and financial details that are customarily included in reports of that type.

(b) Furnish to Lender, within 45 days after the end of each fiscal quarter of Borrower, beginning with the fiscal quarter ending March 31, 2017, a financial report, the accuracy of which is certified to by a Certifying Agent, prepared in accordance with GAAP (subject to GAAP Exceptions), containing Borrower's balance sheet as of the end of the period and its income statement showing the results of its operations for the portion of its fiscal year then elapsed, and its statement of cash flows for the period.

(c) (1) Permit an agent of Lender reasonably acceptable to Borrower to observe all meetings of the board of directors of Borrower, and (2) provide to Lender copies of all materials submitted to Borrower's board of directors in connection with such meetings as and when such materials are provided to Borrower's board of directors, until such time after December 1, 2019, when the total amount of the outstanding Lender Indebtedness is less than \$5,000,000. Borrower shall also furnish to Lender, within 30 days after the end of each calendar quarter, a statement of Borrower's financial performance as compared to Borrower's annual budget submitted to Borrower's board of directors. The observer will execute a non-disclosure agreement in such form as is reasonably acceptable to Borrower. Notwithstanding anything to the contrary in this subparagraph, Lender shall not receive materials, and the observer shall be automatically recused from discussions by Borrower's board of directors, that relate to customers or potential customers of Borrower that are in competition with Lender or any projects relating to such competitive customers.

(d) Promptly inform Lender of the occurrence of any Event of Default or upon gaining knowledge of any event that could reasonably be expected to be an Unmatured Event of Default or any event that has, or could reasonably be expected to have, a Material Adverse Effect; grant or cause Subsidiary to grant to Lender and its representatives the right to examine Borrower's and Subsidiary's books and records at any reasonable time or times; maintain and cause Subsidiary to maintain complete and accurate books and records of its transactions in accordance with good accounting practices; and furnish or cause Subsidiary to furnish to Lender any information that Lender reasonably requests concerning Borrower's or Subsidiary's financial affairs within 10 days after Lender requests that information.

(e) Pay and discharge or cause to be paid and discharged, as often as they are due and payable, all taxes and assessments of whatever nature that are levied or assessed against Borrower or Subsidiary or any of Borrower's or Subsidiary's properties, unless and to the extent only that (1) in a jurisdiction where payment of taxes and assessments is abated during the period of any contest, those taxes or assessments are being contested in good faith by appropriate proceedings, and (2) Borrower or Subsidiary shall have set aside on its books adequate reserves with respect to those taxes and assessments.

(f) Maintain Borrower's and Subsidiary's existence in good standing in their current jurisdiction of organization and their qualification in good standing in every other jurisdiction in which the failure to be qualified or authorized to do business could reasonably be expected to have a Material Adverse Effect; continue to operate exclusively in the business of developing, manufacturing and selling graphene nanoplatets, engineered products containing graphene nanoplatets, and similar products; and comply and cause Subsidiary to comply in all material respects with all governmental laws, rules, regulations, and orders that apply to it.

(g) Maintain or cause to be maintained insurance, including, without limitation, "special form" (f/k/a "all risk") property insurance, flood insurance (if required), workers' compensation insurance, and commercial general liability coverage with responsible insurance companies on its and Subsidiary's properties, including, without limitation, the Collateral, and against the risks and in the amounts required by the Collateral Documents (or, in the absence of a requirement, that similar businesses customarily maintain); (2) furnish to Lender upon its request the details with respect to that insurance and satisfactory evidence of that insurance coverage; and (3) within 60 days after Lender requests, obtain or cause to be obtained any additional insurance that Lender reasonably requests. As soon after closing as is reasonably practicable, each insurance policy that this *Section 13(g)* requires shall be written or endorsed in a manner that makes losses, if any, payable to Borrower and Lender or Subsidiary and Lender, as applicable, as their respective interests appear and shall include, as applicable, an additional insured endorsement or a standard mortgage clause or standard lender's loss payable endorsement in favor of Lender in form and substance satisfactory to Lender.

(h) Act prudently and in accordance with customary industry standards in managing and operating its assets, properties, business, and investments; and use commercially reasonable efforts to keep in good working order and condition, ordinary wear and tear excepted, all of its tangible assets and properties that are necessary to the conduct of its business.

(i) Engage, and cause Subsidiary to engage, in good faith discussions with Lender regarding Borrower's provision to Lender, with favored pricing, of technology rights and/or volume supply commitments; and engage, and cause Subsidiary to engage, in good faith discussions with Lender regarding the out-license of graphene related technology to Lender.

(j) Not make loans or advances to any individuals or entities in excess of \$5,000 in the aggregate, other than with respect to accounts receivable incurred in the ordinary course of business.

(k) Not guarantee, endorse, assume, or otherwise incur or suffer to exist any contingent liability in respect of any obligation of any other individual or entity, except in favor of Lender or by the endorsement of negotiable instruments for deposit or collection in the ordinary course of business.

(l) Not issue, incur, assume, or permit to remain outstanding any Indebtedness in excess of \$200,000 in the aggregate, or allow Subsidiary to do so, except for Subordinated Indebtedness, Lender Indebtedness, and Indebtedness secured by Purchase Money and Lease Liens (subject to the limitations set forth in the definition of Purchase Money and Lease Liens in *Section 1* of this Note).

(m) Not enter into any merger, consolidation, reorganization, or recapitalization, or purchase or otherwise acquire all, or substantially all, of the assets, obligations, or capital stock or other ownership interests of any entity; or amend, modify, or waive any of its rights under, its articles of incorporation, bylaws, any shareholder agreement relating to shares of Borrower, or any other charter documents; unless in any such case Lender consents in writing, which consent shall not be unreasonably withheld.

(n) Not permit Subsidiary to enter into any merger, consolidation, reorganization, or recapitalization, or purchase or otherwise acquire all, or substantially all, of the assets, obligations, or membership interest or other ownership interests of any entity; or amend, modify, or waive any of Subsidiary's rights under, Subsidiary's articles of organization, operating agreement, or any other charter documents; unless in any such case Lender consents in writing, which consent shall not be unreasonably withheld.

(o) Not, and not permit Subsidiary to, subordinate any Indebtedness that any individual or entity owes to Borrower or Subsidiary to Indebtedness that that individual or entity owes to any other individual or entity; or amend, modify, or waive any of its rights under any agreement related to such Indebtedness.

(p) Not, and not permit Subsidiary to, change its name, fiscal year, or method of accounting, except as GAAP requires; *provided, however*, that Borrower or Subsidiary may change its name if Borrower or Subsidiary gives Lender 60 days' prior written notice of the name change and takes any action that Lender considers necessary to continue the perfection of the security interests and liens that the Collateral Documents may in the future grant to Lender.

(q) Not, and not permit Subsidiary to, engage in any transaction with an Affiliate on terms that are less favorable to Borrower or Subsidiary than Borrower or Subsidiary could obtain at the time in a comparable transaction in an arm's-length dealing with an individual or entity other than an Affiliate.

(r) Not permit to occur any change in the ownership of Subsidiary.

(s) Not make any payment to any shareholder of Borrower, whether in connection with a dividend, stock redemption, or otherwise, except (1) for reasonable compensation for services, (2) as consideration of not more than fair market value for property (other than equity in Borrower), or (3) with Lender's prior written consent.

(t) Not sell or out-license any assets of Borrower or Subsidiary, other than in the ordinary course of business, which shall be deemed to include the licensing of intellectual property, entering into joint development projects, and other related activities in the ordinary course of business or in connection with strategic initiatives approved by the board of directors of Borrower, in which case Lender will be informed in advance (unless a memorandum of understanding, term sheet, letter of intent, or similar agreement is signed, then at that time) in writing by Borrower.

(u) Notify Lender in writing within 10 days after Borrower or any Affiliate of Borrower receives any notice of the beginning of (1) any proceeding or investigation by a federal or state environmental agency against Borrower or the Affiliate, or (2) any other judicial or administrative proceeding or litigation by or against Borrower or any Affiliate that, if adversely decided, could reasonably be expected to have a Material Adverse Effect.

(v) Sign and deliver, or cause to be signed and delivered, any and all other agreements, instruments, assurances, or other documentation, and take, or caused to be taken, all other action, as Lender deems necessary in its reasonable discretion from time to time to give full effect to the Loan Documents and the transactions contemplated by this Note.

Notwithstanding the foregoing, neither the covenants in this *Section 13* nor in any Loan Document shall prohibit Borrower from licensing its intellectual property, entering into joint development projects, or other related activities in the ordinary course of business or in connection with strategic initiatives approved by the board of directors of Borrower, in which case Lender will be informed in advance (unless a memorandum of understanding, term sheet, letter of intent, or similar agreement is signed, then at that time) in writing by Borrower.

14. **Remedies.** Lender shall have all rights and remedies provided by law and by agreement of Borrower or Subsidiary. Lender shall have the right at any time to set off any indebtedness that Lender then owes to Borrower against any Lender Indebtedness that is then due and payable. Lender shall also have all rights and remedies set forth in each other Loan Document.

15. **Fees and Expenses.** Borrower shall pay, or reimburse Lender for, all expenses incurred by Lender (including, but not limited to, search fees and fees and expenses of legal counsel, other professional advisers, consultants and experts) in connection with (1) the negotiation, preparation, and execution of this Note and the other Loan Documents (including legal fees not to exceed \$25,000), each amendment to, or waiver of any provision of, this Note and the other Loan Documents, and each refinancing or restructuring of this Note, (2) the administration of this Note and the other Loan Documents, including, without limitation, making filings and recordings in public offices to perfect or give notice of liens in favor of Lender and obtaining financing statement searches, tax lien searches, inspections, audits, and assessments, (3) obtaining advice of counsel or other professional advisers, consultants, and experts regarding any aspect of this Note and the other Loan Documents, (4) the enforcement of any provision of this Note or the other Loan Documents, and (5) the collection of any amount at any time owing to Lender by Borrower under this Note or the other Loan Documents.

16. **Relationship.** The relationship between Borrower and Lender under this Note is solely that of debtor and creditor. Lender does not have any fiduciary responsibilities to Borrower. Lender does not and shall not have any responsibility to review, or to inform Borrower of any matter in connection with, any aspect of Borrower's business, operations, or properties or any other security for the Lender Indebtedness. Borrower shall rely entirely upon its own judgment with respect to each such matter.

17. **Waivers.** No delay by Lender in the exercise of any right or remedy shall be a waiver of that right or remedy. No single or partial exercise by Lender of any right or remedy shall preclude any other or future exercise of that or any other right or remedy. No waiver by Lender of any default or of any provision of this Note or the other Loan Documents shall be effective unless it is in writing and signed by Lender. No waiver of any right or remedy on one occasion shall be a waiver of that right or remedy on any future occasion. Borrower waives demand for payment, presentment, notice of dishonor, and protest of this Note and consents to any extension or postponement of time of its payment.

18. **Notices.** Any notice or other communication that this Note requires or permits shall be in writing and shall be served either personally, by certified United States mail with postage fully prepaid, or by a nationally-recognized overnight courier service, addressed to Borrower as:

XG Sciences, Inc.  
3101 Grand Oak Drive  
Lansing, Michigan 48911  
Attention: Philip L. Rose

and to Lender as:

The Dow Chemical Company  
2030 Dow Center  
Midland, Michigan 48674  
Attention: Kenneth Van Heel

or to any other place that either party designates by like written notice served upon the other party. Notice shall be effective upon receipt, if served personally, two Business Days after mailing, if served by mail, or one Business Day after delivery to a courier service, if served by courier service.

19. **Complete Agreement.** This Note contains the entire agreement between Borrower and Lender with respect to the subject matter of this Note. There are no promises, terms, conditions, or obligations that are not contained in this Note. This Note may not be modified except by a writing that the party to be charged signs.

20. **Parties Bound.** This Note shall be binding upon and shall inure to the benefit of Borrower and Lender and their respective successors and assigns; *provided, however*, that Borrower may not assign its rights in or interests under this Note without Lender's prior written consent. There are no third party beneficiaries of this Note or any other Loan Document.

21. **Interpretation.** Borrower and Lender have participated jointly in the negotiation of this Note and the other Loan Documents. In the event any ambiguity or question of intent arises, this Note and the other Loan Documents shall be construed as if drafted jointly by the parties, and no presumption or burden of proof shall arise favoring or disfavoring any party by virtue of the authorship of any provisions of this Note or the other Loan Documents.

22. **Applicable Law and Jurisdiction.** This Note shall be governed by and interpreted according to the laws of the State of Michigan, without giving effect to principles of conflict of laws. Borrower irrevocably agrees and consents that any action against Borrower for collection or enforcement of this Note may be brought in any state or federal court that has subject matter jurisdiction and is located in, or whose district includes, Midland County, Michigan, and that any such court shall have personal jurisdiction over Borrower for purposes of the action, and Borrower waives any objection that any such court is not a convenient forum.

23. **Form 8-K.** Notwithstanding the confidentiality agreement between the parties, Borrower will file a Form 8-K, in a form mutually agreeable to Borrower and Lender, with the United States Securities And Exchange Commission within four days of the date of this Note.

[Signatures follow.]

**BORROWER AND LENDER EACH IRREVOCABLY AND UNCONDITIONALLY WAIVES ITS RIGHT TO A TRIAL BY JURY IN ANY ACTION, INCLUDING, WITHOUT LIMITATION, ANY CLAIM, COUNTERCLAIM, CROSS-CLAIM, OR THIRD-PARTY CLAIM ("CLAIM") THAT IS BASED UPON, ARISES OUT OF, OR RELATES TO THIS NOTE OR ANY LOAN DOCUMENT, INCLUDING, WITHOUT LIMITATION, ANY CLAIM THAT IS BASED UPON, ARISES OUT OF, OR RELATES TO ANY ACTION OR INACTION OF LENDER IN CONNECTION WITH ANY ACCELERATION, ENFORCEMENT, OR COLLECTION OF ANY LOAN OR LOANS.**

**XG SCIENCES, INC.**

By /s/ Philip L. Rose  
Philip L. Rose, Chief Executive Officer **Borrower**

Accepted by:

**THE DOW CHEMICAL COMPANY**

By /s/ Howard Ungerleider  
Howard Ungerleider, Chief Financial Officer **Lender**



**SCHEDULE A**

**OUTSTANDING INDEBTEDNESS OF BORROWER AND SUBSIDIARY**

**BRIDGE FINANCINGS**

From December 31, 2015 through April 7, 2016, Borrower entered into private placement bridge financings with 14 investors totaling \$1,124,750 (the "Bridge Financings"). The investors in the Bridge Financings received common stock warrant coverage of 30% for investments made prior to December 31, 2015 and 20% coverage thereafter. Borrower repaid the Bridge Financings in full before the date of this Note.

**FINANCING LEASE OBLIGATIONS**

Borrower has the following financing lease obligations as of the Initial Draw Date under the terms of the Master Lease with Aspen Advanced Opportunity Fund. This disclosure is qualified in all respects by the terms of such Master Lease.

**Aspen Advanced Opportunity Fund Leased Assets** Total = \$1,026,090.73

Item #	Item Name	Manufacturer	Description	Application Area	Location	Model #	Date in service	XG GL A/C #	Amount
1	Calendar	Magnet Fairview	(3) 12" x 26" rolls	Paper line	GO		12/2014	15255	\$ 162,571.00
2	Automation	Magnet Fairview	Front end feed system	Paper line	GO		12/2014	15256	128,605.00
3	Rebuild existing calendar	Magnet Fairview	Rebuild back end	Paper line	GO		12/2014	15257	99,145.00
Total - Lease Schedule #3 (to be dated 12/31/2014)									\$ 390,321.00
1	Battery Tester	Arbin	lab eq	R&D battery testing	EO	BT2000	12/2013	16229	\$ 56,990.11
Total - Lease Schedule #2 dated 12/20/2013 (payment terms start on 1/1/14)									\$ 56,990.11
1	Pneumatic Transfer Conveyor	Vac-U-Max	material conveyance	Intercalated line	GO	Z71821A/01	12/2013	15178	\$ 11,830.00
2	Pneumatic Transfer Conveyor	Vac-U-Max	material conveyance	Intercalated line	GO	Z71821A/01	12/2013	15178	11,830.00
3	Pneumatic Transfer Conveyor	Vac-U-Max	material conveyance	Paper line	GO	MDL105201	12/2013	15228	14,862.22
4	Pneumatic Transfer Conveyor	Vac-U-Max	material conveyance	Paper line	GO	Z71821A/01	12/2013	15228	11,866.00
5	Calendar	Magnet Fairview	(3) 12" x 26" rolls	Paper line	GO	3 roll 2,000 pli	12/2013	15228	158,455.00
6	Calendar	Magnet Fairview	(3) 14" x 26" rolls	Paper line	GO	3 roll 4,500 pli	12/2013	15228	175,950.00
7	Infrared Oven	Blasdel	25 watt / sq in	Paper line	GO	8' x 24"	12/2013	15228	54,545.00
8	Infrared Oven - dual conveyor	Blasdel	20 watt / sq in	Paper line	GO	14' 2 belt	12/2013	15228	63,258.00
9	Ultrasonic Cleaner	Hessonic	500 watts input	Paper line	GO	HS-3317-SP	12/2013	15228	12,355.97
10	Tubular Conveyor	Cablevey	6" tubular	Paper line	GO	Conveying system	12/2013	15228	47,615.94
11	Planetary Mixer	Shanghai	mixer	Dispersion lab	EO	YRXJ-10L	12/2013	16229	16,211.49
Total - Lease Schedule #1 dated 12/20/2013 (payment terms start on 1/1/14)									\$ 578,779.62

Borrower has two lease financing obligations to Wells Fargo Equipment Finance as of the Initial Draw Date for two leased compressors.

Borrower has a lease financing obligation to Airgas as of the Initial Draw Date for a gas storage tank, vaporizer, regulator and related equipment.

**SCHEDULE B**

**OUTSTANDING OWNERSHIP INTEREST OF BORROWER  
AND BORROWER'S OWNERS**

Attached, subject to: (1) elections received from holders of Series B Convertible Preferred Stock to exchange such stock for common stock on a two-for-one basis in accordance with such stock's certificate of designations, and (2) subscriptions received after November 30, 2016 to purchase common stock pursuant to the Company's ongoing public offering of common stock.

**XG Sciences, Inc.**

**Stockholder Roster as of November 30, 2016**

<i>Holder</i>	<i>Common Shares</i>	<i>Series A Shares</i>	<i>Series B Shares</i>	<i>Total Shares</i>
Ann Arbor SPARK	36,257.0			36,257.0
ASC-XGS, LLC		166,023.0		166,023.0
Aspen Advanced Opportunity Fund, LP		1,046,308.0	-	1,046,308.0
Colin D. Cronin	2,803.0	5,300.0	2,500.0	10,603.0
David and Vicky Pendell, JTWROS	-	3,157.0	-	3,157.0
David J. Donovan	16,257.0	-	-	16,257.0
Edward J. Demmer	30,000.0	-	-	30,000.0
Gary Griffin	1,500.0	-	-	1,500.0
Hanwha Chemical Corporation	150,000.0			150,000.0
Hiroyuki Fukushima	50,000.0	500.0	-	50,500.0
Inhwan Do	50,000.0	500.0	-	50,500.0
Iris K. Linder	1,667.0			1,667.0
Jeffery A. Wesley	9,005.0	-	-	9,005.0
John W. Dourjalian	1,649.0	3,123.0	-	4,772.0
Kevin B. Miller	2,400.0	-	-	2,400.0
Lawrence T Drzal	50,550.0	-	600.0	51,150.0
Linnea Van Dyne	5,380.0			5,380.0
Marjorie E. Frisch	2,087.5			2,087.5
Mark E. Hooper Revocable Living Trust UAD 5/8/90	3,625.0			3,625.0
Mark S. Kerrins & Rosemary Kerrins (JTWROS)	32,500.0	-	-	32,500.0
Mathew H Frisch	2,087.5	-	-	2,087.5
Michael R Knox (Common) and Mike Knox & Linnea Van Dyne JTWROS (Series A)	121,667.0	72,226.0	-	193,893.0
MSU Foundation	9,543.0			9,543.0
Paul Nordstrom	3,637.0	6,363.0	-	10,000.0
Peter S. Bosanic & Lisa Kendzioski Bosanic (JTWROS)	1,925.0	1,875.0	-	3,800.0
POSCO, a South Korean Corporation	200,000.0	100,000.0	-	300,000.0
Reed Shick	880.0	-	-	880.0
Robert L. McKellar	592.0	-	-	592.0
Robert Skandalaris	34,977.0			34,977.0
Stephen J. Linder Trust No. 1 UTD 7/20/92	5,251.0	-	-	5,251.0
William D. Hamilton and Susan M. Heathfield, Husband and Wife	7,251.0			7,251.0
William G. Lutz	3,053.0	-	-	3,053.0
Jones Network, LP	27,500.0		9,375.0	36,875.0
George Cardoza			2,500.0	2,500.0
William Robison			31,250.0	31,250.0
Steven Purcell			6,250.0	6,250.0
James D. Chambers			6,000.0	6,000.0
Golden Hills Investments, LLLP			15,625.0	15,625.0
Muriel F. Licht Trust			3,125.0	3,125.0
Hewit Hawn			313.0	313.0
First Trust Company of Onaga FBO Kenneth RJ Rettig			1,125.0	1,125.0
Jones Extended Family Trust			3,125.0	3,125.0
David G. Pendell Revocable Trust			3,125.0	3,125.0
Edelgard Traut			1,000.0	1,000.0
First Trust Company of Onaga FBO George A. Shaw			3,125.0	3,125.0
John M. O'Neill			1,000.0	1,000.0
L.D. Sipes, Jr.			10,000.0	10,000.0
Lexy and Steven Shroyer Family Trust 2004			9,375.0	9,375.0
Robert F. Moyer Revocable Trust dated 9/20/2011			4,688.0	4,688.0
Samuel H. Jones Jr.	37,500.0		6,250.0	43,750.0
Elaine D. Cavanna			1,625.0	1,625.0
Shannondoah, LLC			1,500.0	1,500.0
Traut Family Trust UTD 7/3/13			1,000.0	1,000.0
Ravi Shanker			1,000.0	1,000.0
David H. Fuhrhop and Marcia L. Fuhrhop			582.0	582.0
Charles Thomas Bombeck IV	3,000.0		3,000.0	6,000.0
Arnold Avery Allemang Re / Tr U/Z 07/28/94	120,625.0		15,625.0	136,250.0
Steven & Carisa Jones 401K Plan & Trust	15,000.0		3,125.0	18,125.0
George J. and/or Beverly A. Biltz			3,750.0	3,750.0
Philip Rose			3,125.0	3,125.0
Laurie L. Bock Administrative Trust			938.0	938.0
Kay B. Coin			1,563.0	1,563.0
LMRAY, LLC			469.0	469.0
Spinnaker Brown, LLC			1,688.0	1,688.0
Who Dat Nation Trust			1,760.0	1,760.0
Arthur Baumann			813.0	813.0

<i>Holder</i>	<i>Common Shares</i>	<i>Series A Shares</i>	<i>Series B Shares</i>	<i>Total Shares</i>
N. Rich Holdings, LLC			2,000.0	2,000.0
M. Rich Holdings, LLC			6,000.0	6,000.0
David P. Stern Trust UA 12-19-2001			500.0	500.0
Arnold S. and Bette G. Hoffman			3,125.0	3,125.0
Tomas R. Manson Family Trust			1,500.0	1,500.0
Thomas and Carmelita B. Karacic			3,125.0	3,125.0
Erik J. Falconer			3,000.0	3,000.0
Brian G. Martindale Trust			3,200.0	3,200.0
OK Enterprises, Inc.			938.0	938.0
Mary V. Murfey Family Trust #2			4,000.0	4,000.0
Galt Asset Management, LLC			3,125.0	3,125.0
Paul Anthony Radomski			10,000.0	10,000.0
Stevens Financial Group, LLC			31,250.0	31,250.0
First Trust Company of Onaga FBO James M Rajewski IRA#TW000918			2,345.0	2,345.0
David Ari Johnson and Gabrielle Johnson Revocable Trust 1-13-14			1,563.0	1,563.0
Timothy Long Living Trust			625.0	625.0
Thomas W. Rouse			1,219.0	1,219.0
Morgan Duke			3,125.0	3,125.0
Howard Moskow			1,563.0	1,563.0
Hoffman Investment Company			3,125.0	3,125.0
Russell S. Deane Trust 1/4/2008			1,250.0	1,250.0
J. Scott Lizenby			400.0	400.0
Michael D. Bierlein Intervivos Trust			3,282.0	3,282.0
Lillian Elizabeth Deane Trust dated July 2, 1993			625.0	625.0
Jennifer Dana Dean			1,000.0	1,000.0
First Trust Company of Onaga FBO Robert L Hartsock			1,500.0	1,500.0
Robert and Carlita Gasparini			1,563.0	1,563.0
Rodney Boulanger			3,125.0	3,125.0
James R. DeVore and Joan Mobley-DeVore			10,000.0	10,000.0
XGS II, LLC		109,172.0		109,172.0
SVIC No. 15 New Technology Business Investment L.L.P.	-	314,709.0	-	314,709.0
John & Kay Riegel	2,000.0			2,000.0
Steven Shroyer & Lexy Shroyer Declaration of Trust	4,000.0			4,000.0
Anita M. Nagler 2013 GRAT	12,500.0			12,500.0
Eva & Gary Quateman	6,000.0			6,000.0
Christopher Brooks	2,500.0			2,500.0
Travis Nagler Moyer	1,250.0			1,250.0
CrossleyShear, Inc.	5,000.0			5,000.0
Kay Soaper	2,000.0			2,000.0
Audrey Nagler Moyer	1,250.0			1,250.0
Desertaire Enterprises, LP	6,250.0			6,250.0
Michael Lemme	1,000.0			1,000.0
Kenneth W LeCureux Intervivos Trust	1,000.0			1,000.0
Steven and Carisa Jones, JTWROS	25,000.0			25,000.0
Shirley G. Pendell Irrevocable Trust	6,504.0			6,504.0
Judy B Greenhill Trust	1,500.0			1,500.0
Kelsey Desloover	3,500.0			3,500.0
Nathan Desloover	3,500.0			3,500.0
Christian Allemang	3,500.0			3,500.0
Steven and Carisa Jones Defined Benefit Plan & Trust	13,000.0			13,000.0
MadSavAsh Investments, LLC	13,000.0			13,000.0
Floyd L. Howsden	1,000.0			1,000.0
The GJW, LLC	6,250.0			6,250.0
Richard Wilczewski	1,000.0			1,000.0
Michael LaFontaine Jr.	3,125.0			3,125.0
Brett J. Bean & Patricia W. Bean	5,000.0			5,000.0
Thomas A Holmes	12,000.0			12,000.0
Bob & Ginny Black Trust	1,000.0			1,000.0
Richard L Black	1,000.0			1,000.0
Norris A Broyles Jr	1,000.0			1,000.0
Shirley Hooper Broyles	1,000.0			1,000.0
James S Williams	2,000.0			2,000.0
Matthew Radomski	1,250.0			1,250.0
Brian K. and Ellen J. Larson	1,000.0			1,000.0

<i>Holder</i>	<i>Common Shares</i>	<i>Series A Shares</i>	<i>Series B Shares</i>	<i>Total Shares</i>
Jeffrey A. Anderson	1,000.0			1,000.0
David and Sandra Busch Self Joint Revocable Trust	1,000.0			1,000.0
Jones Family Trust I, UAD 2/20/2016 TTEE John M O'Neil	31,250.0			31,250.0
Peter R. Schooff	1,000.0			1,000.0
906 Capital, LLC	1,875.0			1,875.0
William R. Donberg Trust	1,000.0			1,000.0
Devandra J. Hartsock Revocable Trust	1,000.0			1,000.0
Stephen R. Smith	1,250.0			1,250.0
Larry Silverstein and Rebecca Keshmiri	6,250.0			6,250.0
Jere D. Marciniak and Patricia A. Marciniak	3,000.0			3,000.0
David E. Kepler II	3,000.0			3,000.0
Stephen Caton Forsyth	62,500.0			62,500.0
Kim Yong Cheol	1,500.0			1,500.0
<b>Total Shares of Stock</b>	<u>1,306,673.0</u>	<u>1,829,256.0</u>	<u>269,987.0</u>	<u>3,405,916.0</u>

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**XG Sciences, Inc.**  
**Stock Options and Warrants as of November 30, 2016**

<i>Holder</i>	<i>Issue Date</i>	<i>Exp. Date</i>	<i>Stock Shares</i>	<i>Exercise Price</i>	<i>Total Vested 11/30/2016</i>	<i>Total Not Vested 11/30/2016</i>
Warrants to Purchase Common Stock						
Michael R. Knox	7/1/2009	7/1/2019	6,000	\$ 8.00	6,000	-
Michael R. Knox	10/8/2012	10/8/2027	5,000	\$ 12.00	5,000	-
Jones Network, LP	4/21/2015	4/21/2022	7,969	\$ 16.00	7,969	-
George Cardoza	4/22/2015	4/22/2022	2,125	\$ 16.00	2,125	-
William Robison	4/22/2015	4/22/2022	26,563	\$ 16.00	26,563	-
Steven Purcell	4/23/2015	4/23/2022	5,313	\$ 16.00	5,313	-
Golden Hills Investments, LLLP	4/24/2015	4/24/2022	13,281	\$ 16.00	13,281	-
Hewitt Hawn	4/24/2015	4/24/2022	266	\$ 16.00	266	-
James D. Chambers	4/24/2015	4/24/2022	5,100	\$ 16.00	5,100	-
Muriel F. Licht Trust	4/24/2015	4/24/2022	2,656	\$ 16.00	2,656	-
First Trust Company of Onaga FBO						
Kenneth RJ Rettig	4/27/2015	4/27/2022	956	\$ 16.00	956	-
Jones Extended Family Trust	4/27/2015	4/27/2022	2,656	\$ 16.00	2,656	-
David G. Pendell Revocable Trust	4/28/2015	4/28/2022	2,656	\$ 16.00	2,656	-
Edelgard Traut	4/28/2015	4/28/2022	850	\$ 16.00	850	-
First Trust Company of Onaga FBO						
George A. Shaw	4/28/2015	4/28/2022	2,656	\$ 16.00	2,656	-
John M. O'Neill	4/28/2015	4/28/2022	850	\$ 16.00	850	-
L.D. Sipes, Jr.	4/28/2015	4/28/2022	8,500	\$ 16.00	8,500	-
Lexy and Steven Shroyer Family Trust						
2004	4/28/2015	4/28/2022	7,969	\$ 16.00	7,969	-
Robert F. Moyer Revocable Trust dated						
9/20/2011	4/28/2015	4/28/2022	3,985	\$ 16.00	3,985	-
Samuel H. Jones Jr.	4/28/2015	4/28/2022	5,313	\$ 16.00	5,313	-
Arnold Avery Allemang Revocable						
Trust	4/29/2015	4/29/2022	13,281	\$ 16.00	13,281	-
Arnold S. and Bette G. Hoffman	4/29/2015	4/29/2022	2,656	\$ 16.00	2,656	-
Arthur Baumann	4/29/2015	4/29/2022	691	\$ 16.00	691	-
Brian G. Martindale Trust	4/29/2015	4/29/2022	2,720	\$ 16.00	2,720	-
Charles Thomas Bombeck IV	4/29/2015	4/29/2022	2,550	\$ 16.00	2,550	-
David H. Fuhrhop and Marcia L.						
Fuhrhop	4/29/2015	4/29/2022	495	\$ 16.00	495	-
David P. Stern Trust UA 12-19-2001	4/29/2015	4/29/2022	425	\$ 16.00	425	-
Elaine D. Cavanna	4/29/2015	4/29/2022	1,381	\$ 16.00	1,381	-
Erik J. Falconer	4/29/2015	4/29/2022	2,550	\$ 16.00	2,550	-
George J. and/or Beverly A. Biltz	4/29/2015	4/29/2022	3,188	\$ 16.00	3,188	-
Kay B. Coin	4/29/2015	4/29/2022	1,329	\$ 16.00	1,329	-
Laurie L. Bock Administrative Trust	4/29/2015	4/29/2022	797	\$ 16.00	797	-
LMRAY, LLC	4/29/2015	4/29/2022	399	\$ 16.00	399	-
M. Rich Holdings, LLC	4/29/2015	4/29/2022	5,100	\$ 16.00	5,100	-
N. Rich Holdings, LLC	4/29/2015	4/29/2022	1,700	\$ 16.00	1,700	-
Philip Rose	4/29/2015	4/29/2022	2,656	\$ 16.00	2,656	-
Ravi Shanker	4/29/2015	4/29/2022	850	\$ 16.00	850	-
Shannondoah, LLC	4/29/2015	4/29/2022	1,275	\$ 16.00	1,275	-
Spinnaker Brown, LLC	4/29/2015	4/29/2022	1,435	\$ 16.00	1,435	-
Steven & Carisa Jones 401K Plan &						
Trust	4/29/2015	4/29/2022	2,656	\$ 16.00	2,656	-
Thomas and Carmelita B. Karacic	4/29/2015	4/29/2022	2,656	\$ 16.00	2,656	-
Tomas R. Manson Family Trust	4/29/2015	4/29/2022	1,275	\$ 16.00	1,275	-
Traut Family Trust UTD 7/3/13	4/29/2015	4/29/2022	850	\$ 16.00	850	-
Who Dat Nation Trust	4/29/2015	4/29/2022	1,496	\$ 16.00	1,496	-
David Ari Johnson and Gabrielle						
Johnson Revocable Trust 1-13-14	4/30/2015	4/30/2022	1,329	\$ 16.00	1,329	-
First Trust Company of Onaga FBO						
James M Rajewski IRA#TW000918	4/30/2015	4/30/2022	1,993	\$ 16.00	1,993	-
First Trust Company of Onaga FBO						
Robert L Hartsock	4/30/2015	4/30/2022	1,275	\$ 16.00	1,275	-
Galt Asset Management, LLC	4/30/2015	4/30/2022	2,656	\$ 16.00	2,656	-
Hoffman Investment Company	4/30/2015	4/30/2022	2,656	\$ 16.00	2,656	-
Howard Moskow	4/30/2015	4/30/2022	1,329	\$ 16.00	1,329	-
J. Scott Lizenby (assumed internal 53						
transfer - no paperwork)	4/30/2015	4/30/2022	340	\$ 16.00	340	-
Jennifer Dana Dean	4/30/2015	4/30/2022	850	\$ 16.00	850	-
Lillian Elizabeth Deane Trust dated July						
2, 1993	4/30/2015	4/30/2022	531	\$ 16.00	531	-
Mary V. Murfey Family Trust #2	4/30/2015	4/30/2022	3,400	\$ 16.00	3,400	-
Michael D. Bierlein Intervivos Trust	4/30/2015	4/30/2022	2,790	\$ 16.00	2,790	-
Morgan Duke	4/30/2015	4/30/2022	2,656	\$ 16.00	2,656	-
OK Enterprises, Inc.	4/30/2015	4/30/2022	797	\$ 16.00	797	-
Paul Anthony Radomski	4/30/2015	4/30/2022	8,500	\$ 16.00	8,500	-
Robert and Carlita Gasparini	4/30/2015	4/30/2022	1,329	\$ 16.00	1,329	-
Russell S. Deane Trust 1/4/2008	4/30/2015	4/30/2022	1,063	\$ 16.00	1,063	-
Stevens Financial Group, LLC	4/30/2015	4/30/2022	26,563	\$ 16.00	26,563	-
Thomas W. Rouse	4/30/2015	4/30/2022	1,036	\$ 16.00	1,036	-
Timothy Long Living Trust (no						
paperwork)	4/30/2015	4/30/2022	531	\$ 16.00	531	-

<i>Holder</i>						<b>Total Vested</b>	<b>Total Not Vested</b>
<b>Warrants to Purchase Common Stock</b>	<b>Issue Date</b>	<b>Exp. Date</b>	<b>Stock Shares</b>	<b>Exercise Price</b>		<b>11/30/2016</b>	<b>11/30/2016</b>
Colin Cronin	5/26/2015	5/26/2022	2,125	\$ 16.00		2,125	-
Lawrence T. Drzal	5/26/2015	5/26/2022	510	\$ 16.00		510	-
Rodney Boulanger	6/26/2015	6/26/2022	1,563	\$ 16.00		1,563	-
James R. DeVore and Joan Mobley-DeVore	6/30/2015	6/30/2022	5,000	\$ 16.00		5,000	-
Arnold Avery Allemang Revocable Trust U/A 7/28/94	12/31/2015	12/31/2020	9,375	\$ 8.00		9,375	-
David G. Pendell	12/31/2015	12/31/2020	1,875	\$ 8.00		1,875	-
Madsavash Investments, LLC	12/31/2015	12/31/2020	3,750	\$ 8.00		3,750	-
Steve and Carisa Jones Defined Benefit Pension Plan & Trust, UAD 1/1/06	12/31/2015	12/31/2020	3,750	\$ 8.00		3,750	-
Steven and Carisa Jones 401K Plan & Trust, UAD 1/1/06	12/31/2015	12/31/2020	1,875	\$ 8.00		1,875	-
Arnold Avery Allemang Revocable Trust U/A 7/28/94	3/31/2016	3/31/2021	2,000	\$ 10.00		2,000	-
Arthur/Margarita Baumann	3/31/2016	3/31/2021	400	\$ 10.00		400	-
Brian G. Martindale Trust	3/31/2016	3/31/2021	2,000	\$ 10.00		2,000	-
David G. Pendell	3/31/2016	3/31/2021	1,000	\$ 10.00		1,000	-
David H & Marcia L Furhop	3/31/2016	3/31/2021	200	\$ 10.00		200	-
Jones Network, LP	3/31/2016	3/31/2021	2,000	\$ 10.00		2,000	-
L.D. Sipes, Jr.	3/31/2016	3/31/2021	1,000	\$ 10.00		1,000	-
Mainstar Trust FBO George A Shaw	3/31/2016	3/31/2021	800	\$ 10.00		800	-
Shannondoah, LLC	3/31/2016	3/31/2021	1,200	\$ 10.00		1,200	-
LMRAY, LLC	4/30/2016	4/30/2021	195	\$ 10.00		195	-
Spinnaker Brown, LLC	4/30/2016	4/30/2021	700	\$ 10.00		700	-
<b>Total Common Stock Warrants</b>			<b>268,017</b>			<b>268,017</b>	<b>-</b>
<b>Warrants to Purchase Series A Preferred Stock</b>							
Aspen Advanced Opportunity Fund, LP	1/15/2014	1/15/2024	833,333	\$ 12.00		833,333	
Colin D. Cronin	1/15/2014	1/15/2024	1,767	\$ 12.00		1,767	
John W. Dourjalian	1/15/2014	1/15/2024	1,041	\$ 12.00		1,041	
Paul Nordstrom	1/15/2014	1/15/2024	2,121	\$ 12.00		2,121	
Peter S. Bosanic & Lisa Kendzioski Bosanic	1/15/2014	1/15/2024	625	\$ 12.00		625	
SVIC No. 15 (Samsung)	1/15/2014	1/15/2024	100,000	\$ 12.00		-	100,000
XGS II, LLC	1/15/2014	1/15/2024	83,333	\$ 12.00		83,333	
Hiroiyuki Fukushima	3/31/2014	1/15/2024	250	\$ 12.00		250	
Inwhan Do	3/31/2014	1/15/2024	250	\$ 12.00		250	
POSCO, a South Korean Corporation	3/31/2014	1/15/2024	50,000	\$ 12.00		50,000	
<b>Total Series A Warrants</b>			<b>1,072,720</b>			<b>972,720</b>	<b>100,000</b>
<b>Grand Total Warrants</b>			<b>1,340,737</b>			<b>1,240,737</b>	<b>100,000</b>
<b>Stock Options</b>							
Scott Murray	12/1/2007	12/1/2017	10,000	\$ 8.00		10,000	-
Corinne Lyon	6/1/2013	6/1/2021	10,000	\$ 12.00		10,000	-
Liya Wang	6/1/2013	6/1/2021	30,000	\$ 12.00		30,000	-
Robert Privette	6/1/2013	6/1/2021	20,000	\$ 12.00		20,000	-
Scott Murray	6/1/2013	6/1/2021	10,000	\$ 12.00		10,000	-
Arnold Allemang	6/1/2013	6/1/2021	3,750	\$ 12.00		3,750	-
Steven Jones	6/1/2013	6/1/2021	2,500	\$ 12.00		2,500	-
Philip Rose	1/6/2014	1/6/2022	220,000	\$ 12.00		134,987	85,013
Arnold Allemang	4/1/2014	3/31/2022	1,750	\$ 12.00		1,750	-
Arnold Allemang	4/1/2014	3/31/2022	9,000	\$ 12.00		3,750	5,250
Steven Jones	4/1/2014	3/31/2022	1,750	\$ 12.00		1,750	-
Steven Jones	4/1/2014	3/31/2022	9,000	\$ 12.00		3,750	5,250
Ravi Shanker	4/1/2014	3/31/2022	12,000	\$ 12.00		6,000	6,000
Albert Kim	10/19/2015	10/19/2023	20,000	\$ 12.00		5,000	15,000
Percy Chinoy	10/19/2015	10/19/2023	10,000	\$ 12.00		2,500	7,500
<b>Total Stock Options</b>			<b>369,750</b>			<b>245,737</b>	<b>124,013</b>
<b>Grand Total Warrants and Stock Options</b>			<b>1,710,487</b>			<b>1,486,474</b>	<b>224,013</b>

**SCHEDULE C**

**INVESTMENTS IN OWNERSHIP INTERESTS OF OTHER PERSONS**

100% of the membership interest of Subsidiary

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**EXHIBIT A**

**SECURITY AGREEMENT  
(XG Sciences, Inc.)**

**THIS SECURITY AGREEMENT (“Agreement”)** is made as of \_\_\_\_\_, by and between XG Sciences, Inc., a Michigan corporation, of 3101 Grand Oak Drive, Lansing, Michigan 48911 (“**Debtor**”), and The Dow Chemical Company, of 2030 Dow Center, Midland, Michigan 48674 (“**Secured Party**”), for itself and as agent for the benefit of all other affiliates of Secured Party (each, an “**Affiliate**”), pursuant to a certain Draw Loan Note and Agreement (as amended, supplemented, restated or otherwise modified from time to time, “**Note**”) dated as of December 7, 2016, between Debtor and Secured Party.

1. **Grant of Security Interest.** Debtor grants to Secured Party a continuing security interest in all business assets of Debtor, including without limitation:

(a) all machinery and equipment (including vehicles) and fixtures, wherever located, whether now owned or hereafter acquired by Debtor, and all chattel paper evidencing any past, present or future leasing of the machinery, equipment or fixtures;

(b) all inventory, wherever located, whether now owned or hereafter acquired by Debtor; and any and all bills of lading, warehouse receipts and other documents of title evidencing inventory; all rights of stoppage in transit of inventory; all chattel paper evidencing any past, present or future leasing of inventory; and all letter of credit rights under all existing and future letters of credit securing all or part of the purchase price of inventory that has been or is in the future sold by Debtor;

(c) all accounts, contract rights, chattel paper, instruments, investment property, general intangibles and letter of credit rights, wherever located, whether now owned or hereafter acquired by Debtor;

(d) all deposit accounts, wherever located, whether now owned or hereafter acquired by Debtor;

(e) all trademarks, trade names, corporate names, business names, domain names, trade styles, trade dress, service marks, logos, source identifiers, business identifiers, or designs of like nature now held or hereafter acquired by Debtor, any registration or recording of the foregoing or any thereof, and any application in connection therewith, including without limitation, any such registration, recording or application in the United States Patent and Trademark Office (“**U.S. PTO**”) or in any similar office or agency of the United States, any state thereof or any country or political subdivision of such other country, and all extensions or renewals of any of the foregoing;

(f) any letters patent of the United States or any country in which Debtor now or hereafter has title, all reissues, divisionals, continuations, continuations-in-part, and extensions thereof, as well as any application for a letters patent in the United States or any other country now or hereafter owned by Debtor, and all extensions or renewals of any of the foregoing;

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(g) any copyright, copyrightable work, any registration or recording of any copyright or any copyrightable work to which Debtor now or hereafter has title, and any application in connection with any copyright or copyrightable work owned by Debtor, including without limitation, any such registration, recording or application in the United States Copyright Office or in any similar office or agency of the United States, any state thereof, or any other country, and any renewal of any of the foregoing;

(h) all know-how trade secrets and business information, whether now owned or hereafter acquired by Debtor;

(i) all rights in computer programs and software applications and source codes of Debtor and all other proprietary information of Debtor;

together with (i) all proceeds of the foregoing, including, without limitation, all cash, checks, drafts, accounts receivable, chattel paper, leases and instruments received by Debtor in connection with any sale, lease, exchange or other disposition of any of the foregoing, and (ii) all books, records (including computer software), and documents at any time evidencing or relating to any of the foregoing or any proceeds thereof. All of the foregoing properties and assets of Debtor are referred to collectively in this Agreement as the “**Collateral**.” Notwithstanding anything contained herein to the contrary, the term “**Collateral**” does not and shall not include any patent rights within the meaning of that certain Restated and Amended Exclusive License Agreement between Michigan State University and Debtor.

2. **Indebtedness Secured.** The foregoing security interest is given to secure payment and performance of ALL OBLIGATIONS AND INDEBTEDNESS THAT DEBTOR NOW AND IN THE FUTURE OWES TO SECURED PARTY AND ANY AFFILIATE under this Agreement and the Note, as well as under all other security agreements, pledge agreements, assignments, mortgages, guaranties, notes, loan agreements, and other agreements, instruments and documents that Debtor has signed or in the future signs relating thereto, and all extensions and renewals of such indebtedness and obligations.

The indebtedness and obligations that this Agreement secures are collectively called the “**Indebtedness**.”

3. **Warranties, Representations, and Agreements.** Debtor warrants and represents to Secured Party, and agrees, as follows:

(a) Debtor is the owner, leasee or licensee of the Collateral, and none of the Collateral is subject to a lien, security interest, encumbrance or claim in favor of a third party (other than Subsidiary), and no financing statement is on file in a public office covering any of the Collateral, except in favor of Secured Party or with respect to Permitted Liens, and except that certain financing statement No. 2013142779-9 in favor of NMHG Financial Services, Inc., which Debtor shall cause to be discharged within 30 days of this Agreement.

- (b) Debtor has full power and authority to enter into and perform its obligations under this Agreement.
- (c) This Agreement is the valid and binding obligation of Debtor and is enforceable against Debtor in accordance with its terms.
- (d) All information that Debtor has furnished or in the future furnishes to Secured Party concerning the Collateral, including, without limitation, all information concerning the condition and quality of the Collateral, is and will be correct and complete.
- (e) Debtor's exact legal name is set forth in the first paragraph of this Agreement.
- (f) Debtor's address set forth on the first page of this Agreement is the location of Debtor's chief executive office.
- (g) Any part of the Collateral that consists of accounts or chattel paper does and shall evidence bona fide sales or leases to the parties named in Debtor's books, and Debtor is not aware of any existing defense to any account or chattel paper.
- (h) **Exhibit A** to this Agreement contains a complete and accurate list of all of Debtor's and its Subsidiary's United States intellectual property registrations, recordings and applications. Debtor shall provide Secured Party with an updated Exhibit A (1) within thirty (30) days after the date of this Agreement to list international intellectual property registrations, recordings and applications, and (2) from time to time for any additions or deletions to such list occurring after the date of this Agreement. Except as disclosed on Exhibit A and except for business information, know-how and trade secrets, there is no intellectual property that is material to Obligor or Borrower.
- (i) Each current employee of Debtor is bound by a nondisclosure agreement in form and substance previously disclosed to Secured Party.

4. **Agreements of Debtor.** Debtor agrees that:

(a) Debtor shall not cause or permit any lien, security interest or encumbrance to be placed on any Collateral (other than Permitted Liens), except in favor of Secured Party and Debtor shall not sell, assign or transfer any Collateral or permit any Collateral to be transferred by operation of law, except for any intellectual property assigned to Subsidiary, as permitted under the Note and sales of inventory in the ordinary course of Debtor's business. A sale in the ordinary course of business does not include a transfer in partial or complete satisfaction of a debt.

(b) Debtor shall maintain all records concerning the Collateral at Debtor's chief executive office.

(c) Debtor shall furnish to Secured Party all information regarding the Collateral that Secured Party from time to time reasonably requests and shall allow Secured Party at any reasonable time to inspect the Collateral and Debtor's records regarding the Collateral.

(d) Debtor shall sign, file, record or obtain from third persons all subordination agreements and other documents, and shall take all other actions, that Secured Party reasonably considers necessary or appropriate to perfect, to continue perfection of, or to maintain first priority (except with respect to Permitted Liens) of, Secured Party's security interest in the Collateral and Debtor shall place upon the Collateral and/or documents evidencing the Collateral any notice of Secured Party's security interest that Secured Party from time to time reasonably requires. Actions that Secured Party may require Debtor to take under the preceding sentence include, without limitation, (1) obtaining from any third party who has possession of Collateral an acknowledgment that the third party holds the Collateral for Secured Party and (2) obtaining agreements from banks, securities intermediaries, issuers of letters of credit and others, and taking all other actions reasonably requested by Secured Party, to give Secured Party control of any part of the Collateral consisting of investment property, deposit accounts, letter of credit rights or electronic chattel paper.

(e) Debtor shall immediately notify Secured Party in writing of any change in Debtor's name, identity or organizational structure, and of any change in the location of Debtor's place of business and of the location of each additional place of business that Debtor establishes. Debtor shall not make a change in its name or its organizational structure or in the jurisdiction under the laws of which Debtor is organized, without Secured Party's prior written consent.

(f) Debtor shall indemnify Secured Party with respect to all losses, damages, liabilities and expenses (including attorney fees) that Secured Party incurs by reason of a failure of Debtor to comply with an obligation under this Agreement or by reason of a warranty or representation that Debtor makes to Secured Party in this Agreement being false in any material respect.

(g) After the occurrence of an Event of Default (subject to applicable cure periods), Debtor shall take all steps reasonably necessary to permit Secured Party to contact its account debtors at any time for the purpose of verifying the existence, amount and collectability of, and other information regarding, Debtor's accounts, chattel paper, instruments or general intangibles.

(h) Debtor shall maintain all tangible Collateral in good condition and repair and maintain special form, replacement cost property insurance covering all tangible Collateral. As soon after closing as reasonably practicable, but no later than 30 days after closing, each insurance policy (1) shall provide that its proceeds shall be payable to Secured Party to the extent of Secured Party's interest in the Collateral, (2) shall contain a standard lender's loss payable endorsement in favor of Secured Party, (3) shall provide that the policy shall not be canceled, and the coverage shall not be reduced, without at least 10 days' prior written notice by the insurer to Secured Party and (4) shall otherwise be in form and substance satisfactory to Secured Party. Debtor shall provide Secured Party evidence of that insurance coverage. Upon Secured Party's request, Debtor shall deliver to Secured Party all policies that provide for such insurance. Debtor agrees that Secured Party may act as agent for Debtor in obtaining, adjusting, and settling that insurance and endorsing any draft evidencing proceeds of it.

(i) To the extent that applicable law at any time permits a secured party to file a financing statement that is not authenticated by Debtor, Debtor authorizes Secured Party to file one or more financing statements containing an indication that such financing statement covers the Collateral. The financing statements that Secured Party files to perfect its security interest in the Collateral may describe the Collateral as "all assets" or "all personal property" that Debtor now owns or acquires in the future. If Secured Party has previously filed one or more financing statements to perfect its security interest in the Collateral, then Debtor approves and ratifies those filings.

(j) Debtor shall pay, before they become delinquent, all taxes and assessments upon the Collateral or for its use or operation and pay and perform when due all indebtedness and obligations under all leases, land contracts or other agreements under which Debtor has possession of any real property upon which any of the Collateral is at any time located and under any mortgage or mortgages at any time covering that real property.

(k) Debtor shall prepare, execute, acknowledge and deliver to Secured Party an instrument in writing in recordable form for recording a lien on and security interest in and to all of its right, title and interest in, to and under all new patent and trademark application filings and any rights extending therefrom, either in the United States or any other country and all proceeds of any and all of the foregoing, within one month after the filing of any such applications.

(l) Debtor shall timely enter into a nondisclosure agreement, in form and substance reasonably acceptable to Secured Party, with each new employee, manager, director, and officer of Debtor, and all agents and other parties to whom trade secrets or other confidential information of Debtor or any affiliate of Debtor may be disclosed.

(m) Debtor shall not commit any material breach or default under that certain license agreement between Debtor and Michigan State University dated as of July 27, 2007 and amended on May 24, 2010 and May 27, 2011, as it may be amended, restated, renewed, extended, replaced, or modified.

5. **Secured Party's Right to Perform.** If Debtor fails to perform an obligation of Debtor under this Agreement, then Secured Party may, without giving notice to or obtaining the consent of Debtor, perform that obligation on behalf of Debtor. Debtor shall reimburse Secured Party on demand for any expense that Secured Party incurs in performing the obligation and shall pay to Secured Party interest on each expense, from the date the expense was incurred by Secured Party, at 5% per annum ("**Default Rate**"). Secured Party is not required to perform an obligation that Debtor has failed to perform. If Secured Party does so, then that shall not be a waiver of Secured Party's right to declare the Indebtedness immediately due and payable by reason of Debtor's failure to perform.

6. **Events of Default and Acceleration.** Any part or all of the Indebtedness shall, at the option of Secured Party, become immediately due and payable without notice or demand upon the occurrence of any of the following events of default (each, an "**Event of Default**"):

(a) If an Event of Default occurs under and as defined in the Note, including any default in the payment or performance of any of the Indebtedness, when and as it is due and payable subject to applicable grace periods.

(b) If Debtor fails to perform any other material obligation, covenant or agreement of Debtor to Secured Party under this Agreement, under a promissory note or other instrument that at any time evidences any Indebtedness or under any other security agreement, loan agreement, mortgage, assignment, guaranty or other agreement that now or in the future secures or relates to any Indebtedness ("**Security Documents**").

(c) If a warranty, representation, or statement that has been or in the future is made to Secured Party by Debtor or by a guarantor of all or part of the Indebtedness ("**Guarantor**") in this Agreement or in a Security Document shall have been false in any material respect when made or furnished.

(d) If Debtor or a Guarantor dissolves, becomes insolvent or makes an assignment for the benefit of creditors.

(e) If a guaranty that now or in the future secures payment or performance of all or a part of the Indebtedness is terminated, revoked or limited for any reason, without Secured Party's written consent or agreement.

(f) If an attachment, garnishment, levy, execution or other legal process is at any time issued against or placed upon any of the Collateral (other than with respect to Permitted Liens) and is not terminated or released within 30 days.

(g) If all or a substantial part of the tangible Collateral is destroyed or materially damaged by fire or other casualty, and cannot be repaired or replaced within a commercially reasonable time, not to exceed 90 days, whether or not there is insurance coverage for the damage or destruction.

If an Event of Default is capable of being cured, then Debtor may cure the same during the thirty-day period that begins on the date on which Debtor receives notice from Secured Party or otherwise has actual knowledge, of the event (the “**Cure Period**”). An Event of Default that is capable of being cured will not be deemed to have occurred as a result of an event during the Cure Period for that event or, if the event is cured during the Cure Period, thereafter.

If a voluntary or involuntary case in bankruptcy, receivership or insolvency is at any time begun by or against Debtor or a Guarantor or if any attachment, garnishment, levy, execution or other legal process is at any time issued against or placed upon Collateral and not terminated or released within 30 days, then the entire Indebtedness shall automatically become immediately due and payable, without notice or demand. All or part of the Indebtedness also may become, or may be declared to be, immediately due and payable under the terms of the Note or a note that at any time evidences any Indebtedness or under a Security Document that has been or in the future is entered into between Debtor and Secured Party.

7. **Secured Party’s Rights and Remedies.** Secured Party shall have all rights and remedies of a secured party under applicable laws. Without limiting those rights and remedies, upon the occurrence of an Event of Default (subject to applicable cure periods):

(a) (1) Without notice or demand to Debtor, Secured Party shall be entitled to notify Debtor’s account debtors and obligors to make all payments directly to Secured Party, and Secured Party shall have the right to take all actions that Secured Party reasonably considers necessary or desirable to collect upon the Collateral, including, without limitation, prosecuting actions against, or settling or compromising disputes and claims with, Debtor’s account debtors and obligors, (2) without notice or demand to Debtor, Secured Party may receive, open, dispose of and notify the postal authorities to change the address of, mail directed to Debtor, and (3) upon Secured Party’s demand, Debtor shall immediately deliver to Secured Party, at the place that Secured Party designates, all proceeds of the Collateral and all books, records, agreements, leases, documents and instruments that evidence or relate to the Collateral.

(b) Debtor, upon Secured Party’s demand, shall assemble the Collateral and proceeds of Collateral at Debtor’s place of business, and Secured Party may dispose of the Collateral in any commercially reasonable manner. Any notification that Secured Party is required to give to Debtor regarding sale or other disposition of Collateral shall be considered reasonable if it is mailed at least 10 days before the sale or other disposition. In connection with a disposition of Collateral, Secured Party may comply with the requirements of an applicable state or federal law or regulation, and such compliance shall not cause the disposition to not be commercially reasonable.

(c) Secured Party shall have the right (but no obligation) to continue or complete the manufacturing or processing of, or other operations in connection with, any part of the Collateral, and, for that purpose, to enter and remain upon or in any land or buildings that are possessed by Debtor or that Debtor has the right to possess. Debtor shall reimburse Secured Party on demand for any net expense that Secured Party incurs in connection with those activities and shall pay to Secured Party interest on each net expense, from the date on which Secured Party incurred the expense, at the Default Rate.

The proceeds of any collection or disposition of Collateral shall be applied first to Secured Party's attorney fees and expenses, as provided in *Paragraph 8* of this Agreement, then to the unpaid interest accrued on the Indebtedness and then to the principal of the Indebtedness, and Debtor shall be liable for any deficiency. Secured Party does not have any obligation to prepare or process any Collateral for sale or other disposition. If Secured Party sells any of the Collateral on credit, then Debtor will be credited only with payments that the purchaser actually makes and that Secured Party receives and applies to the unpaid balance of the purchase price of the Collateral. If the purchaser fails to pay for the Collateral, then Secured Party may again dispose of the Collateral and apply the proceeds in accordance with this paragraph. All rights and remedies of Secured Party under this Agreement, whether or not exercisable only on default, shall be cumulative and may be exercised from time to time. No delay by Secured Party in the exercise of any right or remedy shall operate as a waiver thereof, and no single or partial exercise of any right or remedy shall preclude other or further exercise thereof or the exercise of any other right or remedy.

8. **Expenses.** Debtor shall reimburse Secured Party on demand for all reasonable attorney fees, legal expenses, and other expenses that Secured Party incurs in perfecting (subject to the \$25,000 limitation in the Note), protecting and enforcing its interest in the Collateral and its rights under this Agreement. This includes fees and expenses incurred in trying to take possession of Collateral from Debtor, a trustee or receiver in bankruptcy, or any other person. Secured Party may apply any proceeds of collection or disposition of Collateral to Secured Party's attorney fees, legal expenses and other out-of-pocket expenses.

9. **Amendments and Waivers.** No provision of this Agreement may be modified or waived except by a written agreement signed by Secured Party and Debtor. Secured Party will continue to have all of its rights under this Agreement even if it does not fully and promptly exercise them on all occasions. Secured Party may, at its option: waive any default; defer an action on any default; extend or modify the time or manner of payment of the Indebtedness or waive or modify any term or condition relating to the Indebtedness; release Collateral or other security for the Indebtedness; release any person liable for any of the Indebtedness, including Debtor; or make advances or other extensions of credit secured hereby; all without giving Debtor notice or obtaining Debtor's consent. Any such action by Secured Party will not release or impair its security interest in the Collateral or Debtor's obligations under this Agreement. Secured Party's security interest in the Collateral and Debtor's obligations under this Agreement will not be released or impaired if Secured Party fails to obtain, perfect, or secure priority of any other security for the Indebtedness that is agreed to be given, or is given, by anyone else. Secured Party is not required to sue upon or otherwise enforce payment of the Indebtedness or any other security before exercising its rights under this Agreement.

10. **Notices.** Any notices or communications required or permitted under this Agreement shall be governed by the Note.

11. **Terminology; Conflicts.** Capitalized terms that are not otherwise defined in this Agreement shall have the meanings set forth in the Note. Other terms used in this Agreement shall have the meanings set forth in the Uniform Commercial Code as in effect in the State of Michigan on the date of this Agreement. In the event of a conflict between the terms of this Agreement and the Note, the terms of the Note control.

12. **Binding Effect.** This Agreement shall be binding upon and inure to the benefit of Debtor and Secured Party and their respective successors and assigns.

13. **Termination.** Upon the payment in full and termination of the Note and the Security Documents, this Agreement shall terminate and Secured Party shall execute, acknowledge and deliver to Debtor an instrument in writing, prepared by debtor, in recordable form releasing its liens and security interests in the Collateral under this Agreement.

**SECURED PARTY AND DEBTOR EACH IRREVOCABLY AND UNCONDITIONALLY WAIVES ITS RIGHT TO A TRIAL BY JURY IN ANY ACTION, INCLUDING A CLAIM, COUNTERCLAIM, CROSS-CLAIM OR THIRD-PARTY CLAIM (“CLAIM”), THAT IS BASED UPON, ARISES OUT OF OR RELATES TO THIS SECURITY AGREEMENT OR THE INDEBTEDNESS, INCLUDING, WITHOUT LIMITATION, ANY CLAIM THAT IS BASED UPON, ARISES OUT OF OR RELATES TO AN ACTION OR INACTION OF SECURED PARTY IN CONNECTION WITH AN ACCELERATION OF THE INDEBTEDNESS OR AN ENFORCEMENT OF SECURED PARTY’S SECURITY INTEREST IN THE COLLATERAL.**

[Signature page follows.]



Debtor and Secured Party have signed this Security Agreement as of the date stated on the first page.

**XG SCIENCES, INC.**

By \_\_\_\_\_

Its \_\_\_\_\_

**Debtor**

**THE DOW CHEMICAL COMPANY**

By \_\_\_\_\_

Its \_\_\_\_\_

**Secured Party**

## Exhibit A

### List of Intellectual Property

#### *Michigan State University License*

We have acquired an exclusive license for a number of inventions from Michigan State University. These rights are embodied in a Technology Licensing Agreement between XGS and Michigan State University dated July 27, 2007 and amended on May 24, 2010 and May 27, 2011, which owns the rights to all intellectual property resulting from research performed at the University. This Agreement gives us the exclusive worldwide rights to the subject intellectual property in its field. In exchange for the rights to the technology covered by this Agreement, we paid MSU an initial fee and agreed to pay ongoing royalties on the basis of material sold by us in future years. Under a previous version of the Licensing Agreement, we also awarded a small amount of common stock to MSU. The intellectual property covered by the Agreement is in various stages of development and legal protection. Because there is an active research program underway in this area, we also anticipate that we may add other MSU inventions to our Agreement. In some limited cases, depending on the source of research funds, other parties may have limited rights to use the inventions covered by these agreements. This is typical in the case of research funded by U.S. government agencies and is sometimes the case when research has been funded or partially funded by private corporations.

As of November 1, 2016 the following technologies were included in the MSU License Agreements with XGS and were being actively prosecuted at the U.S. Patent Office:

- U.S. Patent Application No. 12/587,645. “Electrically Conductive, Optically Transparent Films of Exfoliated Graphite NanoParticles & Methods of Making the Same”
- U.S. Patent Application No. 13/199,086. “PI Coupling Agents for Dispersion of Graphene NanoPlatelets in Polymers”, *allowed but not yet granted*
- **U.S. Patent 8,834,959.** “Method for the Preparation of Doped Single Graphene Sheets”

#### *Our Patent Filings*

In addition to the patent applications related to MSU technology discussed above, we also file for patents on some of our own inventions. As of November 1, 2016 the following patents and patent applications were being managed by us and our patent attorneys:

- U.S. Patent Application No. 15/155,558. “Process of Dry Milling Particulate Materials”
- U.S. Patent Application No. 13/686,961. “Single Mode Microwave Device for Producing Exfoliated Graphite”
- U.S. Patent Application No. 14/201,986. “Graphene Carbon Compositions”
- **U.S. Patent 9,472,354.** “Electrodes for Capacitors from Mixed Carbon Compositions”
- U.S. Patent Application No. 14/488,417. “Flexible Resin-Free Composites Containing Graphite & Fillers”

- U.S. Patent Application No. 14/079,057. “Silicon-Graphene Nanocomposites for Electrochemical Applications”
- U.S. Patent Application No. 62/060,319. “LiF-Embedded SiG Powder for Lithium-Ion Battery”
- U.S. Patent Application No. 62/284,797. “Thermal Interface Materials using Graphene Coated Fillers”
- U.S. Patent Application No. 15/082,363. “Heat Exchanger Elements and Devices”
- **U.S. Patent 9,206,051.** “Mechanical Exfoliation Apparatus”
- **U.S. Patent 8,715,720.** “A Cloud Mixer and Method of Minimizing Agglomeration of Particles” (method)
- **U.S. Patent 9,061,259 B2.** “A Cloud Mixer and Method of Minimizing Agglomeration of Particles” (product)
- **U.S. Patent 9,266,078,** “A Cloud Mixer and Method of Minimizing Agglomeration of Particles” (apparatus)
- U.S. Patent Application No. 14/931,236. “Mechanical Exfoliation Apparatus - Divisional”
- U.S. Patent Application No. 14/938,969. “Single Mode Microwave Device for Producing Exfoliated Graphite.”
- U.S. Patent Application No. 15/002,454. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/013,028. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/047,995. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/050,496. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/018,885. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/050,517. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 62/303,612. “Graphene Based Coating on Lead Grid for Lead Acid Batteries”

### ***Global Patent Filings***

For each patent application filed in the US, we make a determination on the nature and value of the patent. For many of the applications filed in the US, additional filings are made in other countries such as the European Union, Japan, South Korea, China, Taiwan or other applicable countries. These filings and analyses are made on a case-by-case basis. Typically, patents that are defensive in nature are not filed abroad, while those that are protective of active XGS products or application areas are filed in relevant countries abroad. Granted/allowed patents only listed here.

- **China Patent No. ZL 2012 8 0065778.X.** “Single Mode Microwave Device for Producing Exfoliated Graphite”
- **China Patent No. ZL 2012 8 0052188.3.** “Cloud Mixer and Method of Minimizing Agglomeration of Particulates”
- China foreign filing of U.S. Patent 9,206,051 “Mechanical Exfoliation Apparatus” *allowed but not yet granted*
- Taiwan foreign filing of U.S. Patent Application No. 14/203,608. “Electrodes for Capacitors from Mixed Carbon Compositions” *allowed but not yet granted*

### ***Trademarks***

We have filed for or been granted registered trademarks as follows:

- “xGnP<sup>®</sup>,” which is the brand name by which we designate our graphene nanoplatelets.
- The corporate logo “XG Sciences” (design logo plus words)
- The tag line “The Material Difference” which is used in conjunction with the corporate logo
- The product designation “XG Leaf<sup>®</sup>”, which is the brand name for our family of sheet products.
- The product designation “XG SiG<sup>™</sup>”, which is the brand name for our battery anode materials.
- The product designation “XG TIM<sup>™</sup>”, which is the brand name for our thermal interface materials.

## EXHIBIT B

### PLEDGE AGREEMENT

**THIS PLEDGE AGREEMENT** is made as of \_\_\_\_\_ by and among XG Sciences, Inc., a Michigan corporation, of 3101 Grand Oak Drive, Lansing, Michigan 48911 (“**Debtor**”), XG Sciences IP, LLC, a Michigan limited liability company, of 3101 Grand Oak Drive, Lansing, Michigan 48911 (“**XG, LLC**”) and The Dow Chemical Company, of 2030 Dow Center, Midland, Michigan 48674 (“**Secured Party**”), for itself and as agent for the benefit of all other affiliates of Secured Party (each, an “**Affiliate**”), pursuant to a certain Draw Loan Note and Agreement (as amended, supplemented or restated or otherwise modified from time to time, “**Note**”) dated as of December 7, 2016, between Secured Party and Debtor.

1. **Grant of Security Interest.** Debtor grants to Secured Party a security interest in all of Debtor’s membership interests in XG, LLC and in (1) all securities, equity interests, membership interests, security entitlements and other financial assets, instruments and other property (“**Additional Property**”) that Debtor at any time receives or is entitled to receive by reason of a dividend, equity split, recapitalization, reclassification, merger, consolidation, liquidation, exchange, renewal, redemption, substitution or other transaction regarding the above-described property or regarding any Additional Property, (2) all interest and other distributions that Debtor at any time receives or is entitled to receive in respect of any of the above-described property or any Additional Property and (3) all proceeds of the foregoing. The foregoing properties and proceeds are referred to in this Agreement as “**Collateral**.”

2. **Indebtedness Secured.** Debtor gives this security interest to secure payment and performance of **ALL OBLIGATIONS AND INDEBTEDNESS THAT DEBTOR NOW AND IN THE FUTURE OWES TO SECURED PARTY AND ANY AFFILIATE** under this Agreement, and the Note, as well as under all other agreements, instruments and documents that Debtor has signed or in the future signs relating thereto, and all extensions or renewals of that indebtedness and obligations.

The indebtedness and obligations that this security interest secures are collectively called the “**Indebtedness**.”

3. **Warranties and Representations.** Debtor represents and warrants to, and agrees with, Secured Party as follows:

(a) Debtor owns the Collateral and has the unqualified right to transfer the Collateral to Secured Party, and it is not subject to a lien, encumbrance or other claim in favor of a third party, or to a right or option of a third party to acquire Collateral.

(b) Each instrument, security and other financial asset included in the Collateral is genuine and what it purports to be and has not been materially altered. Each security included in the Collateral is validly issued, fully paid and not subject to calls or assessments.

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(c) Debtor's address on the first page of this Agreement is the location of Debtor's chief executive office.

(d) Debtor is a corporation and is incorporated and validly existing in good standing under the laws of the State of Michigan; Debtor has full power and authority to enter into and perform its obligations under this Agreement; the signing, delivery and performance of this Agreement have been duly authorized by all necessary action of Debtor's shareholders and directors and will not violate XG, LLC's operating agreement.

(e) Debtor at all times during the terms of this Agreement will own 100% of the outstanding membership interests of XG, LLC.

4. **Agreements of Debtor.** Debtor agrees that:

(a) Debtor must not sell, lease, transfer or assign Collateral or an interest in Collateral or permit Collateral to be transferred by operation of law.

(b) Debtor must pay promptly when due all taxes and assessments upon the Collateral or for its use or ownership.

(c) Debtor must furnish to Secured Party all information regarding the Collateral that Secured Party requests and must allow Secured Party at any reasonable time to inspect Debtor's records regarding the Collateral.

(d) Debtor must immediately notify Secured Party in writing of a change in Debtor's name, identity or corporate structure and of a change in the location of Debtor's chief executive office.

5. **Delivery of Certificates and Instruments for Collateral.** Debtor agrees that:

(a) Concurrently with the execution of this Agreement, Debtor shall pledge and deposit with the Secured Party all certificates or instruments, if any, representing any of the Collateral at the time owned by Debtor and subject to the security interest hereof, accompanied by undated powers duly executed in blank by Debtor or such other instruments of transfer as are acceptable to the Secured Party.

(b) If Debtor shall acquire (by purchase, conversion, exchange, distribution or otherwise) any additional Collateral, at any time or from time to time after the date hereof which is or are intended to be subject to the security interest hereof and which is or are represented by certificates or instruments, Debtor shall (i) promptly pledge and deposit with the Secured Party all such certificates or instruments, accompanied by undated powers duly executed in blank by Debtor or such other instruments of transfer as are acceptable to the Secured Party and (ii) promptly thereafter deliver to the Secured Party a certificate executed by an authorized officer of Debtor describing such additional Collateral and certifying that the same have been duly pledged with the Secured Party hereunder.

(c) Without limitation of any other provision of this Agreement, if any of the Collateral of Debtor (whether now owned or hereafter acquired) which is intended to be subjected to the security interests hereof is an uncertificated security, Debtor shall, as soon as reasonably practicable after closing, cause XG, LLC to create a registration book for the registration of each such “uncertificated security” and duly register Debtor as the owner and note the pledge in favor of Secured Party in a manner that provides control with respect to such uncertificated security. Debtor further agrees to take such actions as the Secured Party deems reasonably necessary or desirable to effect the foregoing and to permit the Secured Party to exercise any of its rights and remedies hereunder in respect thereof, and agrees to provide an opinion of counsel reasonably satisfactory to the Secured Party with respect to any such pledge of any of the securities described above, promptly upon the request of the Secured Party. Debtor further agrees not to amend the operating agreement of XG, LLC in a manner that results in an “opt out” of Article 8 of the Michigan Uniform Commercial Code.

**6. Secured Party’s Rights.**

(a) If Debtor fails to perform an obligation of Debtor under this Agreement, then Secured Party may, without giving Debtor notice, to or obtaining Debtor’s consent, perform that obligation on Debtor’s behalf. Debtor must reimburse Secured Party on demand for each expense that Secured Party incurs in performing an obligation and must pay to Secured Party interest on the expense, from the date on which Secured Party incurred the expense, at an annual rate equal to 5 percent.

Secured Party is not required to perform an obligation that Debtor has failed to perform. If Secured Party does so, then that will not be a waiver of Secured Party’s right to declare the Indebtedness immediately due and payable because of Debtor’s failure to perform.

(b) With respect to the custody and preservation of Collateral in its possession, Secured Party’s only duty will be to use reasonable care. Secured Party will not have an obligation to take steps necessary to preserve rights against prior parties. Secured Party will not have a duty to sell Collateral even if its value declines. Secured Party must not have an obligation to exercise, or to notify Debtor of, a conversion or redemption right or to take similar action with regard to any Collateral.

(c) Each of Debtor and XG, LLC agrees to comply with all instructions originated by Secured Party directing it to transfer, redeem or otherwise act with respect to the Collateral ("**Instructions**"), subject to this Section 6(c) and the other provisions of this Agreement. Prior to the occurrence of an Event of Default, Instructions shall require the consent of Debtor. After the occurrence of an Event of Default, Instructions shall not require the consent of Debtor except to the extent required by MCL 440.9620 (Acceptance of collateral in full or partial satisfaction of obligation; compulsory disposition of collateral).

7. **Default and Acceleration.** If any of the following (each an "**Event of Default**") occurs, then the Indebtedness will, at Secured Party's option, become immediately due and payable, without notice or demand to Debtor:

(a) If an Event of Default shall occur under and as defined in the Note, including any default in the payment or performance of all or part of the Indebtedness, when and as it is due and payable subject to applicable grace periods.

(b) If Debtor fails to perform any other material obligation, covenant or agreement of Debtor under this Agreement or under another security agreement, loan agreement, mortgage, assignment, guaranty or other agreement that now or in the future secures or relates to the Indebtedness ("**Security Documents**").

(c) If a warranty, representation or other statement that has been or in the future is made to Secured Party by Debtor, XG, LLC, or by a guarantor of all or part of the Indebtedness ("**Guarantor**") in this Agreement or in a Security Document, shall have been false in a material respect when made or furnished.

(d) If a lien, security interest or other encumbrance or a writ of attachment, garnishment, levy, execution or other legal process is at any time issued against or placed upon the Collateral and is not terminated or released within 30 days.

(e) If Debtor or a Guarantor dissolves, becomes insolvent, or makes an assignment for the benefit of creditors.

(f) If a guaranty that now or in the future secures payment or performance of the Indebtedness is terminated or limited, without the written consent or agreement of Secured Party.



(g) If the issuer or obligor on the Collateral materially defaults in an obligation of the issuer or obligor under the terms of that Collateral or under an agreement that gives Secured Party control over the Collateral or if a warranty or representation made by the issuer or obligor in such an agreement shall have been false in a material respect or if a petition for relief is filed by or against the issuer or obligor under the federal Bankruptcy Code.

(h) If a securities intermediary materially defaults in the performance of an obligation under an existing or future agreement that gives Secured Party control over Collateral or if a warranty or representation that the securities intermediary in any such agreement shall have been false in a material respect when made or if a petition for relief is filed by or against the securities intermediary under the federal Bankruptcy Code.

(i) If an Event of Default is capable of being cured, then Debtor may cure the same during the thirty-day period that begins on the date on which Debtor receives notice from Secured Party or otherwise has actual knowledge, of the event (the “**Cure Period**”). An Event of Default will not be deemed to have occurred as a result of an event during the Cure Period for that event or, if the event is cured during the Cure Period, thereafter.

If a voluntary or involuntary case in bankruptcy, receivership or insolvency is begun by or against Debtor or any Guarantor, and not terminated or released within 30 days, then the entire Indebtedness will automatically become immediately due and payable, without notice or demand. The Indebtedness also may become immediately due and payable under the terms of a note that at any time evidences the Indebtedness or of a Security Document that has been or in the future is entered into between Debtor and Secured Party.

8. **Remedies.** Secured Party shall have all of the rights and remedies of a secured party under applicable law. All rights and remedies of Secured Party are cumulative and may be exercised from time to time. Without limiting those rights and remedies, upon the occurrence of an Event of Default (subject to applicable cure periods), then:

(a) Subject to *Section 6(a)* above, Secured Party shall have the right, but no obligation, without notice to Debtor and without Debtor’s consent, to vote or give consent with regard to any of the collateral that consists of securities. Secured Party will have the right, but no obligation, (1) to revoke and terminate rights that Secured Party shall have given to Debtor, or permitted Debtor to retain, to control any uncertificated security, security entitlement or securities account that is included in the Collateral and (2) to exercise exclusive control over the Collateral.

(c) Secured Party will have the right, but no obligation, to exercise and enforce Debtor's rights and remedies with respect to the Collateral, including, but not limited to, the right to demand, enforce payment of, collect and receive all dividends, interest, principal payments and other sums that are at any time owing with respect to any of the Collateral and to apply the sums to the Indebtedness in the manner that Secured Party reasonably determines.

(d) Secured Party may sell or otherwise dispose of the Collateral in a commercially reasonable manner. A notification that Secured Party is required to give to Debtor regarding any sale or other disposition of Collateral will be considered reasonable if Secured Party mails or otherwise sends or delivers it to Debtor at least ten (10) days before the sale or other disposition.

(e) Secured Party will apply the proceeds of a collection or disposition of Collateral first to Secured Party's attorney fees and expenses, as provided in *Paragraph 8* of this Agreement, and then to the Indebtedness, in the manner that Secured Party determines, and Debtor will be liable for any deficiency remaining.

All rights and remedies of Secured Party are cumulative and may be exercised from time to time.

9. **Expenses.** Debtor must reimburse Secured Party on demand for all attorney fees and other expenses that Secured Party incurs in preparing and perfecting (subject to the \$25,000 limitation in the Note), and protecting and enforcing Secured Party's rights under this Agreement. This includes fees and expenses incurred in trying to obtain possession of Collateral from Debtor, a trustee or receiver in bankruptcy or another person. Secured Party may apply proceeds of collection or disposition of Collateral to Secured Party's reasonable attorney fees and other expenses.

10. **Amendments and Waivers.** A provision of this Agreement may not be modified or waived except by a written agreement signed by Secured Party and Debtor. Secured Party will continue to have all of Secured Party's rights under this Agreement even if Secured Party does not fully and promptly exercise them on all occasions. Debtor waives all defenses based on suretyship or impairment of collateral. Without limiting the generality of the preceding sentence, (a) Secured Party may, at Secured Party's option, waive a default, defer an action on a default; extend or modify the time or manner of payment of the Indebtedness or waive or modify a term or condition relating to the Indebtedness; release Collateral or other security for the Indebtedness; release anyone that is liable for the Indebtedness, including Debtor or a Guarantor; or make advances or other extensions of credit secured by this Agreement; all without giving Debtor notice or obtaining Debtor's consent; and any of those actions by Secured Party shall not release or impair Secured Party's security interest in the Collateral or Debtor's obligations under this Agreement, (b) Secured Party's security interest in the Collateral and Debtor's obligations under this Agreement will not be released or impaired if Secured Party fails to obtain, perfect or secure priority of, other security for the Indebtedness that anyone else gives or agrees to give and (c) Secured Party is not required to sue upon or otherwise enforce payment of the Indebtedness or other security before exercising Secured Party's rights under this Agreement.

11. **Notices.** A notice to Debtor or Secured Party will be considered to have been given if and when it is mailed, with postage prepaid, to the address of Debtor or Secured Party on the first page of this Agreement or if and when it is delivered personally.

12. **Terminology; Conflicts.** Capitalized terms that are not otherwise defined in this Agreement shall have the meanings set forth in the Note. Other terms used in this Agreement shall have the meanings set forth in the Uniform Commercial Code as in effect in the State of Michigan on the date of this Agreement. In the event of a conflict between the terms of this Agreement and the Note, the terms of the Note will control.

13. **Binding Effect.** This Agreement will be binding upon and inure to the benefit of Debtor and Secured Party and their successors and assigns.

14. **Termination.** Upon the payment in full and termination of the Note and the Security Documents, this Agreement shall terminate and Secured Party shall execute, acknowledge and deliver to Debtor an instrument in writing, prepared by Debtor, in recordable form releasing its liens and security interests in the Collateral under this Agreement.

[Signature page follows.]

**SECURED PARTY DEBTOR, AND XG, LLC EACH IRREVOCABLY AND UNCONDITIONALLY WAIVES ITS, HIS OR HER RIGHT TO A TRIAL BY JURY IN ANY ACTION, INCLUDING ANY CLAIM, COUNTERCLAIM, CROSS-CLAIM OR THIRD-PARTY CLAIM (“CLAIM”), THAT IS BASED UPON, ARISES OUT OF OR RELATES TO THIS PLEDGE AGREEMENT OR THE INDEBTEDNESS, INCLUDING, WITHOUT LIMITATION, ANY CLAIM THAT IS BASED UPON, ARISES OUT OF OR RELATES TO AN ACTION OR INACTION OF SECURED PARTY IN CONNECTION WITH AN ACCELERATION OF THE INDEBTEDNESS OR AN ENFORCEMENT OF SECURED PARTY’S SECURITY INTEREST IN THE COLLATERAL.**

Debtor and Secured Party have signed this Pledge Agreement as of the date stated on the first page.

**XG SCIENCES, INC.**

By \_\_\_\_\_

Its \_\_\_\_\_

**DEBTOR**

**XG SCIENCES IP, LLC**

By \_\_\_\_\_

Its \_\_\_\_\_

**XG, LLC**

**THE DOW CHEMICAL COMPANY**

By \_\_\_\_\_

Its \_\_\_\_\_

**SECURED PARTY**

**EXHIBIT C**

**INTELLECTUAL PROPERTY SECURITY AGREEMENT**

**Intellectual Property Security Agreement**, dated as of \_\_\_\_\_, by XG Sciences IP, LLC, a Michigan limited liability company, of 3101 Grand Oak Drive, Lansing, Michigan 48911 and XG Sciences, Inc., a Michigan corporation, of 3101 Grand Oak Drive, Lansing, Michigan 48911 (“**Debtors**”), in favor of The Dow Chemical Company, of 2030 Dow Center, Midland, Michigan 48674 for itself and as agent for the benefit of all other affiliates of Secured Party (each, an “**Affiliate**”) pursuant to the Security Agreement (in such capacity, “**Secured Party**”).

WITNESSETH:

WHEREAS, the Debtors are parties to Security Agreements dated as of \_\_\_\_\_ (the “**Security Agreements**”), in favor of the Secured Party pursuant to which the Debtors are required to execute and deliver this Intellectual Property Security Agreement;

NOW, THEREFORE, in consideration of the premises, the Debtors hereby agree with the Secured Party as follows:

SECTION 1. Defined Terms. Unless otherwise defined herein, terms defined in the Security Agreements and used herein have the meaning given to them in the Security Agreements.

SECTION 2. Grant of Security Interest in Intellectual Property Collateral. The Debtors hereby pledge and grant to the Secured Party a lien on and security interest in and to all of its right, title and interest in, to and under all the following Collateral of the Debtors:

- (a) Patents of Debtors listed on Schedule A attached hereto ;
- (b) Trademarks of Debtors listed on Schedule B attached hereto;
- (c) all proceeds of any and all of the foregoing; and
- (d) all future patent and trademark application filings in the United States or any other country, of which Debtors shall notify Secured Party on a regular basis, but no less frequently than annually, and descriptions of which Debtor shall promptly add to Schedule A attached hereto or Schedule B attached hereto, as appropriate.

SECTION 3. Security Agreement. The security interest granted pursuant to this Intellectual Property Security Agreement is granted in conjunction with the security interest granted to the Secured Party pursuant to the Security Agreements and Debtors hereby acknowledge and affirm that the rights and remedies of the Secured Party with respect to the security interest in the Patents and Trademarks made and granted hereby are more fully set forth in the Security Agreements, the terms and provisions of which are incorporated by reference herein as if fully set forth herein. In the event that any provision of this Intellectual Property Security Agreement is deemed to conflict with the Security Agreements, the provisions of the Security Agreements shall control unless the Secured Party shall otherwise determine.

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SECTION 4. Termination. Upon the payment in full and termination of the Security Agreements, the Secured Party shall execute, acknowledge and deliver to the Debtors an instrument in writing, prepared by the debtors, in recordable form releasing the collateral pledge, grant, assignment, lien and security interest in the Patents and Trademarks under this Intellectual Property Security Agreement.

SECTION 5. Counterparts. This Intellectual Property Security Agreement may be executed in any number of counterparts, all of which constitute one and the same instrument, and any party hereto may execute this Intellectual Property Security Agreement by signing and delivering one or more counterparts.

SECTION 6. Governing Law. This Intellectual Property Security Agreement and the transactions contemplated hereby, and all disputes between the parties under or relating to this Intellectual Property Security Agreement or the facts or circumstances leading to its execution, whether in contract, tort or otherwise, shall be construed in accordance with and governed by the laws (including statutes of limitation) of the State of Michigan, without regard to conflict of law principles that would require the application of laws of another jurisdiction.

[Signature page follows.]

IN WITNESS WHEREOF, the Debtors have caused this Intellectual Property Security Agreement to be executed and delivered by its duly authorized officers as of the date first set forth above.

**XG SCIENCES IP, LLP**

By \_\_\_\_\_

Its \_\_\_\_\_

**Debtor**

**XG SCIENCES, INC.**

By \_\_\_\_\_

Its \_\_\_\_\_

**Debtor**

**Accepted and Agreed:**

**THE DOW CHEMICAL COMPANY**

By \_\_\_\_\_

Its \_\_\_\_\_

**Secured Party**



**SCHEDULE A  
TO  
INTELLECTUAL PROPERTY SECURITY AGREEMENT  
GRANTED PATENTS AND PATENT APPLICATIONS**

**U.S. Granted Patents**

<b>Patent No.</b>	<b>Title</b>
9,472,354	Electrodes for Capacitors from Mixed Carbon Compositions
9,206,051	Mechanical Exfoliation Apparatus
8,715,720	A Cloud Mixer and Method of Minimizing Agglomeration of Particles
9,061,259	A Cloud Mixer and Method of Minimizing Agglomeration of Particles
9,266,078	A Cloud Mixer and Method of Minimizing Agglomeration of Particles

**U.S. Patent Applications**

<b>Application No.</b>	<b>Title</b>
15/155,558	Process of Dry Milling Particulate Materials
13/686,961	Single Mode Microwave Device for Producing Exfoliated Graphite
14/201,986	Graphene Carbon Compositions
14/488,417	Flexible Resin-Free Composites Containing Graphite & Fillers
14/079,057	Silicon-Graphene Nanocomposites for Electrochemical Applications
62/060,319	LiF-Embedded SiG Powder for Lithium-Ion Battery
62/284,797	Thermal Interface Materials Using Graphene Coated Fillers
15/082,363	Heat Exchanger Elements and Devices
14/931,236	Mechanical Exfoliation Apparatus
14/938,969	Single Mode Microwave Device for Producing Exfoliated Graphite
15/002,454	Mechanical Exfoliation Apparatus
15/013,028	Mechanical Exfoliation Apparatus
15/047,995	Mechanical Exfoliation Apparatus
15/050,496	Mechanical Exfoliation Apparatus
15/018,885	Mechanical Exfoliation Apparatus
15/050,517	Mechanical Exfoliation Apparatus
62/303,612	Graphene Based Coating on Lead Grid for Lead Acid Batteries

**Foreign Granted Patents**

<u>Country</u>	<u>Patent No.</u>	<u>Title</u>
China	ZL 2012 8 0065778.X	Single Mode Microwave Device for Producing Exfoliated Graphite
China	ZL 2012 8 0052188.3	Cloud Mixer and Method of Minimizing Agglomeration of Particulates

**Foreign Patent Applications**

<u>Country</u>	<u>Application No.</u>	<u>Title</u>
Taiwan	Based on U.S. Patent Application No. 14/203,608	Electrodes for Capacitors from Mixed Carbon Compositions
China	Based on U.S. Patent No. 9,206,051	Mechanical Exfoliation Apparatus

**SCHEDULE B  
TO  
INTELLECTUAL PROPERTY SECURITY AGREEMENT  
REGISTERED TRADEMARKS AND TRADEMARK APPLICATIONS**

**Registered Trademarks**

<u>Country</u>	<u>Mark</u>	<u>Registration No.</u>
United States	XG LEAF	4652615
United States	XG SCIENCES THE MATERIAL DIFFERENCE	4316435
United States	XG SCIENCES	4001356
United States	XGNP	3493218

**Trademark Applications**

<u>Country</u>	<u>Mark</u>	<u>Application No.</u>
United States	XG TIM	87153373
United States	XG SIG	87153369
United States	GNP	87089742

## EXHIBIT D

### SECURITY AGREEMENT (XG Sciences IP, LLC)

**THIS SECURITY AGREEMENT** (“**Agreement**”) is made as of \_\_\_\_\_, 2016, by and between XG Sciences IP, LLC, a Michigan limited liability company, of 3101 Grand Oak Drive, Lansing, Michigan 48911 (“**Obligor**”), and The Dow Chemical Company, of 2030 Dow Center, Midland, Michigan 48674 (“**Secured Party**”), for itself and as agent for the benefit of all other affiliates of Secured Party (each, an “**Affiliate**”). Obligor is a wholly-owned subsidiary of XG Sciences, Inc., a Michigan corporation (“**Borrower**”). Borrower has entered into a certain Draw Loan Note and Agreement (as amended, supplemented, restated or otherwise modified from time to time, “**Note**”) dated as of the date of this Agreement, between Borrower and Secured Party. This Agreement is a condition to the terms of the Note.

1. **Grant of Security Interest.** Obligor grants to Secured Party a continuing security interest in all business assets of Obligor, including without limitation:

- (a) all machinery and equipment (including vehicles) and fixtures, wherever located, whether now owned or hereafter acquired by Obligor, and all chattel paper evidencing any past, present or future leasing of the machinery, equipment or fixtures;
  - (b) all inventory, wherever located, whether now owned or hereafter acquired by Obligor; and any and all bills of lading, warehouse receipts and other documents of title evidencing inventory; all rights of stoppage in transit of inventory; all chattel paper evidencing any past, present or future leasing of inventory; and all letter of credit rights under all existing and future letters of credit securing all or part of the purchase price of inventory that has been or is in the future sold by Obligor;
  - (c) all accounts, contract rights, chattel paper, instruments, investment property, general intangibles and letter of credit rights, wherever located, whether now owned or hereafter acquired by Obligor;
  - (d) all deposit accounts, wherever located, whether now owned or hereafter acquired by Obligor;
  - (e) all trademarks, trade names, corporate names, business names, domain names, trade styles, trade dress, service marks, logos, source identifiers, business identifiers, or designs of like nature now held or hereafter acquired by Obligor, any registration or recording of the foregoing or any thereof, and any application in connection therewith, including without limitation, any such registration, recording or application in the United States Patent and Trademark Office (“**U.S. PTO**”) or in any similar office or agency of the United States, any state thereof or any country or political subdivision of such other country, and all extensions or renewals of any of the foregoing;
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(f) any letters patent of the United States or any country in which Obligor now or hereafter has title, all reissues, divisionals, continuations, continuations-in-part, and extensions thereof, as well as any application for a letters patent in the United States or any other country now or hereafter owned by Obligor, and all extensions or renewals of any of the foregoing;

(g) any copyright, copyrightable work, any registration or recording of any copyright or any copyrightable work to which Obligor now or hereafter has title, and any application in connection with any copyright or copyrightable work owned by Obligor, including without limitation, any such registration, recording or application in the United States Copyright Office or in any similar office or agency of the United States, any state thereof, or any other country, and any renewal of any of the foregoing;

(h) all know-how, trade secrets, and business information, whether now owned or hereafter acquired by Obligor;

(i) all rights in computer programs and software applications and source codes of Obligor and all other proprietary information of Obligor;

together with (i) all proceeds of the foregoing, including, without limitation, all cash, checks, drafts, accounts receivable, chattel paper, leases and instruments received by Obligor in connection with any sale, lease, exchange or other disposition of any of the foregoing, and (ii) all books, records (including computer software), and documents at any time evidencing or relating to any of the foregoing or any proceeds thereof. All of the foregoing properties and assets of Obligor are referred to collectively in this Agreement as the “**Collateral**.” Notwithstanding anything contained herein to the contrary, the term “**Collateral**” does not and shall not include any patent rights within the meaning of that certain Restated and Amended Exclusive License Agreement between Michigan State University and Borrower.

2. **Indebtedness Secured.** The foregoing security interest is given to secure payment and performance of ALL OBLIGATIONS AND INDEBTEDNESS THAT EITHER OBLIGOR OR BORROWER NOW AND IN THE FUTURE OWES TO SECURED PARTY AND ANY AFFILIATE under this Agreement, and all obligations and indebtedness of Borrower to Secured Party under the Note, as well as all obligations and indebtedness of either Obligor or Borrower under all other security agreements, pledge agreements, assignments, mortgages, guaranties, notes, loan agreements, and other agreements, instruments and documents that either Obligor or Borrower has signed or in the future signs related thereto, and all extensions and renewals of such indebtedness and obligations.

The indebtedness and obligations that this Agreement secures are collectively called the “**Indebtedness**.”

3. **Warranties, Representations, and Agreements.** Obligor warrants and represents to Secured Party, and agrees, as follows:

(a) Obligor is the owner of the Collateral, and none of the Collateral is subject to a lien, security interest, encumbrance or claim in favor of a third party (other than Borrower), and no financing statement is on file in a public office covering any of the Collateral, except in favor of Secured Party or with respect to Permitted Liens.

(b) Obligor has full power and authority to enter into and perform its obligations under this Agreement.

(c) This Agreement is the valid and binding obligation of Obligor and is enforceable against Obligor in accordance with its terms.

(d) All information that Obligor has furnished or in the future furnishes to Secured Party concerning the Collateral, including, without limitation, all information concerning the condition, and quality of the Collateral, is and will be correct and complete.

(e) Obligor's exact legal name is set forth in the first paragraph of this Agreement.

(f) Obligor's address set forth on the first page of this Agreement is the location of Obligor's chief executive office.

(g) Any part of the Collateral that consists of accounts or chattel paper does and shall evidence bona fide sales or leases to the parties named in Obligor's books, and Obligor is not aware of any existing defense to any account or chattel paper.

(h) **Exhibit A** to this Agreement contains a complete and accurate list of all of Obligor's and Borrower's United States intellectual property registrations, recordings and applications. Obligor shall provide Secured Party with an updated Exhibit A (1) within thirty (30) days after the date of this Agreement to list international intellectual property registrations, recordings and applications, and (2) from time to time for any additions or deletions to such list occurring after the date of this Agreement. Except as disclosed on Exhibit A and except for business information, know-how and trade secrets, there is no intellectual property that is material to Obligor or Borrower.

(i) Each current employee of Obligor is bound by a nondisclosure agreement in form and substance previously disclosed to Secured Party.

4. **Agreements of Obligor.** Obligor agrees that:

(a) Obligor shall not cause or permit any lien, security interest or encumbrance to be placed on any Collateral (other than Permitted Liens), except in favor of Secured Party and Obligor shall not sell, assign or transfer any Collateral or permit any Collateral to be transferred by operation of law, except for intellectual property licensed to Borrower, as permitted under the Note and sales of inventory in the ordinary course of Obligor's business. A sale in the ordinary course of business does not include a transfer in partial or complete satisfaction of a debt.

(b) Obligor shall maintain all records concerning the Collateral at Obligor's chief executive office.

(c) Obligor shall furnish to Secured Party all information regarding the Collateral that Secured Party from time to time reasonably requests and shall allow Secured Party at any reasonable time to inspect the Collateral and Obligor's records regarding the Collateral.

(d) Obligor shall sign, file, record or obtain from third persons all subordination agreements and other documents, and shall take all other actions, that Secured Party reasonably considers necessary or appropriate to perfect, to continue perfection of, or to maintain first priority (except with respect to Permitted Liens) of, Secured Party's security interest in the Collateral and Obligor shall place upon the Collateral and/or documents evidencing the Collateral any notice of Secured Party's security interest that Secured Party from time to time reasonably requires. Actions that Secured Party may require Obligor to take under the preceding sentence include, without limitation, (1) obtaining from any third party who has possession of Collateral an acknowledgment that the third party holds the Collateral for Secured Party and (2) obtaining agreements from banks, securities intermediaries, issuers of letters of credit and others, and taking all other actions reasonably requested by Secured Party, to give Secured Party control of any part of the Collateral consisting of investment property, deposit accounts, letter of credit rights or electronic chattel paper.

(e) Obligor shall immediately notify Secured Party in writing of any change in Obligor's name, identity or organizational structure, and of any change in the location of Obligor's place of business and of the location of each additional place of business that Obligor establishes. Obligor shall not make a change in its name or its organizational structure or in the jurisdiction under the laws of which Obligor is organized, without Secured Party's prior written consent.

(f) Obligor shall indemnify Secured Party with respect to all losses, damages, liabilities and expenses (including attorney fees) that Secured Party incurs by reason of a failure of Obligor to comply with an obligation under this Agreement or by reason of a warranty or representation that Obligor makes to Secured Party in this Agreement being false in any material respect.

(g) After the occurrence of an Event of Default (subject to applicable cure periods), Obligor shall take all steps reasonably necessary to permit Secured Party to contact its account Obligor's at any time for the purpose of verifying the existence, amount and collectability of, and other information regarding, Obligor's accounts, chattel paper, instruments or general intangibles.

(h) Obligor shall maintain all tangible Collateral in good condition and repair and maintain special form, replacement cost property insurance covering all tangible Collateral. As soon after closing as reasonably practicable, but no later than 30 days after closing, each insurance policy (1) shall provide that its proceeds shall be payable to Secured Party to the extent of Secured Party's interest in the Collateral, (2) shall contain a standard lender's loss payable endorsement in favor of Secured Party, (3) shall provide that the policy shall not be canceled, and the coverage shall not be reduced, without at least 10 days' prior written notice by the insurer to Secured Party and (4) shall otherwise be in form and substance satisfactory to Secured Party. Obligor shall provide Secured Party evidence of that insurance coverage. Upon Secured Party's request, Obligor shall deliver to Secured Party all policies that provide for such insurance. Obligor agrees that Secured Party may act as agent for Obligor in obtaining, adjusting, and settling that insurance and endorsing any draft evidencing proceeds of it.

(i) To the extent that applicable law at any time permits a secured party to file a financing statement that is not authenticated by Obligor, Obligor authorizes Secured Party to file one or more financing statements containing an indication that such financing statement covers the Collateral. The financing statements that Secured Party files to perfect its security interest in the Collateral may describe the Collateral as "all assets" or "all personal property" that Obligor now owns or acquires in the future. If Secured Party has previously filed one or more financing statements to perfect its security interest in the Collateral, then Obligor approves and ratifies those filings.

(j) Obligor shall pay, before they become delinquent, all taxes and assessments upon the Collateral or for its use or operation and pay and perform when due all indebtedness and obligations under all leases, land contracts or other agreements under which Obligor has possession of any real property upon which any of the Collateral is at any time located and under any mortgage or mortgages at any time covering that real property.

(k) Obligor shall prepare, execute, acknowledge and deliver to Secured Party an instrument in writing in recordable form for recording a lien on and security interest in and to all of its right, title and interest in, to and under all new patent and trademark application filings and any rights extending therefrom, either in the United States or any other country and all proceeds of any and all of the foregoing, within one month after the filing of any such applications.

(l) Obligor shall timely enter into a nondisclosure agreement, in form and substance reasonably acceptable to Secured Party, with each new employee, manager, director, and officer of Obligor, and all agents and other parties to whom trade secrets or other confidential information of Obligor or any affiliate of Obligor may be disclosed.

(m) Obligor shall not commit any material breach or default under that certain license agreement between Obligor and Michigan State University dated as of July 27, 2007 and amended on May 24, 2010 and May 27, 2011, as it may be amended, restated, renewed, extended, replaced, or modified.



5. **Secured Party's Right to Perform.** If Obligor fails to perform an obligation of Obligor under this Agreement, then Secured Party may, without giving notice to or obtaining the consent of Obligor, perform that obligation on behalf of Obligor. Obligor shall reimburse Secured Party on demand for any expense that Secured Party incurs in performing the obligation and shall pay to Secured Party interest on each expense, from the date the expense was incurred by Secured Party, at 5% per annum ("**Default Rate**"). Secured Party is not required to perform an obligation that Obligor has failed to perform. If Secured Party does so, then that shall not be a waiver of Secured Party's right to declare the Indebtedness immediately due and payable by reason of Obligor's failure to perform.

6. **Events of Default and Acceleration.** Any part or all of the Indebtedness shall, at the option of Secured Party, become immediately due and payable without notice or demand upon the occurrence of any of the following events of default (each, an "**Event of Default**"):

(a) If an Event of Default occurs under and as defined in the Note, including any default occurs in the payment or performance of any of the Indebtedness, when and as it is due and payable subject to applicable grace periods.

(b) If Debtor fails to perform any other material obligation, covenant or agreement of Obligor or Borrower to Secured Party under this Agreement, under a promissory note or other instrument that at any time evidences any Indebtedness or under any other security agreement, loan agreement, mortgage, assignment, guaranty or other agreement that now or in the future secures or relates to any Indebtedness ("**Security Documents**").

(c) If a warranty, representation, or statement that has been or in the future is made to Secured Party by Obligor, Borrower or by a guarantor of all or part of the Indebtedness ("**Guarantor**") in this Agreement or in a Security Document shall have been false in any material respect when made or furnished.

(d) If Obligor, Borrower or a Guarantor dissolves, becomes insolvent or makes an assignment for the benefit of creditors.

(e) If a guaranty that now or in the future secures payment or performance of all or a part of the Indebtedness is terminated, revoked or limited for any reason, without Secured Party's written consent or agreement.

(f) If an attachment, garnishment, levy, execution or other legal process is at any time issued against or placed upon any of the Collateral (other than with respect to Permitted Liens) and is not terminated or released within 30 days.

(g) If all or a substantial part of the tangible Collateral is destroyed or materially damaged by fire or other casualty, and cannot be repaired or replaced within a commercially reasonable time, not to exceed 90 days, whether or not there is insurance coverage for the damage or destruction.

If an Event of Default is capable of being cured, then Obligor may cure the same during the thirty-day period that begins on the date on which Obligor receives notice from Secured Party, or otherwise has actual knowledge, of the event (the "**Cure Period**"). An Event of Default that is capable of being cured will not be deemed to have occurred as a result of an event during the Cure Period for that event or, if the event is cured during the Cure Period, thereafter.

If a voluntary or involuntary case in bankruptcy, receivership or insolvency is at any time begun by or against Obligor, Borrower or a Guarantor or if any attachment, garnishment, levy, execution or other legal process is at any time issued against or placed upon Collateral and not terminated or released within 30 days, then the entire Indebtedness shall automatically become immediately due and payable, without notice or demand. All or part of the Indebtedness also may become, or may be declared to be, immediately due and payable under the terms of the Note or a note that at any time evidences any Indebtedness or under a Security Document that has been or in the future is entered into between Obligor and Secured Party.

7. **Secured Party's Rights and Remedies.** Secured Party shall have all rights and remedies of a secured party under applicable laws. Without limiting those rights and remedies, upon the occurrence of an Event of Default (subject to applicable cure periods):

(a) (1) Without notice or demand to Obligor, Secured Party shall be entitled to notify Obligor's account debtors and obligors to make all payments directly to Secured Party, and Secured Party shall have the right to take all actions that Secured Party reasonably considers necessary or desirable to collect upon the Collateral, including, without limitation, prosecuting actions against, or settling or compromising disputes and claims with, Obligor's account debtors and obligors, (2) without notice or demand to Obligor, Secured Party may receive, open, dispose of and notify the postal authorities to change the address of, mail directed to Obligor, and (3) upon Secured Party's demand, Obligor shall immediately deliver to Secured Party, at the place that Secured Party designates, all proceeds of the Collateral and all books, records, agreements, leases, documents and instruments that evidence or relate to the Collateral.

(b) Obligor, upon Secured Party's demand, shall assemble the Collateral and proceeds of Collateral at Debtor's place of business, and Secured Party may dispose of the Collateral in any commercially reasonable manner. Any notification that Secured Party is required to give to Obligor regarding sale or other disposition of Collateral shall be considered reasonable if it is mailed at least 10 days before the sale or other disposition. In connection with a disposition of Collateral, Secured Party may comply with the requirements of an applicable state or federal law or regulation, and such compliance shall not cause the disposition to not be commercially reasonable.

(c) Secured Party shall have the right (but no obligation) to continue or complete the manufacturing or processing of, or other operations in connection with, any part of the Collateral, and, for that purpose, to enter and remain upon or in any land or buildings that are possessed by Obligor or that Obligor has the right to possess. Obligor shall reimburse Secured Party on demand for any net expense that Secured Party incurs in connection with those activities and shall pay to Secured Party interest on each net expense, from the date on which Secured Party incurred the expense, at the Default Rate.

The proceeds of any collection or disposition of Collateral shall be applied first to Secured Party's attorney fees and expenses, as provided in *Paragraph 8* of this Agreement, then to the unpaid interest accrued on the Indebtedness and then to the principal of the Indebtedness, and Obligor shall be liable for any deficiency. Secured Party does not have any obligation to prepare or process any Collateral for sale or other disposition. If Secured Party sells any of the Collateral on credit, then Obligor will be credited only with payments that the purchaser actually makes and that Secured Party receives and applies to the unpaid balance of the purchase price of the Collateral. If the purchaser fails to pay for the Collateral, then Secured Party may again dispose of the Collateral and apply the proceeds in accordance with this paragraph. All rights and remedies of Secured Party under this Agreement, whether or not exercisable only on default, shall be cumulative and may be exercised from time to time. No delay by Secured Party in the exercise of any right or remedy shall operate as a waiver thereof, and no single or partial exercise of any right or remedy shall preclude other or further exercise thereof or the exercise of any other right or remedy.

8. **Expenses.** Obligor shall reimburse Secured Party on demand for all reasonable attorney fees, legal expenses, and other expenses that Secured Party incurs in perfecting (subject to the \$25,000 limitation in the Note), protecting and enforcing its interest in the Collateral and its rights under this Agreement. This includes fees and expenses incurred in trying to take possession of Collateral from Obligor, a trustee or receiver in bankruptcy, or any other person. Secured Party may apply any proceeds of collection or disposition of Collateral to Secured Party's attorney fees, legal expenses and other out-of-pocket expenses.

9. **Amendments and Waivers.** No provision of this Agreement may be modified or waived except by a written agreement signed by Secured Party and Obligor. Secured Party will continue to have all of its rights under this Agreement even if it does not fully and promptly exercise them on all occasions. Secured Party may, at its option: waive any default; defer an action on any default; extend or modify the time or manner of payment of the Indebtedness or waive or modify any term or condition relating to the Indebtedness; release Collateral or other security for the Indebtedness; release any person liable for any of the Indebtedness, including Obligor; or make advances or other extensions of credit secured hereby; all without giving Obligor notice or obtaining Obligor's consent. Any such action by Secured Party will not release or impair its security interest in the Collateral or Obligor's obligations under this Agreement. Secured Party's security interest in the Collateral and Obligor's obligations under this Agreement will not be released or impaired if Secured Party fails to obtain, perfect, or secure priority of any other security for the Indebtedness that is agreed to be given, or is given, by anyone else. Secured Party is not required to sue upon or otherwise enforce payment of the Indebtedness or any other security before exercising its rights under this Agreement.

10. **Notices.** Any notices or communications required or permitted under this Agreement shall be governed by the Note.

11. **Terminology; Conflicts.** Capitalized terms that are not otherwise defined in this Agreement shall have the meanings set forth in the Note. Other terms used in this Agreement shall have the meanings set forth in the Uniform Commercial Code as in effect in the State of Michigan on the date of this Agreement. In the event of a conflict between the terms of this Agreement and the Note, the terms of the Note will control.

12. **Binding Effect.** This Agreement shall be binding upon and inure to the benefit of Obligor and Secured Party and their respective successors and assigns. This Agreement is provided to Secured Party as an inducement to Secured Party to make the loans to Borrower that are contemplated by the Note, and in consideration of the loans by Secured Party to Borrower pursuant to the Note, and for other good and valuable consideration. Obligor derives substantial benefit from the loans to Borrower under the Note.

13. **Termination.** Upon the payment in full and termination of the Note and the Security Documents, this Agreement shall terminate and Secured Party shall execute, acknowledge and deliver to Obligor an instrument in writing, prepared by Debtor, in recordable form releasing its liens and security interests in the Collateral under this Agreement.

**SECURED PARTY AND OBLIGOR EACH IRREVOCABLY AND UNCONDITIONALLY WAIVES ITS RIGHT TO A TRIAL BY JURY IN ANY ACTION, INCLUDING A CLAIM, COUNTERCLAIM, CROSS-CLAIM OR THIRD-PARTY CLAIM (“CLAIM”), THAT IS BASED UPON, ARISES OUT OF OR RELATES TO THIS SECURITY AGREEMENT OR THE INDEBTEDNESS, INCLUDING, WITHOUT LIMITATION, ANY CLAIM THAT IS BASED UPON, ARISES OUT OF OR RELATES TO AN ACTION OR INACTION OF SECURED PARTY IN CONNECTION WITH AN ACCELERATION OF THE INDEBTEDNESS OR AN ENFORCEMENT OF SECURED PARTY’S SECURITY INTEREST IN THE COLLATERAL.**

[Signature page follows.]

Obligor and Secured Party have signed this Security Agreement as of the date stated on the first page.

**XG SCIENCES IP, LLP**

By \_\_\_\_\_

Its \_\_\_\_\_

**Obligor**

**THE DOW CHEMICAL COMPANY**

By \_\_\_\_\_

Its \_\_\_\_\_

**Secured Party**

## Exhibit A

### List of Intellectual Property

#### *Michigan State University License*

We have acquired an exclusive license for a number of inventions from Michigan State University. These rights are embodied in a Technology Licensing Agreement between XGS and Michigan State University dated July 27, 2007 and amended on May 24, 2010 and May 27, 2011, which owns the rights to all intellectual property resulting from research performed at the University. This Agreement gives us the exclusive worldwide rights to the subject intellectual property in its field. In exchange for the rights to the technology covered by this Agreement, we paid MSU an initial fee and agreed to pay ongoing royalties on the basis of material sold by us in future years. Under a previous version of the Licensing Agreement, we also awarded a small amount of common stock to MSU. The intellectual property covered by the Agreement is in various stages of development and legal protection. Because there is an active research program underway in this area, we also anticipate that we may add other MSU inventions to our Agreement. In some limited cases, depending on the source of research funds, other parties may have limited rights to use the inventions covered by these agreements. This is typical in the case of research funded by U.S. government agencies and is sometimes the case when research has been funded or partially funded by private corporations.

As of November 1, 2016 the following technologies were included in the MSU License Agreements with XGS and were being actively prosecuted at the U.S. Patent Office:

- U.S. Patent Application No. 12/587,645. “Electrically Conductive, Optically Transparent Films of Exfoliated Graphite NanoParticles & Methods of Making the Same”
- U.S. Patent Application No. 13/199,086. “PI Coupling Agents for Dispersion of Graphene NanoPlatelets in Polymers”, *allowed but not yet granted*
- **U.S. Patent 8,834,959.** “Method for the Preparation of Doped Single Graphene Sheets”

#### *Our Patent Filings*

In addition to the patent applications related to MSU technology discussed above, we also file for patents on some of our own inventions. As of November 1, 2016 the following patents and patent applications were being managed by us and our patent attorneys:

- U.S. Patent Application No. 15/155,558. “Process of Dry Milling Particulate Materials”
- U.S. Patent Application No. 13/686,961. “Single Mode Microwave Device for Producing Exfoliated Graphite”
- U.S. Patent Application No. 14/201,986. “Graphene Carbon Compositions”
- **U.S. Patent 9,472,354.** “Electrodes for Capacitors from Mixed Carbon Compositions”
- U.S. Patent Application No. 14/488,417. “Flexible Resin-Free Composites Containing Graphite & Fillers”

- U.S. Patent Application No. 14/079,057. “Silicon-Graphene Nanocomposites for Electrochemical Applications”
- U.S. Patent Application No. 62/060,319. “LiF-Embedded SiG Powder for Lithium-Ion Battery”
- U.S. Patent Application No. 62/284,797. “Thermal Interface Materials using Graphene Coated Fillers”
- U.S. Patent Application No. 15/082,363. “Heat Exchanger Elements and Devices”
- **U.S. Patent 9,206,051.** “Mechanical Exfoliation Apparatus”
- **U.S. Patent 8,715,720.** “A Cloud Mixer and Method of Minimizing Agglomeration of Particles” (method)
- **U.S. Patent 9,061,259 B2.** “A Cloud Mixer and Method of Minimizing Agglomeration of Particles” (product)
- **U.S. Patent 9,266,078,** “A Cloud Mixer and Method of Minimizing Agglomeration of Particles” (apparatus)
- U.S. Patent Application No. 14/931,236. “Mechanical Exfoliation Apparatus - Divisional”
- U.S. Patent Application No. 14/938,969. “Single Mode Microwave Device for Producing Exfoliated Graphite.”
- U.S. Patent Application No. 15/002,454. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/013,028. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/047,995. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/050,496. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/018,885. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/050,517. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 62/303,612. “Graphene Based Coating on Lead Grid for Lead Acid Batteries”

### ***Global Patent Filings***

For each patent application filed in the US, we make a determination on the nature and value of the patent. For many of the applications filed in the US, additional filings are made in other countries such as the European Union, Japan, South Korea, China, Taiwan or other applicable countries. These filings and analyses are made on a case-by-case basis. Typically, patents that are defensive in nature are not filed abroad, while those that are protective of active XGS products or application areas are filed in relevant countries abroad. Granted/allowed patents only listed here.

- **China Patent No. ZL 2012 8 0065778.X.** “Single Mode Microwave Device for Producing Exfoliated Graphite”
- **China Patent No. ZL 2012 8 0052188.3.** “Cloud Mixer and Method of Minimizing Agglomeration of Particulates”
- China foreign filing of U.S. Patent 9,206,051 “Mechanical Exfoliation Apparatus” *allowed but not yet granted*
- Taiwan foreign filing of U.S. Patent Application No. 14/203,608. “Electrodes for Capacitors from Mixed Carbon Compositions” *allowed but not yet granted*

### ***Trademarks***

We have filed for or been granted registered trademarks as follows:

- “xGnP<sup>®</sup>,” which is the brand name by which we designate our graphene nanoplatelets.
- The corporate logo “XG Sciences” (design logo plus words)
- The tag line “The Material Difference” which is used in conjunction with the corporate logo
- The product designation “XG Leaf<sup>®</sup>”, which is the brand name for our family of sheet products.
- The product designation “XG SiG<sup>™</sup>”, which is the brand name for our battery anode materials.
- The product designation “XG TIM<sup>™</sup>”, which is the brand name for our thermal interface materials.



EXHIBIT E

FORM OF WARRANT

THIS WARRANT AND THE SHARES ISSUABLE UPON THE EXERCISE OF THIS WARRANT HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED. EXCEPT AS OTHERWISE SET FORTH HEREIN NEITHER THIS WARRANT NOR ANY OF SUCH SHARES MAY BE SOLD, TRANSFERRED OR ASSIGNED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT FOR SUCH SECURITIES UNDER SAID ACT, OR PURSUANT TO AN AVAILABLE EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN ACCORDANCE WITH APPLICABLE STATE SECURITIES LAWS AS EVIDENCED BY A LEGAL OPINION OF COUNSEL TO THE TRANSFEROR TO SUCH EFFECT, THE SUBSTANCE OF WHICH SHALL BE REASONABLY ACCEPTABLE TO THE COMPANY.

XG SCIENCES, INC.

COMMON STOCK PURCHASE WARRANT

Certificate No: \_\_\_\_\_

Warrants to Purchase  
\_\_\_\_\_ Shares of Common Stock  
December \_\_, 2016

This Common Stock Purchase Warrant (this "Warrant") certifies that, for value received, **The Dow Chemical Company** or its registered assignees (the "Holder") is entitled, upon the terms and subject to the limitations on exercise and the conditions hereinafter set forth, at any time on or after the date hereof (the "Initial Exercise Date") and on or prior to 5:00 PM Eastern Time on December \_\_, 2023, (the "Expiration Date") but not thereafter, to purchase from XG Sciences, Inc., a Michigan corporation with offices at 3101 Grand Oak Dr., Lansing, MI 48911 (the "Company"), up to \_\_\_\_\_ shares (the "Shares" and each, a "Share") of the Company's common stock, no par value per share (the "Common Stock"), at a price of \$ \_\_\_\_\_ per Share, as adjusted in accordance with Section 4 below (the "Purchase Price").

This Warrant is issued in connection with the Draw Loan Note and Agreement, dated as of December 7, 2016, by and among the Company, and Holder (the "Note Agreement"). Certain capitalized terms used herein that are not otherwise defined herein shall have the meanings set forth in the Note Agreement.

Section 1. Exercise of Warrants.

(a) Upon presentation and surrender at the principal executive office of the Company of this Warrant prior to the Expiration Date together with a check to the Company in the amount of the Purchase Price multiplied by the number of Shares of Common Stock being purchased, and compliance with the other requirements of Section 1(e) and this Warrant, the Company will issue to the Holder, Shares of Common Stock which in the aggregate represent the number of Shares of Common Stock being purchased. This Warrant may be partially exercised and, in the case of such partial exercise, the Company, upon surrender hereof, will deliver to the Holder a new Warrant representing the number of Shares which have not been exercised.

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(b) In lieu of exercising this Warrant, the Holder may elect to receive Shares equal to the value of this Warrant (or the portion thereof being canceled) by surrender of this Warrant at the principal office of the Company along with the other documents required by Section 1(e) and compliance with the requirements of this Warrant, in which event the Company shall issue to the Holder a number of Shares computed using the following formula:

$$X = \frac{Y (A-B)}{A}$$

"X" equals the number of Shares to be issued to the Holder.

"Y" equals the number of Shares purchasable under this Warrant.

"A" equals the fair market value of one Share on the date of determination.

"B" equals the per share Purchase Price (as adjusted to the date of such calculation).

(c) Fair Market Value. For purposes of this Section 1, the per share fair market value of the Shares means:

(i) If the Common Stock is publicly traded, the per share fair market value of the Shares shall be (a) the daily volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the trading market (including, without limitation, the OTCQX and OTCQB markets maintained by the OTC Markets Group, Inc. and any successor-entities) which the Common Stock is then listed or quoted as reported by Bloomberg L.P. (based on a trading day from 9:30 a.m. (New York City time) to 4:02 p.m. (New York City time)), (b) if the OTC Bulletin Board is not a trading market, the volume weighted average price of the Common Stock for such date (or the nearest preceding date) on the OTC Bulletin Board, (c) if the Common Stock is not then listed or quoted for trading on the OTC Bulletin Board and if prices for the Common Stock are then reported in the "Pink Sheets" published by Pink OTC Markets, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported; or

(i) If the Common Stock is not so publicly traded, the per share fair market value of the Shares shall be such fair market value as is determined in good faith by the Board of Directors of the Company after taking into consideration factors it deems appropriate, including, without limitation, recent sale and offer prices of the capital stock of the Company in private transactions negotiated at arm's length.

(d) If this Warrant shall be deemed "in the money" on the Expiration Date and the Holder has not exercised his, her or its rights hereunder, the Company shall automatically effect a cashless exercise of this Warrant on behalf of the Holder in accordance with the formula hereinabove, provided that the Holder must promptly thereafter comply with the other requirements of Section 1(e) and this Warrant.

(e) The rights represented by this Warrant may be exercised by the Holder, in whole or in part (with respect to Shares of Common Stock), subject to the conditions contained herein and at any time prior to the Expiration Date, by: (i) surrender of this Warrant for cancellation at the principal executive office of the Company (or at such other office or agency of the Company as it may designate by notice in writing to the Holder at the address of the Holder appearing on the books of the Company); (ii) payment to the Company of the Purchase Price for the number of Shares of Common Stock specified in the Notice of Exercise form; (iii) delivery to the Company of a duly executed agreement signed by the person(s) designated in the Notice of Exercise form to the effect that such person(s) agree(s) to be bound by all of the terms and conditions of this Warrant; (iv) delivery to the Company of a duly executed Notice of Exercise form attached hereto as Exhibit A and Investment Representation Statement form attached hereto as Exhibit D to the extent such Investment Representation Statement remains applicable; and (v) delivery to the Company of duly executed adoption agreements for the Shareholder Agreement and the Voting Agreement (each as defined in Section 2(b)) as and to the extent required by Section 8(g). This Warrant shall be deemed to have been exercised, in whole or in part to the extent specified, immediately prior to the close of business on the date on which all of the applicable provisions of this Section 1(e) are reasonably satisfied, and the person(s) designated in the Notice of Exercise form shall become the holder(s) of record of the Shares of Common Stock issuable upon such exercise at that time and date.

(f) As soon as possible after any full or partial exercise of this Warrant, but in any event no more than ten (10) business days, the Company, at its expense, will instruct its transfer agent to issue as soon as possible in the name of and delivered to the Holder of this Warrant, the number of fully paid and non-assessable Shares of Common Stock to which that Holder shall be entitled on such exercise. No fractional shares will be issued on exercise of this Warrant. If, on any exercise of this Warrant, a fractional share results, the Company will pay the cash value of that fractional share, calculated on the basis of the Purchase Price. The Company may issue certificates for Shares or, if consistent with the Company's generally applicable practice, may issue uncertificated Shares as permitted under the Michigan Business Corporation Act. Any certificates evidencing the Shares shall bear restrictive legends to the extent required by this Warrant.

Section 2. Legends.

(a) Until the date on which a registration statement filed by the Company under the Securities Act of 1933, as amended (the "Securities Act") covering the issuance and sale or the resale of the Shares is declared effective by the U.S. Securities and Exchange Commission (the "SEC"), any certificates evidencing the Shares shall bear a legend substantially in the following form:

"THESE SECURITIES HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR REGISTERED OR QUALIFIED UNDER APPLICABLE STATE SECURITIES LAWS AND MAY NOT BE OFFERED FOR RESALE OR RESOLD UNLESS REGISTERED PURSUANT TO THE PROVISIONS OF THE SECURITIES ACT AND REGISTERED OR QUALIFIED PURSUANT TO THE PROVISIONS OF APPLICABLE STATE SECURITIES LAWS, UNLESS AN EXEMPTION FROM SUCH REGISTRATION OR QUALIFICATION IS AVAILABLE."

(b) Any certificates evidencing the Shares shall bear legends to the extent required by the Company's shareholder agreement dated March 18, 2013 and amended effective as of April 13, 2016 (the "Shareholder Agreement") and the Company's voting agreement dated January 15, 2014 (the "Voting Agreement").

(c) Any certificates evidencing the Shares shall bear legends substantially in the following form to the extent reasonably required by the Company:

"THE SHARES OF STOCK REPRESENTED BY THIS CERTIFICATE ARE SUBJECT TO AGREEMENTS SET FORTH IN THE BYLAWS OF THE CORPORATION AMONG THE SHAREHOLDERS OF THE CORPORATION PURSUANT TO SECTION 488 OF THE MICHIGAN BUSINESS CORPORATION ACT. A COPY OF THE BYLAWS IS ON FILE WITH THE SECRETARY OF THE CORPORATION. BY ACCEPTANCE OF THIS CERTIFICATE, THE HOLDER HEREOF AGREES TO BE BOUND BY THE TERMS OF SAID AGREEMENTS."

(d) The Holder consents to the Company making a notation on its records and giving instructions to any transfer agent in order to implement the restrictions on transfer established in this Warrant (including in the foregoing contemplated legends), the Shareholder Agreement or the Voting Agreement. The Company will not be required to (i) transfer on its books any securities that have been transferred in violation of any provisions of this Warrant, the Shareholder Agreement, the Voting Agreement or applicable law, or (ii) to treat as owner of such securities, or accord the right to vote or pay dividends to any purchaser, donee or other transferee to whom such securities may have been so transferred.

Section 3. Charges, Taxes and Expenses. Issuance of Shares shall be made without charge to the Holder for any issue or transfer tax or other incidental expense in respect of the issuance of such Shares, all of which expenses shall be paid by the Company, and such Shares shall be issued in the name of the Holder or in such name or names as may be directed by the Holder; provided, however, that in the event certificates for Shares are to be issued in a name other than the name of the Holder, this Warrant when surrendered for exercise shall be accompanied by the Assignment Form attached hereto duly executed by the Holder, the assignee, and the Company may require, as a condition thereto, the payment of a sum sufficient to reimburse it for any expenses incidental thereto.

Section 4. Certain Adjustments.

(a) Stock Dividends and Stock Splits. If the Company, at any time after the date hereof: (A) shall pay a stock dividend or otherwise make a distribution or distributions on shares of its Common Stock in shares of Common Stock, (B) subdivide outstanding shares of Common Stock into a larger number of shares, or (C) combine (including by way of reverse stock split) outstanding shares of Common Stock into a smaller number of shares, then the Purchase Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock outstanding before such event and of which the denominator shall be the number of shares of Common Stock outstanding after such event. Any adjustment made pursuant to this Section shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution and shall become effective immediately after the effective date in the case of a subdivision, combination or re-classification, and the number of Shares issuable upon exercise of this Warrant shall be proportionately adjusted such that the aggregate Purchase Price of this Warrant shall remain unchanged.

(b) Fundamental Transaction. If, at any time while this Warrant is outstanding, (A) the Company effects any merger or consolidation of the Company with or into another person, (B) the Company effects any sale of all or substantially all of its assets in one or a series of related transactions, (C) any tender offer or exchange offer (whether by the Company or another person) is completed pursuant to which holders of Common Stock are permitted to tender or exchange their shares for other securities, cash or property, or (D) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (in any such case, a "Fundamental Transaction"), then upon any subsequent exercise of this Warrant, the Holder shall have the right to receive, for each Share of Common Stock that would have been issuable upon such conversion absent such Fundamental Transaction, the same kind and amount of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of one share of Common Stock (the "Alternate Consideration"). For purposes of any such conversion, the determination of the Purchase Price shall be appropriately adjusted to apply to such Alternate Consideration based on the amount of Alternate Consideration issuable in respect of one share of Common Stock in such Fundamental Transaction, and the Company shall apportion the Purchase Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. To the extent necessary to effectuate the foregoing provisions, any successor to the Company or surviving entity in such Fundamental Transaction shall issue to the Holder a new warrant consistent with the foregoing provisions and evidencing the Holder's right to exercise such warrant for the Alternate Consideration. The terms of any agreement pursuant to which a Fundamental Transaction is effected shall include terms requiring any such successor or surviving entity to comply with the provisions of this paragraph (b) and insuring that this Warrant (or any such replacement security) will be similarly adjusted upon any subsequent transaction analogous to a Fundamental Transaction.

Section 5. Transfer of Warrant. Subject to the requirements of this Warrant, compliance with the Securities Act and other federal and state law, and the Company's Articles of Incorporation and Bylaws, all rights hereunder are transferable, in whole or in part, upon surrender of this Warrant at the principal executive office of the Company or its designated agent, together with a written assignment of this Warrant substantially in the form attached hereto as Exhibit B and the Investment Representation Statement attached hereto as Exhibit D to the extent such Investment Representation Statement remains applicable, duly executed by the Holder or its agent or attorney and funds sufficient to pay any transfer taxes payable upon the making of such transfer. Upon such surrender and, if required, such payment, the Company shall execute and deliver a new Warrant or Warrants in the name of the assignee or assignees, as applicable, and in the denomination or denominations specified in such instrument of assignment, and shall issue to the assignor a new Warrant evidencing the portion of this Warrant not so assigned, and this Warrant shall promptly be cancelled. The Warrant, if properly assigned in accordance herewith, may be exercised by a new holder for the purchase of Warrant Shares without having a new Warrant issued.

Section 6. Representations and Warranties.

(a) Common Stock. The Company hereby represents and warrants to the Holder that all Shares that may be issued upon the exercise of the purchase rights represented by this Warrant, and all securities, shall, upon issuance, be duly authorized, validly issued, fully paid and nonassessable, and free of any liens and encumbrances. The Company hereby agrees that it shall at all times reserve and keep available out of its authorized but unissued Common Stock, solely for the purpose of effecting the exercise of this Warrant, a number of shares of Common Stock equal to the number of shares as shall from time to time be sufficient to effect the exercise of this entire Warrant at the Purchase Price.

(b) Notice of Certain Events. If the Company proposes at any time (i) to declare any dividend or distribution upon its Common Stock, whether in cash, property, stock, or other securities and whether or not a regular cash dividend; (ii) to offer for subscription pro rata to the holders of any class or series of its stock any additional shares of stock of any class or series or other rights; (iii) to effect any reclassification or recapitalization of Common Stock; (iv) to merge or consolidate with or into any other corporation, or sell, lease, license, or convey all or substantially all of its assets, or to liquidate, dissolve or wind up, or to effect an acquisition; or (v) to offer holders of registration rights the opportunity to participate in an underwritten public offering of the company's securities for cash, then, in connection with each such event, the Company shall give Holder (1) at least 20 days prior written notice of the date on which a record will be taken for such dividend, distribution, or subscription rights (and specifying the date on which the holders of Common Stock will be entitled thereto) or for determining rights to vote, if any, in respect of the matters referred to in (i) and (ii) above; (2) in the case of the matters referred to in (iii) and (iv) above at least 20 days prior written notice of the date when the same will take place (and specifying the date on which the holders of Common Stock will be entitled to exchange their Common Stock for securities or other property deliverable upon the occurrence of such event); and (3) in the case of the matter referred to in (v) above, the same notice as is given to the holders of such registration rights.

(c) Investment Representation Statement. The Holder hereby makes to the Company each of the representations and warranties in the Investment Representation Statement form attached hereto as Exhibit D.

Section 7. Indemnification. Without limitation of any other provision of this Warrant or any other agreement between the Holder and the Company, the Company agrees to defend, indemnify and hold Holder, its respective affiliates and direct and indirect partners (including partners of partners and stockholders and members of partners), members, stockholders, directors, officers, employees and agents and each person who controls any of them within the meaning of Section 15 of the Securities Act, or Section 20 of the Securities Exchange Act of 1934, as amended (the "Exchange Act") (collectively, the "Holder Indemnified Parties" and, individually, a "Holder Indemnified Party") harmless from and against any and all damages, liabilities, losses, taxes, fines, penalties, reasonable costs and expenses (including, without limitation, reasonable fees of a single counsel representing the Holder Indemnified Parties), as the same are incurred, of any kind or nature whatsoever (whether or not arising out of third-party claims and including all amounts paid in investigation, defense or settlement of the foregoing) which may be sustained or suffered by any such Holder Indemnified Party ("Losses"), based upon, arising out of, or by reason of (a) any breach of any representation or warranty made by the Company in this Warrant, the Note Agreement, or any other agreement executed in connection herewith, (b) any breach of any covenant or agreement made by the Company in this Warrant, the Note Agreement, or any other agreement executed in connection herewith, or (c) any third party or governmental claims relating in any way to such Holder Indemnified Party's status as a security holder, creditor, director, agent, representative or controlling person of the Company or otherwise relating to such Holder Indemnified Party's involvement with the Company (including, without limitation, any and all Losses under the Securities Act, the Exchange Act or other federal or state statutory law or regulation, at common law or otherwise, which relate directly or indirectly to the registration, purchase, sale or ownership of any securities of the Company or to any fiduciary obligation owed with respect thereto), including, without limitation, in connection with any third party or governmental action or claim relating to any action taken or omitted to be taken or alleged to have been taken or omitted to have been taken by any Holder Indemnified Party as security holder, director, agent, representative or controlling person of the Company or otherwise, alleging so-called control person liability or securities law liability. The term "Losses" shall specifically exclude loss of profits and all punitive, incidental, consequential, special or indirect damages, except to the extent paid to a third party, and shall include diminution of value. The rights of the parties hereunder shall be in addition to, and not in lieu of, any other rights and remedies which may be available to it by law; provided, however, that the Company will not be liable to the extent that such Losses arise from and are based on conduct by a Holder Indemnified Party that constitutes fraud, gross negligence or willful misconduct.

Section 8. Miscellaneous.

(a) No Rights as Stockholder Until Exercise. This Warrant does not entitle the Holder to any voting rights, dividends or other rights as a stockholder of the Company prior to the exercise hereof.

(b) Loss, Theft, Destruction or Mutilation of Warrant. The Company covenants that upon receipt by the Company of evidence reasonably satisfactory to it of the loss, theft, destruction or mutilation of this Warrant or any stock certificate relating to the Shares, and in case of loss, theft or destruction, of indemnity or security reasonably satisfactory to it (which, in the case of the Warrant, shall not include the posting of any bond), and upon surrender and cancellation of such Warrant or stock certificate, if mutilated, the Company will make and deliver a new Warrant or stock certificate of like tenor and dated as of such cancellation, in lieu of such Warrant or stock certificate.

(c) Saturdays, Sundays, Holidays, etc. If the last or appointed day for the taking of any action or the expiration of any right required or granted herein shall not be a business day (because it is a Saturday, Sunday or U.S. federal holiday), then such action may be taken or such right may be exercised on the next succeeding business day.

(d) Authorized Shares. The Company covenants that, during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares of Common Stock to provide for the issuance of the Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of executing stock certificates to execute and issue the necessary certificates for the Shares upon the exercise of the purchase rights under this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any trading market upon which the Common Stock may be listed. The Company covenants that all Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant and payment for such Shares in accordance herewith, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

(e) Warrant Shares Report. In each case of any adjustment or readjustment in the Warrant Shares issuable upon the exercise of this Warrant, the Company at its sole expense will upon request promptly compute such adjustment or readjustment in accordance with the terms of this Warrant and, upon request in connection with the preparation of the Company's quarterly financial statements, prepare a report setting forth such adjustment or readjustment and showing in reasonable detail the method of calculation thereof and the facts upon which such adjustment or readjustment is based, including a statement of (i) the consideration received or to be received by the Company for any additional shares issued or sold or deemed to have been issued, (ii) the number of shares of Common Stock outstanding or deemed to be outstanding, and (iii) the Purchase Price in effect immediately prior to such issue or sale and as adjusted and readjusted on account thereof. The Company will forthwith mail a copy of each such report to Holder and will, upon the written request at any time of Holder, furnish to Holder a like report setting forth the Purchase Price at the time in effect and showing in reasonable detail how it was calculated. The Company will also keep copies of all such reports at its principal executive office and will cause the same to be available for inspection at such office during normal business hours by Holder or any prospective purchaser or assignee of this Warrant designated by the Holder.



(f) Jurisdiction. All questions concerning the construction, validity, enforcement and interpretation of this Warrant shall be determined in accordance with the laws of the State of Michigan.

(g) Restrictions. The Holder acknowledges that the Shares acquired upon the exercise of this Warrant, if not registered, will have restrictions upon resale and other matters imposed by state and federal securities laws, this Warrant, the Shareholder Agreement, and the Voting Agreement to the extent applicable upon and following exercise of this Warrant. The Holder agrees, as a condition to exercise of this Warrant, to become a party to and to be bound by the Shareholder Agreement and the Voting Agreement, and any subsequent amendments to either, to the extent applicable upon and following the exercise of this Warrant. The parties acknowledge that the Shareholder Agreement and Voting Agreement may contain provisions that terminate such documents upon the closing of a public offering of Common Stock, among other provisions. To the extent that any such agreement is terminated or no longer applicable, the Holder shall not be required to become a party to it or be bound by it.

(h) Nonwaiver. No course of dealing or any delay or failure to exercise any right hereunder on the part of Holder shall operate as a waiver of such right or otherwise prejudice the Holder's rights, powers or remedies.

(i) Notices. Any notice, request or other document required or permitted to be given or delivered to the Holder by the Company shall be delivered to the Holder at the address provided herein by Holder in Exhibit C, attached hereto. If the Holder has not provided contact information in Exhibit C, the Company shall be entitled to use the contact information of the Holder in the Company's books and records.

(j) Limitation of Liability. No provision hereof, in the absence of any affirmative action by the Holder to exercise this Warrant to purchase Shares, and no enumeration herein of the rights or privileges of the Holder, shall give rise to any liability of the Holder for the purchase price of any Common Stock or as a stockholder of the Company, whether such liability is asserted by the Company or by creditors of the Company.

(k) Remedies. The Holder, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Warrant. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of the provisions of this Warrant and hereby agrees to waive and not to assert the defense in any action for specific performance that a remedy at law would be adequate.

(l) Successors and Assigns. Subject to the terms of this Warrant and applicable securities laws, this Warrant and the rights and obligations evidenced hereby shall inure to the benefit of and be binding upon the successors and permitted assigns of the Company and the successors and permitted assigns of Holder. The provisions of this Warrant are intended to be for the benefit of any Holder from time to time of this Warrant and shall be enforceable by the Holder or holder of Shares.

(m) Amendment. This Warrant may only be modified or amended or the provisions hereof waived with the written consent of the Company and the Holder.

(n) Severability. Wherever possible, each provision of this Warrant shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Warrant shall be prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Warrant.

(o) Headings. The headings used in this Warrant are for the convenience of reference only and shall not, for any purpose, be deemed a part of this Warrant.

*(Signature Page Follows)*

**IN WITNESS WHEREOF**, the Company has caused this Warrant to be signed by its duly authorized officer and this Warrant to be dated as of the date first above written.

**XG SCIENCES, INC.**

By: \_\_\_\_\_  
Philip L. Rose, Chief Executive Officer

**EXHIBIT A**

**NOTICE OF EXERCISE**

TO: XG SCIENCES, INC.

(1) The undersigned hereby elects to purchase \_\_\_\_\_ Shares of the Company pursuant to the terms of the attached Warrant, and tenders herewith payment of the exercise price in full, together with the other items required by the Warrant.

(2) Payment shall take the form of (check applicable box):

- wire transfer in lawful money of the United States;
- cashier's check drawn on a U.S. bank; or
- in accordance with the formula set forth in Section 1(b), to exercise this Warrant with respect to the number of shares of Common Stock purchasable pursuant to the cashless exercise procedure set forth in Section 1(b).

The undersigned requests that the shares of such Common Stock be issued in the name(s) of, and delivered to, the person(s) whose name(s) and address(es) are set forth below:

---

(Please type or print name and address)

---

(Social Security or tax identification number)

and delivered to: \_\_\_\_\_

(Please type or print name and address)

and, if such number of shares of Common Stock shall not be all the Common Stock evidenced by this Warrant, that a new Warrant of like tenor for the balance of the shares of Common Stock subject to the Warrant be registered in the name of, and delivered to, the Holder at the address stated below.

The undersigned has executed, and delivers herewith, an Investment Representation Statement in a form substantially similar to the form attached to the Warrant as Exhibit D.

*[Signature page follows]*

[SIGNATURE OF HOLDER]

Name of Investing Entity: \_\_\_\_\_

*Signature of Authorized Signatory of Investing Entity:* \_\_\_\_\_

Name of Authorized Signatory: \_\_\_\_\_

Title of Authorized Signatory: \_\_\_\_\_

Date: \_\_\_\_\_

*[Signature page to Notice of Exercise]*

**EXHIBIT B**

**WARRANT ASSIGNMENT**

FOR VALUE RECEIVED, the undersigned holder of the warrant (the "Assignor") does hereby assign and transfer to \_\_\_\_\_, Federal Identification No. \_\_\_\_\_ (the "Assignee"), a warrant to purchase \_\_\_\_\_ shares of the capital stock of XG Sciences, Inc. represented by warrant certificate no. \_\_\_\_\_ (the "Warrant"), standing in the name of the undersigned on the books of said corporation. The Assignor does hereby irrevocably constitute and appoint \_\_\_\_\_, attorney to transfer the warrants of said corporation, with full power of substitution in the premises.

The Assignee agrees to take and hold the Warrant and any shares of capital stock of XG Sciences, Inc. to be issued upon exercise of the rights thereunder subject to, and to be bound by, the terms and conditions set forth in the Warrant (including the shareholder agreement and voting agreement referenced therein) to the same extent as if Assignee were the original holder thereof.

Assignee has executed, and delivers herewith, an Investment Representation Statement in a form substantially similar to the form attached to the Warrant as Exhibit D.

**ASSIGNOR:**

Dated: \_\_\_\_\_

[Assignor]

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

**ASSIGNEE:**

Dated: \_\_\_\_\_

[Assignee]

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

**EXHIBIT C**

**WARRANT HOLDER'S CONTACT INFORMATION**

Name: The Dow Chemical Company  
Address: 2030 Dow Center  
Midland, Michigan 48674  
Attention: Corporate Venture Capital  
Telephone Number: (989) 636-0571  
Email: \_\_\_\_\_

**EXHIBIT D**

**INVESTMENT REPRESENTATION STATEMENT**

INVESTOR: \_\_\_\_\_

COMPANY: XG Sciences, Inc., a Michigan corporation

SECURITIES: THE WARRANT ISSUED ON \_\_\_\_\_ (THE “**WARRANT**”) AND THE SECURITIES ISSUED OR ISSUABLE UPON EXERCISE THEREOF

DATE: \_\_\_\_\_

In connection with the purchase or acquisition of the above-listed Securities, the undersigned Investor represents and warrants to, and agrees with, the Company as follows:

1. **No Registration.** The Investor understands that the Securities have not been, and will not be, registered under the Securities Act of 1933, as amended (the “**Securities Act**”), by reason of a specific exemption from the registration provisions of the Securities Act, the availability of which depends upon, among other things, the *bona fide* nature of the investment intent and the accuracy of the Investor’s representations as expressed herein or otherwise made pursuant hereto.

2. **Investment Intent.** The Investor is acquiring the Securities for investment for its own account, not as a nominee or agent, and not with a view to, or for resale in connection with, any distribution thereof. The Investor has no present intention of selling, granting any participation in, or otherwise distributing the Securities, nor does it have any contract, undertaking, agreement or arrangement for the same.

3. **Investment Experience.** The Investor has substantial experience in evaluating and investing in private placement transactions of securities in companies similar to the Company, and has such knowledge and experience in financial or business matters so that it is capable of evaluating the merits and risks of its investment in the Company and protecting its own interests.

4. **Speculative Nature of Investment.** The Investor understands and acknowledges that its investment in the Company is highly speculative and involves substantial risks. The Investor can bear the economic risk of its investment and is able, without impairing its financial condition, to hold the Securities for an indefinite period of time and to suffer a complete loss of its investment.

5. **Access to Data.** The Investor has had an opportunity to ask questions of officers of the Company, which questions were answered to its satisfaction. The Investor understands that any such discussions, as well as any information issued by the Company, were intended to describe certain aspects of the Company’s business and prospects, but were not necessarily a thorough or exhaustive description. The Investor acknowledges that any business plans prepared by the Company have been, and continue to be, subject to change and that any projections included in such business plans or otherwise are necessarily speculative in nature, and it can be expected that some or all of the assumptions underlying the projections will not materialize or will vary significantly from actual results.



6. **Accredited Investor.** The Investor is an “accredited investor” within the meaning of Regulation D, Rule 501(a), promulgated by the Securities and Exchange Commission and agrees to submit to the Company such further assurances of such status as may be reasonably requested by the Company.

7. **Residency.** The residency of the Investor (or, in the case of a partnership or corporation, such entity’s principal place of business) is correctly set forth on the signature page hereto.

8. **Restrictions on Resales.** The Investor acknowledges that the Securities must be held indefinitely unless subsequently registered under the Securities Act or an exemption from such registration is available. The Investor is aware of the provisions of Rule 144 promulgated under the Securities Act, which permit resale of shares purchased in a private placement subject to the satisfaction of certain conditions, which may include, among other things, the availability of certain current public information about the Company; the resale occurring not less than a specified period after a party has purchased and paid for the security to be sold; the number of shares being sold during any three-month period not exceeding specified limitations; the sale being effected through a “broker’s transaction,” a transaction directly with a “market maker” or a “riskless principal transaction” (as those terms are defined in the Securities Act or the Exchange Act (as defined below), as amended, and the rules and regulations promulgated thereunder); and the filing of a Form 144 notice, if applicable. The Investor acknowledges and understands that the Company may not be satisfying the current public information requirement of Rule 144 at the time the Investor wishes to sell the Securities and that, in such event, the Investor may be precluded from selling the Securities under Rule 144 even if the other applicable requirements of Rule 144 have been satisfied. The Investor understands and acknowledges that, in the event the applicable requirements of Rule 144 are not met, registration under the Securities Act or an exemption from registration will be required for any disposition of the Securities. The Investor understands that, although Rule 144 is not exclusive, the Securities and Exchange Commission has expressed its opinion that persons proposing to sell restricted securities received in a private offering other than in a registered offering or pursuant to Rule 144 will have a substantial burden of proof in establishing that an exemption from registration is available for those offers or sales and that those persons and the brokers who participate in the transactions do so at their own risk. The Investor acknowledges that the Securities will have restrictions upon resale and other matters imposed by the Company’s shareholder agreement and voting agreement, to the extent applicable. The Investor agrees to become a party to and to be bound by the Shareholder Agreement and the Voting Agreement, and any subsequent amendments to either, to the extent applicable.

9. **No Public Market.** The Investor understands and acknowledges that no public market now exists for any of the securities issued by the Company and that the Company has made no assurances that a public market will ever exist for the Company’s securities.

10. **Brokers and Finders.** The Investor has not engaged any brokers, finders or agents in connection with the Securities, and the Company has not incurred nor will incur, directly or indirectly, as a result of any action taken by the Investor, any liability for brokerage or finders' fees or agents' commissions or any similar charges in connection with the Securities.

11. **Legal Counsel.** The Investor has had the opportunity to review the Warrant, the exhibits and schedules attached thereto and the transactions contemplated by the Warrant with its own legal counsel. The Investor is not relying on any statements or representations of the Company or its agents for legal advice with respect to this investment or the transactions contemplated by the Warrant.

12. **Tax Advisors.** The Investor has reviewed with its own tax advisors the U.S. federal, state and local and non-U.S. tax consequences of this investment and the transactions contemplated by the Warrant. With respect to such matters, the Investor relies solely on such advisors and not on any statements or representations of the Company or any of its agents, written or oral. The Investor understands that it (and not the Company) shall be responsible for its own tax liability that may arise as a result of this investment or the transactions contemplated by the Warrant.

The Investor is signing this Investment Representation Statement on the date first written above.

**INVESTOR**

[ \_\_\_\_\_ ]

\_\_\_\_\_  
*(Print name of the investor)*

\_\_\_\_\_  
*(Signature)*

\_\_\_\_\_  
*(Name and title of signatory, if applicable)*

\_\_\_\_\_  
*(Street address)*

\_\_\_\_\_  
*(City, state and ZIP)*

**EXHIBIT F**

**XG SCIENCES, INC.  
CERTIFICATION OF ARTICLES, BYLAWS,  
RESOLUTIONS, GOOD STANDING, AND INCUMBENCY**

**XG SCIENCES, INC.**, a Michigan corporation ("**Corporation**"), certifies as follows to **THE DOW CHEMICAL COMPANY**:

1. **Corporate Articles.** Attached to this Certification as **Exhibit A** is a true, correct, and complete copy of the Articles of Incorporation of Corporation, including all amendments.
2. **Corporate Bylaws.** Attached to this Certification as **Exhibit B** is a true, correct, and complete copy of the Bylaws of Corporation, including all amendments.
3. **Resolutions.** Attached to this Certification as **Exhibit C** is a true, correct, and complete copy of certain resolutions adopted by the Board of Directors of Corporation, which resolutions have not been repealed, amended, or modified and which remain in full force and effect as of the date of this Certification.
4. **Good Standing.** Attached to this Certification as **Exhibit D** is evidence of good standing for Corporation. No action or proceeding for the dissolution of Corporation has been instituted or is contemplated by Corporation and, to the best of my knowledge, no such action or proceeding is contemplated.
5. **Incumbency.** The person listed below holds the office of Corporation indicated, and the signature accompanying that name is the genuine signature of the named person:

Printed Name/Title

Signature

Philip L. Rose, Chief Executive Officer

\_\_\_\_\_

The undersigned have signed this Certification as of \_\_\_\_\_, 2016.

By

\_\_\_\_\_  
\_\_\_\_\_, Secretary

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**EXHIBIT A**

**Articles of Incorporation**

See attached Articles of Incorporation.

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**EXHIBIT B**

**Bylaws**

See attached Bylaws.

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**EXHIBIT C**

The following resolutions were adopted by the Board of Directors of **XG SCIENCES, INC.**, a Michigan corporation, as of \_\_\_\_\_, 2016:

**“RESOLVED**, that any person who the secretary of this corporation from time to time certifies to **THE DOW CHEMICAL COMPANY (“Lender”)** as being the President, Vice President, or Treasurer of this corporation (each, an **“Authorized Officer”**) shall be and is authorized, for and on behalf of this corporation, from time to time to do any or all of the following:

- (1) apply for and obtain loans and other extensions of credit from Lender to this corporation;
  - (2) issue warrants for common stock of the Company to Lender;
  - (3) discount with and sell to Lender installment sale contracts, notes, acceptances, drafts, receivables, commercial paper and other evidences of indebtedness payable to this corporation, with or without recourse;
  - (4) receive and receipt for, and sign orders and issue instructions as to the handling and delivery of, proceeds of any such loans, extensions of credit, discounts and sales;
  - (5) apply for and obtain from Lender letters of credit for the account of this corporation;
  - (6) guarantee indebtedness and obligations that third parties owe to Lender;
  - (7) lease personal property or fixtures from Lender, whether under true leases or financing leases;
  - (8) subordinate any indebtedness or obligation that any person, firm or corporation at any time owes to this corporation, to indebtedness and obligations that that person, firm or corporation at any time owes to Lender and subordinate any security interest, mortgage or other lien in or upon any assets or properties of any person, firm or corporation, that this corporation at any time holds to secure any such indebtedness or obligation, to security interests, mortgages and other liens that Lender at any time holds in any such assets or properties;
  - (9) grant to Lender security interests in, and mortgages and liens upon, and assignments and hypothecations of, any or all assets and properties of this corporation, both real and personal, tangible and intangible, that this corporation now owns and in the future acquires, wherever located, to secure any and all indebtedness, obligations and liabilities that this corporation or others now and in the future owe to Lender;
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(10) grant to Lender a pledge and lien upon and assignment and hypothecation of, any equity interests of the corporation's subsidiary entities, to secure any and all indebtedness, obligations and liabilities that this corporation or others now and in the future owe to Lender; and

(11) enter into renewals, extensions, refinancings and modifications of any of the foregoing;

all in amounts, at rates of interest and on other terms and conditions to which any Authorized Officer agrees on behalf of this corporation.

**FURTHER RESOLVED**, that the First Amendment to the Operating Agreement of XG Sciences IP, LLC in the form attached is hereby approved; that any Authorized Agent is authorized, for and on behalf of this corporation, to modify the amendment before signature to incorporate changes requested by Lender that are agreeable to the Authorized Agent; and that any Authorized Agent is authorized, for and on behalf of this corporation, to sign and deliver such amendment.

**FURTHER RESOLVED**, that any Authorized Officer is authorized, for and on behalf of this corporation, to sign and deliver to Lender, from time to time, all promissory notes, loan agreements, leases, security agreements, mortgages, deeds of trust, pledge agreements, guaranties, subordination agreements, assignments, acceptances, deeds, bills of sale, waivers, amendments and other agreements, instruments and documents that Lender requires from time to time in connection with the transactions authorized above, and to take any and all other actions in connection with those transactions that any Authorized Officer considers advisable, and the signing of any of the foregoing, and the taking of any such other action, by any Authorized Officer shall be conclusive evidence that it was authorized by these resolutions.

**FURTHER RESOLVED**, that all prior acts of any Authorized Officer or other person purporting to act as an agent of this corporation, including, without limitation, the execution and delivery of documents contemplated by the foregoing paragraph, on behalf of this corporation that are consistent with the foregoing resolutions are hereby ratified and affirmed in all respects.

**FURTHER RESOLVED**, that these resolutions shall continue in full force and effect until Lender receives notice in writing from this corporation that a resolution of the Board of Directors of this corporation has revoked or modified it.”

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**EXHIBIT D**

**Evidence of Good Standing**

See attached Evidence of Good Standing.

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**EXHIBIT G**

**XG SCIENCES IP, LLC  
CERTIFICATION OF ARTICLES, OPERATING AGREEMENT,  
RESOLUTIONS, GOOD STANDING, AND INCUMBENCY**

**XG SCIENCES IP, LLC**, a Michigan limited liability company ("**Company**"), certifies as follows to **THE DOW CHEMICAL COMPANY**:

1. **Company Articles.** Attached to this Certification as **Exhibit A** is a true, correct, and complete copy of the Articles of Organization of Company, including all amendments.
2. **Operating Agreement.** Attached to this Certification as **Exhibit B** is a true, correct, and complete copy of the Operating Agreement of the Company, including all amendments.
3. **Resolutions.** Attached to this Certification as **Exhibit C** is a true, correct, and complete copy of certain resolutions adopted by the member and manager of Company, which resolutions have not been repealed, amended, or modified and which remain in full force and effect as of the date of this Certification.
4. **Good Standing.** Attached to this Certification as **Exhibit D** is evidence of good standing for Company. No action or proceeding for the dissolution of Company has been instituted or is contemplated by Company and, to the best of my knowledge, no such action or proceeding is contemplated.
5. **Incumbency.** The person listed below is a manager of Company, and the signature accompanying that name is the genuine signature of the named person:

Printed Name/Title

Signature

Philip L. Rose, Manager

\_\_\_\_\_

The undersigned have signed this Certification as of \_\_\_\_\_, 2016.

By

\_\_\_\_\_  
Philip L. Rose, Manager

\_\_\_\_\_

**EXHIBIT A**

**Articles of Organization**

See attached Articles of Organization.

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**EXHIBIT B**

**Operating Agreement**

See attached Operating Agreement.

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### EXHIBIT C

The following resolutions were adopted by the member and manager of XG SCIENCES IP, LLC, a Michigan limited liability company, as of \_\_\_\_\_, 2016:

**“RESOLVED**, that any person who the Manager of this company from time to time certifies to **THE DOW CHEMICAL COMPANY (“Lender”)** as being a Manager of this company (**“Authorized Agent”**) shall be and is authorized, for and on behalf of this company, from time to time to do any or all of the following:

- (1) apply for and obtain loans and other extensions of credit from Lender to this company;
  - (2) discount with and sell to Lender installment sale contracts, notes, acceptances, drafts, receivables, commercial paper and other evidences of indebtedness payable to this company, with or without recourse;
  - (3) receive and receipt for, and sign orders and issue instructions as to the handling and delivery of, proceeds of any such loans, extensions of credit, discounts and sales;
  - (4) apply for and obtain from Lender letters of credit for the account of this company;
  - (5) guarantee indebtedness and obligations that third parties owe to Lender;
  - (6) lease personal property or fixtures from Lender, whether under true leases or financing leases;
  - (7) subordinate any indebtedness or obligation that any person, firm or corporation at any time owes to this company, to indebtedness and obligations that that person, firm or corporation at any time owes to Lender and subordinate any security interest, mortgage or other lien in or upon any assets or properties of any person, firm or corporation, that this company at any time holds to secure any such indebtedness or obligation, to security interests, mortgages and other liens that Lender at any time holds in any such assets or properties;
  - (8) grant to Lender security interests in, and mortgages and liens upon, and assignments and hypothecations of, any or all assets and properties of this company, both real and personal, tangible and intangible, that this company now owns and in the future acquires, wherever located, to secure any and all indebtedness, obligations and liabilities that this company or others now and in the future owe to Lender; and
  - (9) enter into renewals, extensions, refinancings and modifications of any of the foregoing; all in amounts, at rates of interest and on other terms and conditions to which any Authorized Agent agrees on behalf of this company.
-

**FURTHER RESOLVED**, that the First Amendment to the Operating Agreement of this company in the form attached is hereby approved; that any Authorized Agent is authorized, for and on behalf of the member and this company, to modify the amendment before signature to incorporate changes requested by Lender that are agreeable to the Authorized Agent; and that any Authorized Agent is authorized, for and on behalf of the member and this company, to sign and deliver such amendment, as so modified.

**FURTHER RESOLVED**, that any Authorized Agent is authorized, for and on behalf of this company, to sign and deliver to Lender, from time to time, all promissory notes, loan agreements, leases, security agreements, mortgages, deeds of trust, pledge agreements, guaranties, subordination agreements, assignments, acceptances, deeds, bills of sale, waivers, amendments and other agreements, instruments and documents that Lender requires from time to time in connection with the transactions authorized above, and to take any and all other actions in connection with those transactions that any Authorized Agent considers advisable, and the signing of any of the foregoing, and the taking of any such other action, by any Authorized Agent shall be conclusive evidence that it was authorized by these resolutions.

**FURTHER RESOLVED**, that all prior acts of any Authorized Agent or other person purporting to act as an agent of this company, including, without limitation, the execution and delivery of documents contemplated by the foregoing paragraph, on behalf of this company that are consistent with the foregoing resolutions are hereby ratified and affirmed in all respects.

**FURTHER RESOLVED**, that these resolutions shall continue in full force and effect until Lender receives notice in writing from this company that a resolution of the member of this company has revoked or modified it.”

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**EXHIBIT D**

**Evidence of Good Standing**

See attached.

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**SECURITY AGREEMENT**  
**(XG Sciences, Inc.)**

**THIS SECURITY AGREEMENT** (“**Agreement**”) is made as of \_\_\_\_\_, by and between XG Sciences, Inc., a Michigan corporation, of 3101 Grand Oak Drive, Lansing, Michigan 48911 (“**Debtor**”), and The Dow Chemical Company, of 2030 Dow Center, Midland, Michigan 48674 (“**Secured Party**”), for itself and as agent for the benefit of all other affiliates of Secured Party (each, an “**Affiliate**”), pursuant to a certain Draw Loan Note and Agreement (as amended, supplemented, restated or otherwise modified from time to time, “**Note**”) dated as of the December 7, 2016, between Debtor and Secured Party.

1. **Grant of Security Interest.** Debtor grants to Secured Party a continuing security interest in all business assets of Debtor, including without limitation:

(a) all machinery and equipment (including vehicles) and fixtures, wherever located, whether now owned or hereafter acquired by Debtor, and all chattel paper evidencing any past, present or future leasing of the machinery, equipment or fixtures;

(b) all inventory, wherever located, whether now owned or hereafter acquired by Debtor; and any and all bills of lading, warehouse receipts and other documents of title evidencing inventory; all rights of stoppage in transit of inventory; all chattel paper evidencing any past, present or future leasing of inventory; and all letter of credit rights under all existing and future letters of credit securing all or part of the purchase price of inventory that has been or is in the future sold by Debtor;

(c) all accounts, contract rights, chattel paper, instruments, investment property, general intangibles and letter of credit rights, wherever located, whether now owned or hereafter acquired by Debtor;

(d) all deposit accounts, wherever located, whether now owned or hereafter acquired by Debtor;

(e) all trademarks, trade names, corporate names, business names, domain names, trade styles, trade dress, service marks, logos, source identifiers, business identifiers, or designs of like nature now held or hereafter acquired by Debtor, any registration or recording of the foregoing or any thereof, and any application in connection therewith, including without limitation, any such registration, recording or application in the United States Patent and Trademark Office (“**U.S. PTO**”) or in any similar office or agency of the United States, any state thereof or any country or political subdivision of such other country, and all extensions or renewals of any of the foregoing;

(f) any letters patent of the United States or any country in which Debtor now or hereafter has title, all reissues, divisionals, continuations, continuations-in-part, and extensions thereof, as well as any application for a letters patent in the United States or any other country now or hereafter owned by Debtor, and all extensions or renewals of any of the foregoing;

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(g) any copyright, copyrightable work, any registration or recording of any copyright or any copyrightable work to which Debtor now or hereafter has title, and any application in connection with any copyright or copyrightable work owned by Debtor, including without limitation, any such registration, recording or application in the United States Copyright Office or in any similar office or agency of the United States, any state thereof, or any other country, and any renewal of any of the foregoing;

(h) all know-how, trade secrets and business information, whether now owned or hereafter acquired by Debtor;

(i) all rights in computer programs and software applications and source codes of Debtor and all other proprietary information of Debtor;

together with (i) all proceeds of the foregoing, including, without limitation, all cash, checks, drafts, accounts receivable, chattel paper, leases and instruments received by Debtor in connection with any sale, lease, exchange or other disposition of any of the foregoing, and (ii) all books, records (including computer software), and documents at any time evidencing or relating to any of the foregoing or any proceeds thereof. All of the foregoing properties and assets of Debtor are referred to collectively in this Agreement as the “**Collateral**.” Notwithstanding anything contained herein to the contrary, the term “**Collateral**” does not and shall not include any patent rights within the meaning of that certain Restated and Amended Exclusive License Agreement between Michigan State University and Debtor.

2. **Indebtedness Secured.** The foregoing security interest is given to secure payment and performance of ALL OBLIGATIONS AND INDEBTEDNESS THAT DEBTOR NOW AND IN THE FUTURE OWES TO SECURED PARTY AND ANY AFFILIATE under this Agreement and the Note, as well as under all other security agreements, pledge agreements, assignments, mortgages, guaranties, notes, loan agreements, and other agreements, instruments and documents that Debtor has signed or in the future signs relating thereto, and all extensions and renewals of such indebtedness and obligations.

The indebtedness and obligations that this Agreement secures are collectively called the “**Indebtedness**.”

3. **Warranties, Representations, and Agreements.** Debtor warrants and represents to Secured Party, and agrees, as follows:

(a) Debtor is the owner, leasee or licensee of the Collateral, and none of the Collateral is subject to a lien, security interest, encumbrance or claim in favor of a third party (other than Subsidiary), and no financing statement is on file in a public office covering any of the Collateral, except in favor of Secured Party or with respect to Permitted Liens, and except that certain financing statement No. 2013142779-9 in favor of NMHG Financial Services, Inc., which Debtor shall cause to be discharged within 30 days of this Agreement.



- (b) Debtor has full power and authority to enter into and perform its obligations under this Agreement.
- (c) This Agreement is the valid and binding obligation of Debtor and is enforceable against Debtor in accordance with its terms.
- (d) All information that Debtor has furnished or in the future furnishes to Secured Party concerning the Collateral, including, without limitation, all information concerning the condition and quality of the Collateral, is and will be correct and complete.
- (e) Debtor's exact legal name is set forth in the first paragraph of this Agreement.
- (f) Debtor's address set forth on the first page of this Agreement is the location of Debtor's chief executive office.
- (g) Any part of the Collateral that consists of accounts or chattel paper does and shall evidence bona fide sales or leases to the parties named in Debtor's books, and Debtor is not aware of any existing defense to any account or chattel paper.
- (h) **Exhibit A** to this Agreement contains a complete and accurate list of all of Debtor's and its Subsidiary's United States intellectual property registrations, recordings and applications. Debtor shall provide Secured Party with an updated Exhibit A (1) within thirty (30) days after the date of this Agreement to list international intellectual property registrations, recordings and applications, and (2) from time to time for any additions or deletions to such list occurring after the date of this Agreement. Except as disclosed on Exhibit A and except for business information, know-how and trade secrets, there is no intellectual property that is material to Obligor or Borrower.
- (i) Each current employee of Debtor is bound by a nondisclosure agreement in form and substance previously disclosed to Secured Party.

4. **Agreements of Debtor.** Debtor agrees that:

(a) Debtor shall not cause or permit any lien, security interest or encumbrance to be placed on any Collateral (other than Permitted Liens), except in favor of Secured Party and Debtor shall not sell, assign or transfer any Collateral or permit any Collateral to be transferred by operation of law, except for any intellectual property assigned to Subsidiary, as permitted under the Note and sales of inventory in the ordinary course of Debtor's business. A sale in the ordinary course of business does not include a transfer in partial or complete satisfaction of a debt.

(b) Debtor shall maintain all records concerning the Collateral at Debtor's chief executive office.

(c) Debtor shall furnish to Secured Party all information regarding the Collateral that Secured Party from time to time reasonably requests and shall allow Secured Party at any reasonable time to inspect the Collateral and Debtor's records regarding the Collateral.

(d) Debtor shall sign, file, record or obtain from third persons all subordination agreements and other documents, and shall take all other actions, that Secured Party reasonably considers necessary or appropriate to perfect, to continue perfection of, or to maintain first priority (except with respect to Permitted Liens) of, Secured Party's security interest in the Collateral and Debtor shall place upon the Collateral and/or documents evidencing the Collateral any notice of Secured Party's security interest that Secured Party from time to time reasonably requires. Actions that Secured Party may require Debtor to take under the preceding sentence include, without limitation, (1) obtaining from any third party who has possession of Collateral an acknowledgment that the third party holds the Collateral for Secured Party and (2) obtaining agreements from banks, securities intermediaries, issuers of letters of credit and others, and taking all other actions reasonably requested by Secured Party, to give Secured Party control of any part of the Collateral consisting of investment property, deposit accounts, letter of credit rights or electronic chattel paper.

(e) Debtor shall immediately notify Secured Party in writing of any change in Debtor's name, identity or organizational structure, and of any change in the location of Debtor's place of business and of the location of each additional place of business that Debtor establishes. Debtor shall not make a change in its name or its organizational structure or in the jurisdiction under the laws of which Debtor is organized, without Secured Party's prior written consent.

(f) Debtor shall indemnify Secured Party with respect to all losses, damages, liabilities and expenses (including attorney fees) that Secured Party incurs by reason of a failure of Debtor to comply with an obligation under this Agreement or by reason of a warranty or representation that Debtor makes to Secured Party in this Agreement being false in any material respect.

(g) After the occurrence of an Event of Default (subject to applicable cure periods), Debtor shall take all steps reasonably necessary to permit Secured Party to contact its account debtors at any time for the purpose of verifying the existence, amount and collectability of, and other information regarding, Debtor's accounts, chattel paper, instruments or general intangibles.

(h) Debtor shall maintain all tangible Collateral in good condition and repair and maintain special form, replacement cost property insurance covering all tangible Collateral. As soon after closing as reasonably practicable, but no later than 30 days after closing, each insurance policy (1) shall provide that its proceeds shall be payable to Secured Party to the extent of Secured Party's interest in the Collateral, (2) shall contain a standard lender's loss payable endorsement in favor of Secured Party, (3) shall provide that the policy shall not be canceled, and the coverage shall not be reduced, without at least 10 days' prior written notice by the insurer to Secured Party and (4) shall otherwise be in form and substance satisfactory to Secured Party. Debtor shall provide Secured Party evidence of that insurance coverage. Upon Secured Party's request, Debtor shall deliver to Secured Party all policies that provide for such insurance. Debtor agrees that Secured Party may act as agent for Debtor in obtaining, adjusting, and settling that insurance and endorsing any draft evidencing proceeds of it.

(i) To the extent that applicable law at any time permits a secured party to file a financing statement that is not authenticated by Debtor, Debtor authorizes Secured Party to file one or more financing statements containing an indication that such financing statement covers the Collateral. The financing statements that Secured Party files to perfect its security interest in the Collateral may describe the Collateral as "all assets" or "all personal property" that Debtor now owns or acquires in the future. If Secured Party has previously filed one or more financing statements to perfect its security interest in the Collateral, then Debtor approves and ratifies those filings.

(j) Debtor shall pay, before they become delinquent, all taxes and assessments upon the Collateral or for its use or operation and pay and perform when due all indebtedness and obligations under all leases, land contracts or other agreements under which Debtor has possession of any real property upon which any of the Collateral is at any time located and under any mortgage or mortgages at any time covering that real property.

(k) Debtor shall prepare, execute, acknowledge and deliver to Secured Party an instrument in writing in recordable form for recording a lien on and security interest in and to all of its right, title and interest in, to and under all new patent and trademark application filings and any rights extending therefrom, either in the United States or any other country and all proceeds of any and all of the foregoing, within one month after the filing of any such applications.

(l) Debtor shall timely enter into a nondisclosure agreement, in form and substance reasonably acceptable to Secured Party, with each new employee, manager, director, and officer of Debtor, and all agents and other parties to whom trade secrets or other confidential information of Debtor or any affiliate of Debtor may be disclosed.

(m) Debtor shall not commit any material breach or default under that certain license agreement between Debtor and Michigan State University dated as of July 27, 2007 and amended on May 24, 2010 and May 27, 2011, as it may be amended, restated, renewed, extended, replaced, or modified.

5. **Secured Party's Right to Perform.** If Debtor fails to perform an obligation of Debtor under this Agreement, then Secured Party may, without giving notice to or obtaining the consent of Debtor, perform that obligation on behalf of Debtor. Debtor shall reimburse Secured Party on demand for any expense that Secured Party incurs in performing the obligation and shall pay to Secured Party interest on each expense, from the date the expense was incurred by Secured Party, at 5% per annum ("**Default Rate**"). Secured Party is not required to perform an obligation that Debtor has failed to perform. If Secured Party does so, then that shall not be a waiver of Secured Party's right to declare the Indebtedness immediately due and payable by reason of Debtor's failure to perform.

6. **Events of Default and Acceleration.** Any part or all of the Indebtedness shall, at the option of Secured Party, become immediately due and payable without notice or demand upon the occurrence of any of the following events of default (each, an "**Event of Default**"):

(a) If an Event of Default occurs under and as defined in the Note, including any default in the payment or performance of any of the Indebtedness, when and as it is due and payable subject to applicable grace periods.

(b) If Debtor fails to perform any other material obligation, covenant or agreement of Debtor to Secured Party under this Agreement, under a promissory note or other instrument that at any time evidences any Indebtedness or under any other security agreement, loan agreement, mortgage, assignment, guaranty or other agreement that now or in the future secures or relates to any Indebtedness ("**Security Documents**").

(c) If a warranty, representation, or statement that has been or in the future is made to Secured Party by Debtor or by a guarantor of all or part of the Indebtedness ("**Guarantor**") in this Agreement or in a Security Document shall have been false in any material respect when made or furnished.

(d) If Debtor or a Guarantor dissolves, becomes insolvent or makes an assignment for the benefit of creditors.

(e) If a guaranty that now or in the future secures payment or performance of all or a part of the Indebtedness is terminated, revoked or limited for any reason, without Secured Party's written consent or agreement.

(f) If an attachment, garnishment, levy, execution or other legal process is at any time issued against or placed upon any of the Collateral (other than with respect to Permitted Liens) and is not terminated or released within 30 days.

(g) If all or a substantial part of the tangible Collateral is destroyed or materially damaged by fire or other casualty, and cannot be repaired or replaced within a commercially reasonable time, not to exceed 90 days, whether or not there is insurance coverage for the damage or destruction.

If an Event of Default is capable of being cured, then Debtor may cure the same during the thirty-day period that begins on the date on which Debtor receives notice from Secured Party or otherwise has actual knowledge, of the event (the “**Cure Period**”). An Event of Default that is capable of being cured will not be deemed to have occurred as a result of an event during the Cure Period for that event or, if the event is cured during the Cure Period, thereafter.

If a voluntary or involuntary case in bankruptcy, receivership or insolvency is at any time begun by or against Debtor or a Guarantor or if any attachment, garnishment, levy, execution or other legal process is at any time issued against or placed upon Collateral and not terminated or released within 30 days, then the entire Indebtedness shall automatically become immediately due and payable, without notice or demand. All or part of the Indebtedness also may become, or may be declared to be, immediately due and payable under the terms of the Note or a note that at any time evidences any Indebtedness or under a Security Document that has been or in the future is entered into between Debtor and Secured Party.

7. **Secured Party’s Rights and Remedies.** Secured Party shall have all rights and remedies of a secured party under applicable laws. Without limiting those rights and remedies, upon the occurrence of an Event of Default (subject to applicable cure periods):

(a) (1) Without notice or demand to Debtor, Secured Party shall be entitled to notify Debtor’s account debtors and obligors to make all payments directly to Secured Party, and Secured Party shall have the right to take all actions that Secured Party reasonably considers necessary or desirable to collect upon the Collateral, including, without limitation, prosecuting actions against, or settling or compromising disputes and claims with, Debtor’s account debtors and obligors, (2) without notice or demand to Debtor, Secured Party may receive, open, dispose of and notify the postal authorities to change the address of, mail directed to Debtor, and (3) upon Secured Party’s demand, Debtor shall immediately deliver to Secured Party, at the place that Secured Party designates, all proceeds of the Collateral and all books, records, agreements, leases, documents and instruments that evidence or relate to the Collateral.

(b) Debtor, upon Secured Party’s demand, shall assemble the Collateral and proceeds of Collateral at Debtor’s place of business, and Secured Party may dispose of the Collateral in any commercially reasonable manner. Any notification that Secured Party is required to give to Debtor regarding sale or other disposition of Collateral shall be considered reasonable if it is mailed at least 10 days before the sale or other disposition. In connection with a disposition of Collateral, Secured Party may comply with the requirements of an applicable state or federal law or regulation, and such compliance shall not cause the disposition to not be commercially reasonable.

(c) Secured Party shall have the right (but no obligation) to continue or complete the manufacturing or processing of, or other operations in connection with, any part of the Collateral, and, for that purpose, to enter and remain upon or in any land or buildings that are possessed by Debtor or that Debtor has the right to possess. Debtor shall reimburse Secured Party on demand for any net expense that Secured Party incurs in connection with those activities and shall pay to Secured Party interest on each net expense, from the date on which Secured Party incurred the expense, at the Default Rate.

The proceeds of any collection or disposition of Collateral shall be applied first to Secured Party's attorney fees and expenses, as provided in *Paragraph 8* of this Agreement, then to the unpaid interest accrued on the Indebtedness and then to the principal of the Indebtedness, and Debtor shall be liable for any deficiency. Secured Party does not have any obligation to prepare or process any Collateral for sale or other disposition. If Secured Party sells any of the Collateral on credit, then Debtor will be credited only with payments that the purchaser actually makes and that Secured Party receives and applies to the unpaid balance of the purchase price of the Collateral. If the purchaser fails to pay for the Collateral, then Secured Party may again dispose of the Collateral and apply the proceeds in accordance with this paragraph. All rights and remedies of Secured Party under this Agreement, whether or not exercisable only on default, shall be cumulative and may be exercised from time to time. No delay by Secured Party in the exercise of any right or remedy shall operate as a waiver thereof, and no single or partial exercise of any right or remedy shall preclude other or further exercise thereof or the exercise of any other right or remedy.

8. **Expenses.** Debtor shall reimburse Secured Party on demand for all reasonable attorney fees, legal expenses, and other expenses that Secured Party incurs in perfecting (subject to the \$25,000 limitation in the Note), protecting and enforcing its interest in the Collateral and its rights under this Agreement. This includes fees and expenses incurred in trying to take possession of Collateral from Debtor, a trustee or receiver in bankruptcy, or any other person. Secured Party may apply any proceeds of collection or disposition of Collateral to Secured Party's attorney fees, legal expenses and other out-of-pocket expenses.

9. **Amendments and Waivers.** No provision of this Agreement may be modified or waived except by a written agreement signed by Secured Party and Debtor. Secured Party will continue to have all of its rights under this Agreement even if it does not fully and promptly exercise them on all occasions. Secured Party may, at its option: waive any default; defer an action on any default; extend or modify the time or manner of payment of the Indebtedness or waive or modify any term or condition relating to the Indebtedness; release Collateral or other security for the Indebtedness; release any person liable for any of the Indebtedness, including Debtor; or make advances or other extensions of credit secured hereby; all without giving Debtor notice or obtaining Debtor's consent. Any such action by Secured Party will not release or impair its security interest in the Collateral or Debtor's obligations under this Agreement. Secured Party's security interest in the Collateral and Debtor's obligations under this Agreement will not be released or impaired if Secured Party fails to obtain, perfect, or secure priority of any other security for the Indebtedness that is agreed to be given, or is given, by anyone else. Secured Party is not required to sue upon or otherwise enforce payment of the Indebtedness or any other security before exercising its rights under this Agreement.

10. **Notices.** Any notices or communications required or permitted under this Agreement shall be governed by the Note.

11. **Terminology; Conflicts.** Capitalized terms that are not otherwise defined in this Agreement shall have the meanings set forth in the Note. Other terms used in this Agreement shall have the meanings set forth in the Uniform Commercial Code as in effect in the State of Michigan on the date of this Agreement. In the event of a conflict between the terms of this Agreement and the Note, the terms of the Note control.

12. **Binding Effect.** This Agreement shall be binding upon and inure to the benefit of Debtor and Secured Party and their respective successors and assigns.

13. **Termination.** Upon the payment in full and termination of the Note and the Security Documents, this Agreement shall terminate and Secured Party shall execute, acknowledge and deliver to Debtor an instrument in writing, prepared by debtor, in recordable form releasing its liens and security interests in the Collateral under this Agreement.

**SECURED PARTY AND DEBTOR EACH IRREVOCABLY AND UNCONDITIONALLY WAIVES ITS RIGHT TO A TRIAL BY JURY IN ANY ACTION, INCLUDING A CLAIM, COUNTERCLAIM, CROSS-CLAIM OR THIRD-PARTY CLAIM ("CLAIM"), THAT IS BASED UPON, ARISES OUT OF OR RELATES TO THIS SECURITY AGREEMENT OR THE INDEBTEDNESS, INCLUDING, WITHOUT LIMITATION, ANY CLAIM THAT IS BASED UPON, ARISES OUT OF OR RELATES TO AN ACTION OR INACTION OF SECURED PARTY IN CONNECTION WITH AN ACCELERATION OF THE INDEBTEDNESS OR AN ENFORCEMENT OF SECURED PARTY'S SECURITY INTEREST IN THE COLLATERAL.**

[Signature page follows.]

Debtor and Secured Party have signed this Security Agreement as of the date stated on the first page.

**XG SCIENCES, INC.**

By \_\_\_\_\_

Its \_\_\_\_\_

**Debtor**

**THE DOW CHEMICAL COMPANY**

By \_\_\_\_\_

Its \_\_\_\_\_

**Secured Party**



## Exhibit A

### List of Intellectual Property

#### *Michigan State University License*

We have acquired an exclusive license for a number of inventions from Michigan State University. These rights are embodied in a Technology Licensing Agreement between XGS and Michigan State University dated July 27, 2007 and amended on May 24, 2010 and May 27, 2011, which owns the rights to all intellectual property resulting from research performed at the University. This Agreement gives us the exclusive worldwide rights to the subject intellectual property in its field. In exchange for the rights to the technology covered by this Agreement, we paid MSU an initial fee and agreed to pay ongoing royalties on the basis of material sold by us in future years. Under a previous version of the Licensing Agreement, we also awarded a small amount of common stock to MSU. The intellectual property covered by the Agreement is in various stages of development and legal protection. Because there is an active research program underway in this area, we also anticipate that we may add other MSU inventions to our Agreement. In some limited cases, depending on the source of research funds, other parties may have limited rights to use the inventions covered by these agreements. This is typical in the case of research funded by U.S. government agencies and is sometimes the case when research has been funded or partially funded by private corporations.

As of November 1, 2016 the following technologies were included in the MSU License Agreements with XGS and were being actively prosecuted at the U.S. Patent Office:

- U.S. Patent Application No. 12/587,645. “Electrically Conductive, Optically Transparent Films of Exfoliated Graphite NanoParticles & Methods of Making the Same”
- U.S. Patent Application No. 13/199,086. “PI Coupling Agents for Dispersion of Graphene NanoPlatelets in Polymers”, *allowed but not yet granted*
- **U.S. Patent 8,834,959.** “Method for the Preparation of Doped Single Graphene Sheets”

#### *Our Patent Filings*

In addition to the patent applications related to MSU technology discussed above, we also file for patents on some of our own inventions. As of November 1, 2016 the following patents and patent applications were being managed by us and our patent attorneys:

- U.S. Patent Application No. 15/155,558. “Process of Dry Milling Particulate Materials”
- U.S. Patent Application No. 13/686,961. “Single Mode Microwave Device for Producing Exfoliated Graphite”
- U.S. Patent Application No. 14/201,986. “Graphene Carbon Compositions”
- **U.S. Patent 9,472,354.** “Electrodes for Capacitors from Mixed Carbon Compositions”
- U.S. Patent Application No. 14/488,417. “Flexible Resin-Free Composites Containing Graphite & Fillers”

- U.S. Patent Application No. 14/079,057. “Silicon-Graphene Nanocomposites for Electrochemical Applications”
- U.S. Patent Application No. 62/060,319. “LiF-Embedded SiG Powder for Lithium-Ion Battery”
- U.S. Patent Application No. 62/284,797. “Thermal Interface Materials using Graphene Coated Fillers”
- U.S. Patent Application No. 15/082,363. “Heat Exchanger Elements and Devices”
- **U.S. Patent 9,206,051.** “Mechanical Exfoliation Apparatus”
- **U.S. Patent 8,715,720.** “A Cloud Mixer and Method of Minimizing Agglomeration of Particles” (method)
- **U.S. Patent 9,061,259 B2.** “A Cloud Mixer and Method of Minimizing Agglomeration of Particles” (product)
- **U.S. Patent 9,266,078,** “A Cloud Mixer and Method of Minimizing Agglomeration of Particles” (apparatus)
- U.S. Patent Application No. 14/931,236. “Mechanical Exfoliation Apparatus - Divisional”
- U.S. Patent Application No. 14/938,969. “Single Mode Microwave Device for Producing Exfoliated Graphite.”
- U.S. Patent Application No. 15/002,454. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/013,028. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/047,995. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/050,496. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/018,885. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 15/050,517. “Mechanical Exfoliation Apparatus – Divisional”
- U.S. Patent Application No. 62/303,612. “Graphene Based Coating on Lead Grid for Lead Acid Batteries”

### ***Global Patent Filings***

For each patent application filed in the US, we make a determination on the nature and value of the patent. For many of the applications filed in the US, additional filings are made in other countries such as the European Union, Japan, South Korea, China, Taiwan or other applicable countries. These filings and analyses are made on a case-by-case basis. Typically, patents that are defensive in nature are not filed abroad, while those that are protective of active XGS products or application areas are filed in relevant countries abroad. Granted/allowed patents only listed here.

- **China Patent No. ZL 2012 8 0065778.X.** “Single Mode Microwave Device for Producing Exfoliated Graphite”
- **China Patent No. ZL 2012 8 0052188.3.** “Cloud Mixer and Method of Minimizing Agglomeration of Particulates”
- China foreign filing of U.S. Patent 9,206,051 “Mechanical Exfoliation Apparatus” *allowed but not yet granted*
- Taiwan foreign filing of U.S. Patent Application No. 14/203,608. “Electrodes for Capacitors from Mixed Carbon Compositions” *allowed but not yet granted*

### ***Trademarks***

We have filed for or been granted registered trademarks as follows:

- “xGnP<sup>®</sup>,” which is the brand name by which we designate our graphene nanoplatelets.
- The corporate logo “XG Sciences” (design logo plus words)
- The tag line “The Material Difference” which is used in conjunction with the corporate logo
- The product designation “XG Leaf<sup>®</sup>”, which is the brand name for our family of sheet products.
- The product designation “XG SiG<sup>™</sup>”, which is the brand name for our battery anode materials.
- The product designation “XG TIM<sup>™</sup>”, which is the brand name for our thermal interface materials.

**INTELLECTUAL PROPERTY SECURITY AGREEMENT**

**Intellectual Property Security Agreement**, dated as of \_\_\_\_\_, by XG Sciences IP, LLC, a Michigan limited liability company, of 3101 Grand Oak Drive, Lansing, Michigan 48911 and XG Sciences, Inc., a Michigan corporation, of 3101 Grand Oak Drive, Lansing, Michigan 48911 (“**Debtors**”), in favor of The Dow Chemical Company, of 2030 Dow Center, Midland, Michigan 48674 for itself and as agent for the benefit of all other affiliates of Secured Party (each, an “**Affiliate**”) pursuant to the Security Agreement (in such capacity, “**Secured Party**”).

WITNESSETH:

WHEREAS, the Debtors are parties to Security Agreements dated as of \_\_\_\_\_ (the “**Security Agreements**”), in favor of the Secured Party pursuant to which the Debtors are required to execute and deliver this Intellectual Property Security Agreement;

NOW, THEREFORE, in consideration of the premises, the Debtors hereby agree with the Secured Party as follows:

SECTION 1. Defined Terms. Unless otherwise defined herein, terms defined in the Security Agreements and used herein have the meaning given to them in the Security Agreements.

SECTION 2. Grant of Security Interest in Intellectual Property Collateral. The Debtors hereby pledge and grant to the Secured Party a lien on and security interest in and to all of its right, title and interest in, to and under all the following Collateral of the Debtors:

- (a) Patents of Debtors listed on Schedule A attached hereto ;
- (b) Trademarks of Debtors listed on Schedule B attached hereto;
- (c) all proceeds of any and all of the foregoing; and
- (d) all future patent and trademark application filings in the United States or any other country, of which Debtors shall notify Secured Party on a regular basis, but no less frequently than annually, and descriptions of which Debtor shall promptly add to Schedule A attached hereto or Schedule B attached hereto, as appropriate.

SECTION 3. Security Agreement. The security interest granted pursuant to this Intellectual Property Security Agreement is granted in conjunction with the security interest granted to the Secured Party pursuant to the Security Agreements and Debtors hereby acknowledge and affirm that the rights and remedies of the Secured Party with respect to the security interest in the Patents and Trademarks made and granted hereby are more fully set forth in the Security Agreements, the terms and provisions of which are incorporated by reference herein as if fully set forth herein. In the event that any provision of this Intellectual Property Security Agreement is deemed to conflict with the Security Agreements, the provisions of the Security Agreements shall control unless the Secured Party shall otherwise determine.

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SECTION 4. Termination. Upon the payment in full and termination of the Security Agreements, the Secured Party shall execute, acknowledge and deliver to the Debtors an instrument in writing, prepared by debtors, in recordable form releasing the collateral pledge, grant, assignment, lien and security interest in the Patents and Trademarks under this Intellectual Property Security Agreement.

SECTION 5. Counterparts. This Intellectual Property Security Agreement may be executed in any number of counterparts, all of which constitute one and the same instrument, and any party hereto may execute this Intellectual Property Security Agreement by signing and delivering one or more counterparts.

SECTION 6. Governing Law. This Intellectual Property Security Agreement and the transactions contemplated hereby, and all disputes between the parties under or relating to this Intellectual Property Security Agreement or the facts or circumstances leading to its execution, whether in contract, tort or otherwise, shall be construed in accordance with and governed by the laws (including statutes of limitation) of the State of Michigan, without regard to conflict of law principles that would require the application of laws of another jurisdiction.

[Signature page follows.]

IN WITNESS WHEREOF, the Debtors have caused this Intellectual Property Security Agreement to be executed and delivered by its duly authorized officers as of the date first set forth above.

**XG SCIENCES IP, LLP**

By \_\_\_\_\_

Its \_\_\_\_\_

**Debtor**

**XG SCIENCES, INC.**

By \_\_\_\_\_

Its \_\_\_\_\_

**Debtor**

**Accepted and Agreed:**

**THE DOW CHEMICAL COMPANY**

By \_\_\_\_\_

Its \_\_\_\_\_

**Secured Party**

**SCHEDULE A  
TO  
INTELLECTUAL PROPERTY SECURITY AGREEMENT  
GRANTED PATENTS AND PATENT APPLICATIONS**

**U.S. Granted Patents**

<b>Patent No.</b>	<b>Title</b>
9,472,354	Electrodes for Capacitors from Mixed Carbon Compositions
9,206,051	Mechanical Exfoliation Apparatus
8,715,720	A Cloud Mixer and Method of Minimizing Agglomeration of Particles
9,061,259	A Cloud Mixer and Method of Minimizing Agglomeration of Particles
9,266,078	A Cloud Mixer and Method of Minimizing Agglomeration of Particles

**U.S. Patent Applications**

<b>Application No.</b>	<b>Title</b>
15/155,558	Process of Dry Milling Particulate Materials
13/686,961	Single Mode Microwave Device for Producing Exfoliated Graphite
14/201,986	Graphene Carbon Compositions
14/488,417	Flexible Resin-Free Composites Containing Graphite & Fillers
14/079,057	Silicon-Graphene Nanocomposites for Electrochemical Applications
62/060,319	LiF-Embedded SiG Powder for Lithium-Ion Battery
62/284,797	Thermal Interface Materials Using Graphene Coated Fillers
15/082,363	Heat Exchanger Elements and Devices
14/931,236	Mechanical Exfoliation Apparatus
14/938,969	Single Mode Microwave Device for Producing Exfoliated Graphite
15/002,454	Mechanical Exfoliation Apparatus
15/013,028	Mechanical Exfoliation Apparatus
15/047,995	Mechanical Exfoliation Apparatus
15/050,496	Mechanical Exfoliation Apparatus
15/018,885	Mechanical Exfoliation Apparatus
15/050,517	Mechanical Exfoliation Apparatus
62/303,612	Graphene Based Coating on Lead Grid for Lead Acid Batteries



**Foreign Granted Patents**

<u>Country</u>	<u>Patent No.</u>	<u>Title</u>
China	ZL 2012 8 0065778.X	Single Mode Microwave Device for Producing Exfoliated Graphite
China	ZL 2012 8 0052188.3	Cloud Mixer and Method of Minimizing Agglomeration of Particulates

**Foreign Patent Applications**

<u>Country</u>	<u>Application No.</u>	<u>Title</u>
Taiwan	Based on U.S. Patent Application No. 14/203,608	Electrodes for Capacitors from Mixed Carbon Compositions
China	Based on U.S. Patent No. 9,206,051	Mechanical Exfoliation Apparatus

**SCHEDULE B  
TO  
INTELLECTUAL PROPERTY SECURITY AGREEMENT  
REGISTERED TRADEMARKS AND TRADEMARK APPLICATIONS**

**Registered Trademarks**

<u>Country</u>	<u>Mark</u>	<u>Registration No.</u>
United States	XG LEAF	4652615
United States	XG SCIENCES THE MATERIAL DIFFERENCE	4316435
United States	XG SCIENCES	4001356
United States	XGNP	3493218

**Trademark Applications**

<u>Country</u>	<u>Mark</u>	<u>Application No.</u>
United States	XG TIM	87153373
United States	XG SIG	87153369
United States	GNP	87089742

## PLEDGE AGREEMENT

**THIS PLEDGE AGREEMENT** is made as of \_\_\_\_\_ by and XG Sciences, Inc., a Michigan corporation, of 3101 Grand Oak Drive, Lansing, Michigan 48911 (“**Debtor**”), XG Sciences IP, LLC, a Michigan limited liability company, of 3101 Grand Oak Drive, Lansing, Michigan 48911 (“**XG, LLC**”) and The Dow Chemical Company, of 2030 Dow Center, Midland, Michigan 48674 (“**Secured Party**”), for itself and as agent for the benefit of all other affiliates of Secured Party (each, an “**Affiliate**”), pursuant to a certain Draw Loan Note and Agreement (as amended, supplemented or restated or otherwise modified from time to time, “**Note**”) dated as of December 7, 2016, between Secured Party and Debtor.

1. **Grant of Security Interest.** Debtor grants to Secured Party a security interest in all of Debtor’s membership interests in XG, LLC and in (1) all securities, equity interests, membership interests, security entitlements and other financial assets, instruments and other property (“**Additional Property**”) that Debtor at any time receives or is entitled to receive by reason of a dividend, equity split, recapitalization, reclassification, merger, consolidation, liquidation, exchange, renewal, redemption, substitution or other transaction regarding the above-described property or regarding any Additional Property, (2) all interest and other distributions that Debtor at any time receives or is entitled to receive in respect of any of the above-described property or any Additional Property and (3) all proceeds of the foregoing. The foregoing properties and proceeds are referred to in this Agreement as “**Collateral**.”

2. **Indebtedness Secured.** Debtor gives this security interest to secure payment and performance of **ALL OBLIGATIONS AND INDEBTEDNESS THAT DEBTOR NOW AND IN THE FUTURE OWES TO SECURED PARTY AND ANY AFFILIATE** under this Agreement, and the Note, as well as under all other agreements, instruments and documents that Debtor has signed or in the future signs relating thereto, and all extensions or renewals of that indebtedness and obligations.

The indebtedness and obligations that this security interest secures are collectively called the “**Indebtedness**.”

3. **Warranties and Representations.** Debtor represents and warrants to, and agrees with, Secured Party as follows:

(a) Debtor owns the Collateral and has the unqualified right to transfer the Collateral to Secured Party, and it is not subject to a lien, encumbrance or other claim in favor of a third party, or to a right or option of a third party to acquire Collateral.

(b) Each instrument, security and other financial asset included in the Collateral is genuine and what it purports to be and has not been materially altered. Each security included in the Collateral is validly issued, fully paid and not subject to calls or assessments.

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(c) Debtor's address on the first page of this Agreement is the location of Debtor's chief executive office.

(d) Debtor is a corporation and is incorporated and validly existing in good standing under the laws of the State of Michigan; Debtor has full power and authority to enter into and perform its obligations under this Agreement; the signing, delivery and performance of this Agreement have been duly authorized by all necessary action of Debtor's shareholders and directors and will not violate XG, LLC's operating agreement.

(e) Debtor at all times during the terms of this Agreement will own 100% of the outstanding membership interests of XG, LLC.

4. **Agreements of Debtor.** Debtor agrees that:

(a) Debtor must not sell, lease, transfer or assign Collateral or an interest in Collateral or permit Collateral to be transferred by operation of law.

(b) Debtor must pay promptly when due all taxes and assessments upon the Collateral or for its use or ownership.

(c) Debtor must furnish to Secured Party all information regarding the Collateral that Secured Party requests and must allow Secured Party at any reasonable time to inspect Debtor's records regarding the Collateral.

(d) Debtor must immediately notify Secured Party in writing of a change in Debtor's name, identity or corporate structure and of a change in the location of Debtor's chief executive office.

5. **Delivery of Certificates and Instruments for Collateral.** Debtor agrees that:

(a) Concurrently with the execution of this Agreement, Debtor shall pledge and deposit with the Secured Party all certificates or instruments, if any, representing any of the Collateral at the time owned by Debtor and subject to the security interest hereof, accompanied by undated powers duly executed in blank by Debtor or such other instruments of transfer as are acceptable to the Secured Party.

(b) If Debtor shall acquire (by purchase, conversion, exchange, distribution or otherwise) any additional Collateral, at any time or from time to time after the date hereof which is or are intended to be subject to the security interest hereof and which is or are represented by certificates or instruments, Debtor shall (i) promptly pledge and deposit with the Secured Party all such certificates or instruments, accompanied by undated powers duly executed in blank by Debtor or such other instruments of transfer as are acceptable to the Secured Party and (ii) promptly thereafter deliver to the Secured Party a certificate executed by an authorized officer of Debtor describing such additional Collateral and certifying that the same have been duly pledged with the Secured Party hereunder.

(c) Without limitation of any other provision of this Agreement, if any of the Collateral of Debtor (whether now owned or hereafter acquired) which is intended to be subjected to the security interests hereof is an uncertificated security, Debtor shall, as soon as reasonably practicable after closing, cause XG, LLC to create a registration book for the registration of each such “uncertificated security” and duly register Debtor as the owner and note the pledge in favor of Secured Party in a manner that provides control with respect to such uncertificated security. Debtor further agrees to take such actions as the Secured Party deems reasonably necessary or desirable to effect the foregoing and to permit the Secured Party to exercise any of its rights and remedies hereunder in respect thereof, and agrees to provide an opinion of counsel reasonably satisfactory to the Secured Party with respect to any such pledge of any of the securities described above, promptly upon the request of the Secured Party. Debtor further agrees not to amend the operating agreement of XG, LLC in a manner that results in an “opt out” of Article 8 of the Michigan Uniform Commercial Code.

**6. Secured Party’s Rights.**

(a) If Debtor fails to perform an obligation of Debtor under this Agreement, then Secured Party may, without giving Debtor notice, to or obtaining Debtor’s consent, perform that obligation on Debtor’s behalf. Debtor must reimburse Secured Party on demand for each expense that Secured Party incurs in performing an obligation and must pay to Secured Party interest on the expense, from the date on which Secured Party incurred the expense, at an annual rate equal to 5 percent.

Secured Party is not required to perform an obligation that Debtor has failed to perform. If Secured Party does so, then that will not be a waiver of Secured Party’s right to declare the Indebtedness immediately due and payable because of Debtor’s failure to perform.

(b) With respect to the custody and preservation of Collateral in its possession, Secured Party’s only duty will be to use reasonable care. Secured Party will not have an obligation to take steps necessary to preserve rights against prior parties. Secured Party will not have a duty to sell Collateral even if its value declines. Secured Party must not have an obligation to exercise, or to notify Debtor of, a conversion or redemption right or to take similar action with regard to any Collateral.

(c) Each of Debtor and XG, LLC agrees to comply with all instructions originated by Secured Party directing it to transfer, redeem or otherwise act with respect to the Collateral ("**Instructions**"), subject to this Section 6(c) and the other provisions of this Agreement. Prior to the occurrence of an Event of Default, Instructions shall require the consent of Debtor. After the occurrence of an Event of Default, Instructions shall not require the consent of Debtor except to the extent required by MCL 440.9620 (Acceptance of collateral in full or partial satisfaction of obligation; compulsory disposition of collateral).

7. **Default and Acceleration.** If any of the following (each an "**Event of Default**") occurs, then the Indebtedness will, at Secured Party's option, become immediately due and payable, without notice or demand to Debtor:

(a) If an Event of Default shall occur under and as defined in the Note, including any default in the payment or performance of all or part of the Indebtedness, when and as it is due and payable subject to applicable grace periods.

(b) If Debtor fails to perform any other material obligation, covenant or agreement of Debtor under this Agreement or under another security agreement, loan agreement, mortgage, assignment, guaranty or other agreement that now or in the future secures or relates to the Indebtedness ("**Security Documents**").

(c) If a warranty, representation or other statement that has been or in the future is made to Secured Party by Debtor, XG, LLC, or by a guarantor of all or part of the Indebtedness ("**Guarantor**") in this Agreement or in a Security Document, shall have been false in a material respect when made or furnished.

(d) If a lien, security interest or other encumbrance or a writ of attachment, garnishment, levy, execution or other legal process is at any time issued against or placed upon the Collateral and is not terminated or released within 30 days.

(e) If Debtor or a Guarantor dissolves, becomes insolvent, or makes an assignment for the benefit of creditors.

(f) If a guaranty that now or in the future secures payment or performance of the Indebtedness is terminated or limited, without the written consent or agreement of Secured Party.

(g) If the issuer or obligor on the Collateral materially defaults in an obligation of the issuer or obligor under the terms of that Collateral or under an agreement that gives Secured Party control over the Collateral or if a warranty or representation made by the issuer or obligor in such an agreement shall have been false in a material respect or if a petition for relief is filed by or against the issuer or obligor under the federal Bankruptcy Code.

(h) If a securities intermediary materially defaults in the performance of an obligation under an existing or future agreement that gives Secured Party control over Collateral or if a warranty or representation that the securities intermediary in any such agreement shall have been false in a material respect when made or if a petition for relief is filed by or against the securities intermediary under the federal Bankruptcy Code.

(i) If an Event of Default is capable of being cured, then Debtor may cure the same during the thirty-day period that begins on the date on which Debtor receives notice from Secured Party or otherwise has actual knowledge, of the event (the “**Cure Period**”). An Event of Default will not be deemed to have occurred as a result of an event during the Cure Period for that event or, if the event is cured during the Cure Period, thereafter.

If a voluntary or involuntary case in bankruptcy, receivership or insolvency is begun by or against Debtor or any Guarantor, and not terminated or released within 30 days, then the entire Indebtedness will automatically become immediately due and payable, without notice or demand. The Indebtedness also may become immediately due and payable under the terms of a note that at any time evidences the Indebtedness or of a Security Document that has been or in the future is entered into between Debtor and Secured Party.

8. **Remedies.** Secured Party shall have all of the rights and remedies of a secured party under applicable law. All rights and remedies of Secured Party are cumulative and may be exercised from time to time. Without limiting those rights and remedies, upon the occurrence of an Event of Default (subject to applicable cure periods), then:

(a) Subject to *Section 6(a)* above, Secured Party shall have the right, but no obligation, without notice to Debtor and without Debtor’s consent, to vote or give consent with regard to any of the collateral that consists of securities. Secured Party will have the right, but no obligation, (1) to revoke and terminate rights that Secured Party shall have given to Debtor, or permitted Debtor to retain, to control any uncertificated security, security entitlement or securities account that is included in the Collateral and (2) to exercise exclusive control over the Collateral.

(c) Secured Party will have the right, but no obligation, to exercise and enforce Debtor's rights and remedies with respect to the Collateral, including, but not limited to, the right to demand, enforce payment of, collect and receive all dividends, interest, principal payments and other sums that are at any time owing with respect to any of the Collateral and to apply the sums to the Indebtedness in the manner that Secured Party reasonably determines.

(d) Secured Party may sell or otherwise dispose of the Collateral in a commercially reasonable manner. A notification that Secured Party is required to give to Debtor regarding any sale or other disposition of Collateral will be considered reasonable if Secured Party mails or otherwise sends or delivers it to Debtor at least ten (10) days before the sale or other disposition.

(e) Secured Party will apply the proceeds of a collection or disposition of Collateral first to Secured Party's attorney fees and expenses, as provided in *Paragraph 8* of this Agreement, and then to the Indebtedness, in the manner that Secured Party determines, and Debtor will be liable for any deficiency remaining.

All rights and remedies of Secured Party are cumulative and may be exercised from time to time.

9. **Expenses.** Debtor must reimburse Secured Party on demand for all attorney fees and other expenses that Secured Party incurs in preparing and perfecting (subject to the \$25,000 limitation in the Note), and protecting and enforcing Secured Party's rights under this Agreement. This includes fees and expenses incurred in trying to obtain possession of Collateral from Debtor, a trustee or receiver in bankruptcy or another person. Secured Party may apply proceeds of collection or disposition of Collateral to Secured Party's reasonable attorney fees and other expenses.

10. **Amendments and Waivers.** A provision of this Agreement may not be modified or waived except by a written agreement signed by Secured Party and Debtor. Secured Party will continue to have all of Secured Party's rights under this Agreement even if Secured Party does not fully and promptly exercise them on all occasions. Debtor waives all defenses based on suretyship or impairment of collateral. Without limiting the generality of the preceding sentence, (a) Secured Party may, at Secured Party's option, waive a default, defer an action on a default; extend or modify the time or manner of payment of the Indebtedness or waive or modify a term or condition relating to the Indebtedness; release Collateral or other security for the Indebtedness; release anyone that is liable for the Indebtedness, including Debtor or a Guarantor; or make advances or other extensions of credit secured by this Agreement; all without giving Debtor notice or obtaining Debtor's consent; and any of those actions by Secured Party shall not release or impair Secured Party's security interest in the Collateral or Debtor's obligations under this Agreement, (b) Secured Party's security interest in the Collateral and Debtor's obligations under this Agreement will not be released or impaired if Secured Party fails to obtain, perfect or secure priority of, other security for the Indebtedness that anyone else gives or agrees to give and (c) Secured Party is not required to sue upon or otherwise enforce payment of the Indebtedness or other security before exercising Secured Party's rights under this Agreement.



11. **Notices.** A notice to Debtor or Secured Party will be considered to have been given if and when it is mailed, with postage prepaid, to the address of Debtor or Secured Party on the first page of this Agreement or if and when it is delivered personally.

12. **Terminology; Conflicts.** Capitalized terms that are not otherwise defined in this Agreement shall have the meanings set forth in the Note. Other terms used in this Agreement shall have the meanings set forth in the Uniform Commercial Code as in effect in the State of Michigan on the date of this Agreement. In the event of a conflict between the terms of this Agreement and the Note, the terms of the Note will control.

13. **Binding Effect.** This Agreement will be binding upon and inure to the benefit of Debtor and Secured Party and their successors and assigns.

14. **Termination.** Upon the payment in full and termination of the Note and the Security Documents, this Agreement shall terminate and Secured Party shall execute, acknowledge and deliver to Debtor an instrument in writing, prepared by Debtor, in recordable form releasing its liens and security interests in the Collateral under this Agreement.

[Signature page follows.]

**SECURED PARTY AND DEBTOR EACH IRREVOCABLY AND UNCONDITIONALLY WAIVES ITS, HIS OR HER RIGHT TO A TRIAL BY JURY IN ANY ACTION, INCLUDING ANY CLAIM, COUNTERCLAIM, CROSS-CLAIM OR THIRD-PARTY CLAIM (“CLAIM”), THAT IS BASED UPON, ARISES OUT OF OR RELATES TO THIS PLEDGE AGREEMENT OR THE INDEBTEDNESS, INCLUDING, WITHOUT LIMITATION, ANY CLAIM THAT IS BASED UPON, ARISES OUT OF OR RELATES TO AN ACTION OR INACTION OF SECURED PARTY IN CONNECTION WITH AN ACCELERATION OF THE INDEBTEDNESS OR AN ENFORCEMENT OF SECURED PARTY’S SECURITY INTEREST IN THE COLLATERAL.**

Debtor and Secured Party have signed this Pledge Agreement as of the date stated on the first page.

**XG SCIENCES, INC.**

By \_\_\_\_\_

Its \_\_\_\_\_

**DEBTOR**

**XG SCIENCES IP, LLC**

By \_\_\_\_\_

Its \_\_\_\_\_

**XG, LLC**

**THE DOW CHEMICAL COMPANY**

By \_\_\_\_\_

Its \_\_\_\_\_

**SECURED PARTY**