

## **Seth Adrian Miller, Ph.D.**

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(720) 432-4332 seth@heronscientific.com

### **MISSION**

Through Heron Scientific, I offer fractional CTO services, innovation consulting, and litigation support, leveraging my expertise in developing new materials and device technologies in batteries and display technology.

### **EXPERIENCE SUMMARY**

PhD who spans the gaps between technology, market, and finance in energy storage and display technologies. Have brought multiple invention to market, and understand how to structure an R&D program to efficiently reduce risk and increase investment value. Charismatic speaker, with experience leading and moderating brainstorming and innovation workshops. Capable of explaining complex technical concepts in a language accessible to business leaders, investors, lawyers, or juries.

### **SELECTED ACCOMPLISHMENTS**

- Inventor on 94 issued US patents, across a wide range of fields including batteries, nanomaterials, surface chemistry, and electronic and optical systems.
- Invented multiple technologies core to the performance of Texas Instruments DLP display technology. These innovations have shipped on multiple billion dollars of TI product, and awareness of and enhancements to reliability averted hundreds of millions of dollars in potential recalls.
- Testified as technical expert at trial eight times, and retained twenty one times, supporting cases including Tesla v Rivian; LG v SK; Pictiva v Samsung; and shareholders v QuantumScape.

### **PROFESSIONAL EXPERIENCE**

#### **Heron Scientific Inc., Boulder, CO**

2008 – Present

President

Over the last decade, I have acted as a technology strategy consultant to startups and Fortune 500 clients, and as a testifying expert in litigation at the ITC, US District Court, and California State Court.

Examples include:

- Consulting to lithium ion, sodium ion, and zinc-bromine battery companies on performance and cost competitiveness, including bottoms-up cost modeling
- Run ideation sessions and draft disclosures for startup companies developing technologies in thermal energy storage, biometric sensing, hydrogen peroxide electrochemical cells, and others
- For a large multinational, developed roadmaps for next generation energy storage and harvesting technology for wearables. This included analyzing performance, form factor, materials supply chain, and capability to scale
- Drafted R&D and product launch roadmap for a \$70M/yr SME to respond to unexpected regulatory changes, including developing de novo mathematical models of their performance, and prioritization of their product upgrades
- Analysis of the future of non-destructive test tech for a \$700M public company, reporting directly to the CEO
- Diligence for venture funds and private equity on energy storage, 3D display technology, VR/AR, micromachines, transportation, and opto-electronic materials including technical assessment, scalability, and market fit
- Retained as technical expert in litigation, including patent infringement, trade secret theft, false advertising, breach of contract, and personal libel (around technical claims). Testified at trial/hearings eight times.
- In IP matters I have over a decade of experience in expert witness testimony, prior art and invalidity searching, IPR, performing IP diligence for investors, reviews of portfolios for large IP owners, and drafting IP and technology landscapes.

**E Source, Inc** (previously Cairn Energy Research Associates) 2016-Present  
Electrochemistry Research Manager, Consulting expert  
Cost modeling, performance benchmarking, and risk assessment of new battery and supercapacitor technologies

**Light Polymers**, Santa Clara, CA 2025-Present  
Chief Technology Officer (fractional)  
Lead technology development to optimize market fit of lyotropic liquid crystal polarizer for display applications

**Stasis Energy Group**, Rancho Cucamonga, CA 2024-2025  
Chief Technology Officer (fractional)  
Led effort to model the technical and financial performance of in-building thermal energy storage, including acceptance of new-to-the-world technology for state subsidy by the California SGIP program

**Xinova**, Seattle, WA 2018 - 2020  
Managing Director, Innovation Banking and Development  
Xinova helped companies find and scale technology growth through open requests to an inventor network; strategic planning to help clients take advantage of technology disruption; and access to capital to fund product development

**Technology Reserve, Inc.**, Vancouver, BC, Canada 2014 - 2016  
Chief Technologist / Technology Advisor  
Helped multinational organizations out-license technologies to small and medium-sized businesses (SMEs).

**ClearMark Systems, LLC**, Longmont, CO 2013 – 2015  
CEO  
Co-founded and raised \$1.1.M from DARPA for a software company developing anti-counterfeiting and forensics analysis software for the semiconductor supply chain.

**I2C Solutions, LLC**, Louisville, CO 2012 – 2013  
Chief Technology Officer  
Led proposal-writing and technical direction for an SBIR-focused research company. Principal Investigator on an Army SBIR to develop graphene solar cells

**EverSealed Windows, Inc.**, CO 2010 – 2012  
Chief Scientific Officer  
Directed development of seal integrity, thermal performance, and stand-off structure as part of a Department of Energy grant to develop vacuum-sealed window technology. Later returned as CEO, selling off the company's patent portfolio in bankruptcy

**Rocky Mountain Section of the Materials Research Society**, Longmont, CO 2008 – 2015  
Founder, President  
Founded and led non-profit that hosts technical talks, short courses, and networking events for the materials science community in the Front Range of Colorado.

**University of Colorado, Boulder**, Boulder, CO 2009 - 2014  
Research Faculty  
Collaboration with Prof. Doug Gin, Chemical Engineering. Consultant to Prof. Steve George, Chemistry. Consultant to Prof. Jill DuPre, ATLAS Institute.

**Fluonic, Inc**, Boulder, Colorado 2008 – 2013

**Chief Scientific Officer**

Led development of a microfluidic flow sensor for medical infusion. The sensor passed a short burst of electricity through a medical fluid to oxidize/reduce water, creating a localized concentration of acid/base which was sensed downstream.

**Zettacore, Inc.,** Englewood, CO

2005 – 2008

**Principal Polymer Chemist**

Developed a new class of high strength gelled liquid electrolyte for a semiconductor memory device that stored bits in the redox states of porphyrin monolayers and multilayers. Raised \$500,000 in grant support for Zettacore's successor company, eSionic, to develop the technology further.

**Texas Instruments Inc.,** DLP Products, Dallas, TX

2000 – 2005

**Process Development, Packaging Development, Technical Manager**

In 2001 elected as Group Member, Technical Staff, fastest in division history. Developed new technical solutions to dramatically improve the optical contrast ratio of DLP displays. Identified an unanticipated photodegradation mechanism in fielded devices, and led the team to develop a remedy that shipped as a "free upgrade" <9 months from project inception. Led teams of up to 20 engineers in integration and qualification of new anti-adhesion coatings.

**EDUCATION**

**University of California, Berkeley, Berkeley, CA**

1998-2000

**Post-Doctoral Researcher, Dept of Chemistry, Lab of Prof. Doug Gin**

Synthesis and testing of nanostructured organic polymers used as chemical catalysts

**California Institute of Technology, Pasadena, CA**

1992-1998

**Ph. D., Chemistry, Lab of Prof. Denis Dougherty**

Design, synthesis, and test of stable organic radicals (small molecules) which crystallize into magnets. Design and synthesis of new semiconducting and conducting polymers.

**Carleton College, Northfield, MN B.A.,**

1988-1992

**Chemistry, with distinction**

**LITIGATION HISTORY (AS TECHNICAL EXPERT)**

Retailed as an expert 21 times, and testified in eight cases, and been deposed in eight.

- Court testimony includes two ITC patent cases, two patent cases in front of a jury, one false advertising case (NY District Court), one trade secret matter (NJ Superior Court, jury), one contract arbitration hearing (WIPO), and a personal libel case (California state, jury).

Experience in high stakes litigation, including:

- Testifying as a battery expert in a patent suit brought by SK Innovation against LG Energy Solutions, as part of a broader dispute between the two companies that was ultimately settled for \$1.8 billion
- Testifying as an expert in a five-patent, \$1.2B case on OLED technology in the Eastern District of Texas
- Drafted 300 page expert report that led to immediate \$50M settlement of a shareholder lawsuit

**Case:**            Pictiva Displays International Ltd. v. SAMSUNG ELECTRONICS CO., LTD. et al, No. 2:2023cv00495 - Document 525 (E.D. Tex. 2025)

**Parties:**            <Same>

**Lead Atty:**            Melissa Bailey, Sean Pak

**Firm:**                Quinn Emmanuel

**Year:** 2025  
**Role:** Deposed, testified on behalf of Samsung on one of five patents under dispute  
**Outcome:** [Verdict of \\$190M for Pictiva](#) on two patents; no infringement on patent I supported

**Case:** <topic confidential, personal injury case>  
**Parties:** <client confidential>  
**Lead Atty:** <client confidential>  
**Firm:** Buckingham Vega  
**Year:** 2025  
**Role:** Testifying expert  
**Outcome:** Ongoing

**Case:** *Certain Photovoltaic Connectors and Components Thereof, ITC 337-TA-1365*  
**Parties:** Shoals Technologies Group, LLC vs Hikam America, Inc., etc.  
**Lead Atty:** Daniel Ehrlich  
**Firm:** Maier & Maier  
**Year:** 2023  
**Role:** Testifying expert, deposed  
**Outcome:** [Specific patent claims dismissed](#)

**Case:** *QuantumScape Securities Class Action Litigation*  
**Parties:** QuantumScape v Plaintiffs Frank Fish, Kathy Stark, Mary Cranny and the Class  
**Lead Atty:** Nicholas Porritt  
**Firm:** Levi & Korsinsky, LLP  
**Year:** 2023  
**Role:** Testifying expert  
**Outcome:** [Settled](#)

**Case:** *Ningde Amperex Technology Limited v. Zhuhai CosMX Battery Co., Ltd., 2:22-cv-00232-JRG (E.D. Tex.)*  
**Parties:** <Same>  
**Lead Atty:** Jeffrey Totten  
**Firm:** Finnegan  
**Year:** 2023  
**Role:** Testifying expert on indefiniteness, deposed  
**Outcome:** [Judgment to ATL](#)

**Case:** Tesla v Rivian  
**Parties:** <Same>  
**Lead Atty:** Darryl Woo  
**Firm:** Goodwin Procter LLP  
**Year:** 2023  
**Role:** Testifying expert  
**Outcome:** [Settled](#)

**Case:** Oxygenator Water Technologies, Inc. v. Tennant Company  
**Parties:** <Same>  
**Lead Atty:** Nathan Louwaige  
**Firm:** Carlson Caspers  
**Year:** 2022  
**Role:** Testifying expert, deposed, testified in front of jury  
**Outcome:** Judgement in favor of Oxygenator Water Technologies

**Case:** <IPR, display technology, Confidential>  
**Parties:** <Confidential>  
**Lead Atty:** Philip Irwin  
**Firm:** Covington Burlington  
**Year:** 2022  
**Role:** Testifying expert  
**Outcome:** Petition abandoned

**Case:** <IPR, display technology, Confidential>  
**Parties:** <Confidential>  
**Lead Atty:** Kaveh Saba  
**Firm:** Covington Burlington  
**Year:** 2022  
**Role:** Testifying expert  
**Outcome:** Petition abandoned

**Case:** <Patent litigation, optical materials, Confidential>  
**Parties:** <Confidential>  
**Lead Atty:** Matt Holohan  
**Firm:** Sheridan Ross  
**Year:** 2022  
**Role:** Testifying expert  
**Outcome:** Settled

**Case:** <Arbitration, breach of contract, Confidential>  
**Parties:** <Confidential>  
**Lead Atty:** Alicia Hickok  
**Firm:** Faegre Drinker  
**Year:** 2022  
**Role:** Testifying expert, testified at hearing  
**Outcome:** Judgment, confidential

**Case:** <IPR, optical materials Confidential>  
**Parties:** <Confidential>  
**Lead Atty:** Cody Reeves  
**Firm:** Covington  
**Year:** 2021-2022  
**Role:** Consulting expert  
**Outcome:** Petition abandoned

**Case:** <Business defamation, medical device, Confidential>  
**Parties:** <Confidential>  
**Lead Atty:** Colin Cabral  
**Firm:** Proskauer Rose  
**Year:** 2021-2022  
**Role:** Consulting expert, performed and coordinated analyses  
**Outcome:** Ongoing

**Case:** Certain pouch-type battery cells, battery modules, and battery packs, components thereof, and products containing the same, ITC 337-1179

**Parties:** SK Innovation v LG Chemical  
**Lead Atty:** Heng Gong  
**Firm:** Covington  
**Year:** 2019-2021  
**Role:** Testifying expert, coordinated physical analysis, deposed, testified at trial  
**Outcome:** Settled  
**LINK:** [https://www.usitc.gov/press\\_room/news\\_release/2019/er100411175.htm](https://www.usitc.gov/press_room/news_release/2019/er100411175.htm)

**Case:** <patent infringement, chemicals, Confidential>  
**Parties:** As stated  
**Lead Atty:** Baldassare Vinti  
**Firm:** Proskauer Rose  
**Year:** 2020  
**Role:** Testifying expert, coordinated chemical analysis  
**Outcome:** Settled

**Case:** Absorption Pharmaceuticals v. Reckitt Benckiser, U.S. District Court for the District of New Jersey, No. 2:17-cv-12872  
**Parties:** As stated  
**Lead Atty:** Colin Cabral  
**Firm:** Proskauer Rose  
**Year:** 2018-2022  
**Role:** Testifying expert, coordinated chemical analysis, deposed, testified at jury trial  
**Outcome:** [Jury decision for Reckitt](#)

**Case:** Prem Bikkina v Jagan Mahadevan, No. A156582 (Cal. Ct. App. Jan. 14, 2020)  
**Parties:** As stated  
**Lead Atty:** Jeremy Tissot  
**Firm:** Tissot Law  
**Year:** 2017  
**Role:** Testifying expert on accuracy of published research, deposed, testified at trial  
**Outcome:** Judgement in favor of Bikkina

**Case:** Proposed class action suit, false advertising, Clorox  
**Parties:** <class> v Clorox  
**Lead Atty:** Mark Dearman  
**Firm:** RGRD Law  
**Year:** 2014  
**Role:** Retained expert  
**Outcome:** Case dismissed on legal grounds

**Case:** Unnamed, patent infringement  
**Parties:** University of Michigan v Honda  
**Lead Atty:** Patrick Neidemeier  
**Firm:** Proskauer Rose  
**Year:** 2013  
**Role:** Retained expert, coordinated chemical analysis  
**Outcome:** Case dismissed on legal grounds

**Case:** Unnamed, patent infringement  
**Parties:** Analog Devices v Knowles

**Lead Atty:** Nathan Harris  
**Firm:** Proskauer Rose  
**Year:** 2012  
**Role:** Retained expert on case stemming from "Certain MEMS Devices and Products Containing Same", above  
**Outcome:** Settled

**Case:** Church & Dwight Co. v. The Clorox Company, No. 11 Civ. 1865(JSR)  
**Parties:** Church & Dwight v Clorox  
**Lead Atty:** Alexander Kaplan  
**Firm:** Proskauer Rose  
**Year:** 2011  
**Role:** Subject matter expert, testified at hearing  
**Outcome:** Judgment in favor of Church & Dwight, injunction against Clorox  
**LINK:** <https://casetext.com/case/church-dwight-co-v-clorox-co>

**Case:** Certain MEMS Devices and Products Containing Same, ITC 337-700  
**Parties:** Analog Devices v Knowles  
**Lead Atty:** Colin Cabral  
**Firm:** Proskauer Rose  
**Year:** 2010  
**Role:** Participated from inception; testified at deposition and trial  
**Outcome:** Judgment in favor of Analog Devices  
**LINK:** <https://www.usitc.gov/publications/337/Pub4294.pdf>

## PATENTS AND PUBLICATIONS

### Patents and applications, grouped by family, 83 independent families in total

| Document No.  | Title                                                                                                  | Inventors                                                                                                                                        | Priority Date |
|---------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| US6753037     | Re-coating MEMS devices using dissolved resins                                                         | Miller, Seth; Lopes, Vincent C.; Brenner, Michael F.                                                                                             | 6/21/00       |
| US7738154     | Lubricating micro-machined devices using fluorosurfactants                                             | Miller, Seth                                                                                                                                     | 6/30/01       |
| US20030107137 | Micromechanical device contact terminals free of particle generation                                   | Stierman, Roger J.; Miller, Seth; Test, Howard R.; Bojkov, Christo P.; Harris, John P.; Rincon, Reynaldo M.; Mitchell, Scott W.; Amador, Gonzalo | 9/24/01       |
| US20030064149 | Methods of applying coatings to micro electromechanical devices using a carbon dioxide carrier solvent | Miller, Seth A.                                                                                                                                  | 9/28/01       |
| US20030118799 | Photonic band gap structures with extrusion deposited layers                                           | Miller, Seth A.; Koontz, Elisabeth Marley                                                                                                        | 12/19/01      |
| US6737225     | Method of undercutting micro-mechanical device with super-critical carbon dioxide                      | Miller, Seth Andrian<br>Miller, Seth A.; Jacobs, Simon Joshua                                                                                    | 12/28/01      |
| US7009745     | Coating for optical MEMS devices                                                                       |                                                                                                                                                  | 10/31/02      |
| US7442412     | Hydrophobic coating for oxide surfaces                                                                 | Miller, Seth A.                                                                                                                                  | 5/8/03        |
| US6806993     | Method for lubricating MEMS components                                                                 | Adams, Lea; Fisher, Edward C.; Malone, Josh; Miller, Seth; Smith, Jack C.; Dennis, William Kevin; Marsh, Jeffrey W.                              | 6/4/03        |
| US20080290325 | MEMS Passivation with Phosphonate Surfactants                                                          | Jacobs, Simon Joshua; Miller, Seth Adrian                                                                                                        | 1/5/04        |
| US7459325     | MEMS passivation with transition metals                                                                | Jacobs, Simon Joshua; Miller, Seth Adrian                                                                                                        | 1/5/04        |
| US20060228828 | Versatile system for selective organic structure production                                            |                                                                                                                                                  |               |



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|---------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------|
|               |                                                                                             | Miller, Seth Adrian                                                                                                  | 4/11/05  |
| US8846430     | Method of making a reservoir for micromechanical device lubrication                         | Jacobs, Simon J.; Miller, Seth                                                                                       | 12/28/06 |
| US8709531     | Liquid composite compositions using non-volatile liquids and nanoparticles and uses thereof | Miller, Seth A.                                                                                                      | 2/7/07   |
| US8320985     | Touch screen interfaces with pulse oximetry                                                 | Miller, Seth Adrian                                                                                                  | 4/2/09   |
| US8786575     | Touch-sensitive device and method                                                           | Miller, Seth Adrian                                                                                                  | 5/18/09  |
| US8568511     | Gas storage and release using piezoelectric materials                                       | Miller, Seth Adrian                                                                                                  | 6/19/09  |
| US8822026     | Carbon nanotube transparent films                                                           | Miller, Seth Adrian                                                                                                  | 7/15/09  |
| US9114994     | Carbon nanotube separation by reversible gelation                                           | Miller, Seth Adrian                                                                                                  | 7/20/09  |
| US8407011     | Mobile sampling of target substances                                                        | Miller, Seth Adrian                                                                                                  | 8/3/09   |
| US8297444     | Separation of carbon nanotubes using magnetic particles                                     | Miller, Seth Adrian                                                                                                  | 8/24/09  |
| US20110060202 | DEHYDRATION DETECTOR USING MICRO-NEEDLES                                                    | Miller, Seth Adrian                                                                                                  | 9/8/09   |
| 2017025384    | SYNTHETIC MEAT                                                                              | Miller, Seth Adrian                                                                                                  | 10/21/09 |
| US20130281370 | ANGIOGENESIS PROMOTED BY CAGED GROWTH FACTORS                                               | Miller, Seth Adrian                                                                                                  | 10/26/09 |
| US8093313     | Tissue scaffolding composites                                                               | Miller, Seth Adrian                                                                                                  | 10/27/09 |
| US8441775     | Conformal deposition of dielectric composites by eletrophoresis                             | Miller, Seth Adrian                                                                                                  | 12/15/09 |
| US8425748     | Electrokinetic pumping of nonpolar solvents using ionic fluid                               | Miller, Seth Adrian                                                                                                  | 3/9/10   |
| US9540863     | Multi-pane glass unit having seal with adhesive and gas-restrictive coating layer           | Miller, Seth A.; Stark, David H.; Francis IV, William H.; Puligandla, Viswanadham; Boulos, Edward N.; Pernicka, John | 6/2/10   |
| US20120128538 | ADJUSTABLE PRESSURE MICROREACTOR                                                            | Miller, Seth; Kruglick, Ezekiel                                                                                      | 6/9/10   |

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|----------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------|
| US20110306127  | ENHANCING IRON UPTAKE IN PROTEIN-FREE MEDIA                                                      | Miller, Seth Adrian; Marians, Russell C.                                 | 6/10/10  |
| US8304947      | Electro-actuated magnetic bearings                                                               | Miller, Seth Adrian                                                      | 6/21/10  |
| US9096783      | Activated pH control for protein glues<br>Air Cathode Tubes for Rechargeable Metal Air Batteries | Kruglick, Ezekiel; Miller, Seth<br>Yager, Thomas A.; Miller, Seth Adrian | 9/14/10  |
| US9640846      | Optical lithography using graphene contrast enhancement layer                                    | Yager, Thomas A.; Miller, Seth Adrian                                    | 9/28/10  |
| US8512936      | PHASE CHANGE ENERGY STORAGE IN CERAMIC NANOTUBE COMPOSITES                                       |                                                                          | 9/29/10  |
| US20120128869  |                                                                                                  | Miller, Seth Adrian                                                      | 9/29/10  |
| US8617750      | Metal air battery including a composite anode                                                    | Kruglick, Ezekiel; Yager, Thomas A.; Miller, Seth Adrian                 | 9/30/10  |
| US8734924      | Laminate structure comprising a lipophilic gel for containing electrolyte leaks                  | Kruglick, Ezekiel; Miller, Seth                                          | 10/1/10  |
| US8580479      | Lithography using photoresist with photoinitiator and photoinhibitor                             | Miller, Seth                                                             | 11/3/10  |
| US8246698      | Dyes with changeable solubilities, and methods for their use                                     | Miller, Seth Adrian                                                      | 12/22/10 |
| WO/2012/108863 | COMPOSITIONS AND METHODS FOR CONTROLLABLY DELIVERING AN AGENT                                    | MILLER, Seth, Adrian                                                     | 2/8/11   |
| US8790926      | Tissue engineering supports and methods therefor                                                 | Miller, Seth                                                             | 2/16/11  |
| US20120219629  | COMPOSITIONS AND METHODS FOR CONTROLLED DELIVERY OF COMPOUNDS                                    | Miller, Seth                                                             | 2/25/11  |
| US8911988      | Menstrual fluid analysis                                                                         | Miller, Seth Adrian                                                      | 3/1/11   |
| US20130027798  | HYDRATION CONTROLLED VARIABLE REFLECTIVITY COATINGS                                              | Miller, Seth                                                             | 3/1/11   |
| US9422712      | Temperature controlled variable reflectivity coatings                                            | Miller, Seth                                                             | 3/1/11   |

|               |                                                                                               |                                          |         |
|---------------|-----------------------------------------------------------------------------------------------|------------------------------------------|---------|
| US8809064     | Sensing hydroxyl radicals in ozone washing systems                                            | Miller, Seth                             | 3/9/11  |
| US8974594     | Microcapsule corrosion control in reinforced concrete                                         | Miller, Seth; Yager, Thomas A.           | 3/29/11 |
| US8785521     | Two-particle nanocomposite dielectrics                                                        | Miller, Seth Adrian; Duerksen, Gary Lynn | 3/29/11 |
| US9599895     | LITHOGRAPHY USING PHOTORESIST WITH PHOTOINITIATOR AND PHOTOINHIBITOR                          | Miller, Seth Adrian                      | 4/12/11 |
| US8889472     | Dielectric nanocomposites and methods of making the same                                      | Miller, Seth                             | 4/13/11 |
| US9409131     | Functional and reusable electrodeposited coatings on porous membranes                         | Miller, Seth Adrian                      | 6/13/11 |
| US9517438     | Programmable membrane system                                                                  | Miller, Seth Adrian                      | 6/13/11 |
| US9738984     | RELIABLE POINT OF USE MEMBRANE MODIFICATION                                                   | Miller, Seth Adrian                      | 6/13/11 |
| US8425867     | Oxalate sorbents for mercury removal                                                          | Miller, Seth Adrian                      | 8/15/11 |
| US9162002     | Cationic fibers hosting reactive peroxygenated radicals, and methods of making and using them | Lee, Kwangyeol; Miller, Seth Adrian      | 8/19/11 |
| US8465833     | Ferrocene/carbon dioxide releasing system                                                     | Lee, Kwangyeol; Miller, Seth Adrian      | 8/30/11 |
| US9011968     | Alteration of graphene defects                                                                | Miller, Seth; Yager, Thomas              | 9/16/11 |
| US20140230733 | GRAPHENE DEFECT ALTERATION                                                                    | Miller, Seth Adrian                      | 9/16/11 |
| US9091634     | Graphene defect detection                                                                     | Miller, Seth A.                          | 9/16/11 |
| US8785523     | Phosphorus loaded particles and methods for their preparation and use                         | Miller, Seth Adrian                      | 12/6/11 |
| US8979978     | Graphene membrane with regular angstrom-scale pores                                           | Miller, Seth A.; Duerksen, Gary L.       | 1/26/12 |
| US9056282     | Accelerating transport through graphene membranes                                             | Miller, Seth A.; Duerksen, Gary L.       | 1/27/12 |
| US9359671     | Coating a substance with graphene                                                             | Miller, Seth Adrian                      | 2/8/12  |
| US9695048     | GRAPHENE PRODUCTION                                                                           | Miller, Seth Adrian                      | 3/6/12  |

|               |                                                                                            |                                                                        |          |
|---------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------|
| US9135863     | Distortion-correcting deformable displays                                                  | Duerksen, Gary Lynn; Miller, Seth Adrian                               | 4/23/12  |
| US9904002     | TRANSPARENT ILLUMINATION PANELS                                                            | Duerksen, Gary Lynn; Miller, Seth Adrian                               | 5/11/12  |
| US20130316099 | STAND-OFF CONSTRUCTION FOR VACUUM INSULATED GLASS                                          | Miller, Seth A.; Francis IV, William H.                                | 5/22/12  |
| US9156702     | Graphene membrane repair                                                                   | Miller, Seth Adrian; Duerksen, Gary L.                                 | 7/25/12  |
| US9114423     | Repairing graphene on a porous support                                                     | Miller, Seth Adrian; Duerksen, Gary L.                                 | 7/25/12  |
| US965214      | GRAPHENE MEMBRANE LAMINATED TO POROUS WOVEN OR NONWOVEN SUPPORT                            | Miller, Seth Adrian; Duerksen, Gary L.                                 | 11/30/12 |
| US20150273401 | SELECTIVE MEMBRANE SUPPORTED ON NANOPOROUS GRAPHENE                                        | Miller, Seth Adrian; Duerksen, Gary L.                                 | 11/30/12 |
| US9759700     | GAS DETECTION DEVICE WITH GRAPHENE MEMBRANE                                                | Sjong, Angele; Anderson, Kraig; Duerksen, Gary L.; Miller, Seth Adrian | 11/30/12 |
| US20140154464 | GRAPHENE MEMBRANE WITH SIZE-TUNABLE NANOSCALE PORES                                        | Miller, Seth Adrian; Duerksen, Gary L.                                 | 11/30/12 |
| US9297768     | Methods and systems for labeling and detecting defects in a graphene layer                 | Yager, Thomas A.; Miller, Seth Adrian                                  | 4/18/13  |
| US9765178     | SELF-WRITING WAVEGUIDE WITH NANOPARTICLES                                                  | Duerksen, Gary L.; Miller, Seth Adrian                                 | 6/19/13  |
| US20160178418 | STROKE VOLUME DISPLACEMENT FLOW RATE SENSOR AND METHOD FOR REGULATING FLOW                 | Genosar, Amir; Miller, Seth                                            | 7/29/13  |
| US20160325487 | INCREASED INTERLAYER ADHESION OF THREEDIMENSIONAL PRINTED ARTICLES                         | Miller, Seth A.                                                        | 2/24/14  |
| US9224196     | System and method for authentication                                                       | Duerksen, Gary L.; Miller, Seth A.                                     | 3/12/14  |
| US20160347005 | METHODS AND SYSTEMS FOR MONITORING MELT ZONES IN POLYMER THREE DIMENSIONAL PRINTING        | Miller, Seth Adrian                                                    | 3/24/14  |
| US10220409    | METHODS AND SYSTEMS FOR INCREASING SURFACE SMOOTHNESS OF THREE-DIMENSIONAL PRINTED ARTICLE | Miller, Seth Adrian                                                    | 4/15/14  |

|               |                                                                                         |                                          |          |
|---------------|-----------------------------------------------------------------------------------------|------------------------------------------|----------|
| US20150355377 | CONFIGURABLE OPTICAL COUPLERS                                                           | Miller, Seth Adrian; Duerksen, Gary Lynn | 6/6/14   |
| US9575250     | DIRECT WRITABLE AND ERASABLE WAVEGUIDES IN OPTOELECTRONIC SYSTEMS                       | Miller, Seth Adrian; Duerksen, Gary Lynn | 7/3/14   |
| US10925482    | Systems and methods for measuring postlens tear film thickness                          | Miller, Seth Adrian; Meloni, Mark        | 6/15/18  |
| US10925767    | Laser doppler vibrometry for eye surface vibration measurement to determine cell damage | Miller, Seth Adrian; Meloni, Mark        | 3/6/18   |
| US11116664    | Monitor efficacy of laser eye treatment through cell lysis determination                | Miller, Seth Adrian                      | 11/30/17 |
| US11690511B2  | Polarization filtering for improved eye imaging                                         | Miller, Seth Adrian; Meloni, Mark        | 12/1/17  |

#### RECENT REFEREED PUBLICATIONS:

Fang, Y., Hyde, T. J., Arya, F., Hewitt, N., Eames, P. C., Norton, B., & Miller, S. (2014). Indium alloy-sealed vacuum glazing development and context. *Renewable and sustainable energy reviews*, 37, 480-501.

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