# Seth B. Darling

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## Education

***The University of Chicago***, Chicago, IL
Ph.D. in Physical Chemistry (2002)
*Thesis:* Rational Nanoscale Control of Interfacial Structure and Dynamics

***Haverford College***, Haverford, PA
B.A. in Chemistry and Astronomy (1997)
*Honors:* Honors from chemistry department
High honors from astronomy/physics department

## Professional Development

***Oppenheimer Science and Energy Leadership Program***, Department of Energy (2017–2018)

***Strategic Laboratory Leadership Program***, UChicago Argonne, LLC (2010)
Developed by the Univ. of Chicago Booth School of Business Executive Education Office

***Leadership Development Workshop,*** American Chemical Society (2010)

## Employment

***Argonne National Laboratory***

**Director,** Advanced Materials for Energy-Water Systems (AMEWS) Energy Frontier Research Center (EFRC) (2018–present)
**Director,** Institute for Molecular Engineering (2017–present)
**Scientist**, Nanoscience & Technology Division (2010–present)
**Member,** Chief Research Officer Council (2017–present)
**Strategy Leader,** Solar Energy Systems (2009–2016)
**Assistant Scientist**, Center for Nanoscale Materials (2006–2010)
**Glenn Seaborg Argonne Scholar**, Materials Science Division (2003–2006)
**Postdoctoral Fellow**, UC-ANL Consortium for Nanoscience Research (2003–2006)
**Research Fellow**, UC-ANL Consortium for Nanoscience Research (2002–2003)

***The University of Chicago***

**Fellow**, Institute for Molecular Engineering (2013–present)
**Joint Staff Appointee,** Institute for Molecular Engineering (2012–2013)
**Graduate Research Assistant**, Sibener Group (1997–2002)
**Senior Outreach Coordinator**, NSF-MRSEC (1999–2002)
**Laboratory Assistant**, Physical Chemistry Lab (1998)
**Teaching Assistant**, General Chemistry (1997–1998)

***Private Sector***

**Chief Technical Officer**, Visual Molecules LLC (2008–present)
**Research Scientist**, DASGroup, Inc. (1995–1997)
**Research Intern**, Concurrent Technologies Corporation (1991–1995)

***Haverford College***

**Research Assistant**, de Paula Group (1996)
**Laboratory Assistant**, General Chemistry (1996–1997)
**Computer Laboratory Assistant** (1993–1997)

## HONORS

R&D100 Award for Oleo Sponge (2017)
R&D Gold Special Recognition Award for Green Tech (2017)
R&D Editor's Choice Award for Mechanical/Materials Research (2017)
Samuel D. Bader Prize for Exceptional Achievement (2017)
Argonne Energy & Global Sciences Directorate Excellence Project Award (2017)
University of Chicago Pinnacle of Education Award (2014)
R&D100 Award for SIS Lithography (2014)
Argonne Energy Slam Champion (April 2014)
Department of Energy Sustainability Award for *Sustainability Workshop for Middle School Teachers* at Argonne (September 2012; team award)
ACS Leadership Development Award (January 2010)
Glenn T. Seaborg Distinguished Fellowship (2003–2006)
AVS Morton M. Traum Surface Science Award (November 2002)
James Franck Institute Presentation Award (May 2002)
American Institute of Chemists Foundation Student Awardee (May 2001)
AVS Prairie Chapter Presentation Award (September 2000)
University of Chicago Departmental Presentation Award (March 2000)
Ninth Workshop on Surface Dynamics Best Presentation (June 1999)

## PEER-REVIEWED PUBLICATIONS

1. Sequential infiltration synthesis of $Al_2O_3$ in polyethersulfone membranes, R.Z. Waldman, D. Choudhury, D. Mandia, J.W. Elam, P.F. Nealey, A.B. Martinson, and S.B. Darling, *JOM*. Accepted **[Invited]**

2. Crude-oil-repellent membranes by atomic layer deposition: Oxide interface engineering, H.-C. Yang, Y. Xie, B. Narayanan, H. Chan, L. Chen, R.Z. Waldman, S.K.R.S. Sankaranarayanan, J.W. Elam, and S.B. Darling, *ACS Nano*. In Press.

3. Janus membranes: Creating asymmetry for energy efficiency, H.-C. Yang, Y. Xie, J. Hou, A.K. Cheetham, V. Chen, and S.B. Darling, *Adv. Mater*. In Press.

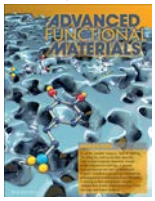
4. Janus membranes via diffusion-controlled atomic layer deposition, R.Z. Waldman, H.-C. Yang, D.J. Mandia, P.F. Nealey, J.W. Elam, and S.B. Darling, *Adv. Mater. Interfac*. **5** (2018) 1800658.

5. Perspective: Interfacial materials at the interface of energy and water, S.B. Darling, *J. Appl. Phys*. **124** (2018) 030901. **[Invited]**

6. Tailoring uniform gold nanoparticle arrays and nanoporous films for next-generation optoelectronic devices, S. Farid, R. Kuljic, S. Poduri, M. Dutta, and S.B. Darling, *Superlattices Microstruct.* **118** (2018) 1-6.

7. Performance modeling and valuation of snow-covered PV systems: Examination of a simplified approach to decrease forecasting error, L. Bosman and S.B. Darling, *Environ. Sci. Pollut. Res*. **25** (2018) 15484-15491.

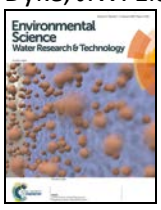
8. Dopamine: Just the right medicine for membranes, H.-C. Yang, R.Z. Waldman, M.-B. Wu, J. Hou, L. Chen, S.B. Darling, and Z.-K. Xu, *Adv. Funct. Mater*. **28** (2018) 1705327. **[Cover Story]**




9. Substitutional growth of methylammonium lead iodide perovskites in alcohols, M. Acik, T.M. Alam, F. Guo, Y. Ren, B. Lee, R.A. Rosenberg, J.F. Mitchell, I.K. Park, G. Lee, and S.B. Darling, *Adv. Energy Mater.* **8** (2018) 1701726.

10. Nanofilms directly formed on macro-porous substrates for molecular and ionic sieving, H.-C. Yang, M.-B. Wu, J. Hou, S.B. Darling, and Z.-K. Xu, *J. Mater. Chem. A.* **6** (2018) 2908-2913.

11. Mitigating oil spills in the water column, E. Barry, J.A. Libera, A.U. Mane, J.R. Avila, D. Devitis, K. Van Dyke, J.W. Elam, and S.B. Darling, *Environ. Sci.: Water Res. Technol.* **4** (2018) 40-47. **[Cover Story]**




12. Effect of nanostructured domains in self-assembled block copolymer films on sequential infiltration synthesis, Q. Peng, Y.-C. Tseng, Y. Long, A.U. Mane, S. DiDona, S.B. Darling, and J.W. Elam, *Langmuir* **33** (2017) 13214-13223.

13. Structure-property relationships in $NO_x$ sensor materials composed of arrays of vanadium oxide nanoclusters, N.R. Putrevu, S.B. Darling, C.U. Segre, H. Ganegoda, and M.I. Khan, *Solid State Sci.* **74** (2017) 1-7.

14. Photocatalytic nanofiltration membranes with self-cleaning property for wastewater treatment, Y. Lv, C. Zhang, A. He, S.-J. Yang, G.-P. Wu, S.B. Darling, and Z.-K. Xu, *Adv. Funct. Mater*. **27** (2017) 1700251.

15. Novel colloidal materials from functionalized polyoxometalates, L. Swenson, J. Orozco, Y. Liu, S.B. Darling, and M.I. Khan, *Inorg. Chem. Commun*. **84** (2017) 20-23.

16. Dewetting in immiscible polymer bilayer films, J. Lal, S. Malkova, M. Mukhopadhyay, S. Narayanan, A. Fluerasu, S.B. Darling, L.B. Lurio, and M. Sutton, *Phys. Rev. Mater*. **1** (2017) 015601.

17. Sequential infiltration synthesis for design of low refractive index surface coatings with controllable thickness, D. Berman, S. Guha, B. Lee, J.W. Elam, S.B. Darling, and E.V. Shevchenko, *ACS Nano* **11** (2017) 2521-2530.

18. Molecular dynamics and charge transport in organic semiconductors: A classical approach to modeling electron transfer, K.M. Pelzer, A. Vázquez-Mayagoitia, L.E. Ratcliff, S. Tretiak, R.A. Bair, S.K. Gray, T. Van Voorhis, R.E. Larsen, and S.B. Darling, *Chem. Sci.* **8** (2017) 2597-2609.

19. Conformal nitrogen-doped $TiO_2$ photocatalytic coatings for sunlight-activated membranes, A. Lee, J. Libera, R.Z. Waldman, A. Ahmed, J. Avila, J.W. Elam, and S.B. Darling, *Adv. Sust. Sys*. **1** (2017)

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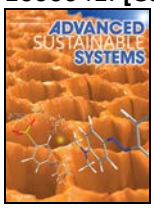


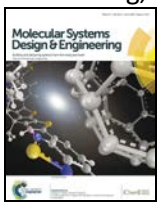

20. Advanced oil sorbents using sequential infiltration synthesis, E. Barry, A.U. Mane, J.A. Libera, J.W. Elam, and S.B. Darling, *J. Mater. Chem. A*. **5** (2017) 2929-2935.

21. Planar mixed halide perovskite-PCBM solar cells on flexible glass substrates processed at low temperature without ITO, F. Ballipinar, A.C. Rastogi, S.M. Garner, and S.B. Darling, *IEEE Photovoltaic Specialists Conference (PVSC)* **43** (2016) 1611-1616.

22. Coexistence of two electronic nano-phases on a $CH_3NH_3PbI_{3-x}Cl_x$ surface from STM measurements, A.J. Yost, A. Pimachev, C.-C. Ho, S.B. Darling, L. Wang, W.-F. Su, Y. Dahnovsky, and T. Chien, *ACS Appl. Mater. Interfac*. **8** (2016) 29110-29116.

23. Room temperature, air crystallized perovskite nanorods for high performance solar cells, A. Dubey, N. Kantack, N. Adhikari, S. Venkatesan, M. Kumar, K.M. Reza, D. Khatiwada, S.B. Darling, and Q. Qiao, *J. Mater. Chem. A*. **4** (2016) 10231-10240.

24. Charge generation in organic photovoltaics: A review of theory and computation, K.M. Pelzer and S.B. Darling, *Mol. Syst. Des. Eng*. **1** (2016) 10-24. **[Invited Review, Cover Story]**




25. Graphene in perovskite solar cells: Device design, characterization, and implementation, M. Acik and S.B. Darling, *J. Mater. Chem. A*. **4** (2016) 6185-6235. **[Review]**

26. Membrane materials for water purification: Design, development, and application, A. Lee, J.W. Elam, and S.B. Darling, *Environ. Sci.: Water Res. Technol.* **2** (2016) 17-42. **[Review, Cover Story]**


27. Exciton size and quantum transport in nanoplatelets, K.M. Pelzer, S.B. Darling, S.K. Gray, and R.D. Schaller, *J. Chem. Phys*. **143** (2015) 224016. **[Editors' Choice 2015]**

28. Efficient perovskite solar cells by temperature control in single and mixed halide precursor solutions and films, D. Khatiwada, S. Venkatesan, N. Adhikari, A. Dubey, A.F. Mitul, L. Mohammed, A. Lefanova, S.B. Darling, and Q. Qiao, *J. Phys. Chem. C*. **119** (2015) 25747-25753.

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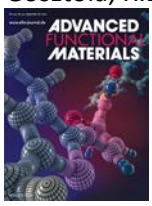
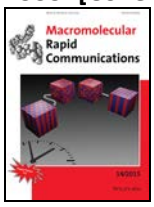
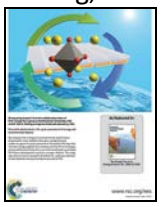



30. Rational design of thermally stable, bicontinuous donor/acceptor morphologies with conjugated block copolymer additives, D. Kipp, J. Mok, J. Strzalka, S.B. Darling, V. Ganesan, and R. Verduzco, *ACS Macro Lett*. **4** (2015) 867-871.

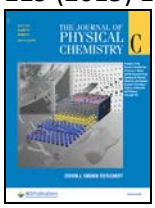
31. Kinetically enhanced approach for rapid and tunable self-assembly of rod-coil block copolymers, C.-C. Ho, S.-J. Wu, S.-H. Lin, S.B. Darling, and W.-F. Su, *Macromol. Rapid Commun*. **36** (2015) 1329-1335. **[Cover Story]**




32. Perovskite photovoltaics: life-cycle assessment of energy and environmental impacts, J. Gong, S.B. Darling, and F. You, *Energy Environ. Sci*. **8** (2015) 1953-1968. **[Back cover Story]**



33. Kinetics for the sequential infiltration synthesis of alumina in poly(methyl methacrylate): An infrared spectroscopic study, M. Biswas, J.A. Libera, S.B. Darling, and J.W. Elam, *J. Phys. Chem. C*. **119** (2015) 14585-14592. **[Cover]**




34. Characterizing the three-dimensional structure of block copolymers via sequential infiltration synthesis and scanning transmission electron tomography, T. Segal-Peretz, J. Winterstein, M. Doxastakis, A. Ramirez-Hernandez, M. Biswas, J. Ren, H.S. Suh, S.B. Darling, J.A. Liddle, J.W. Elam, J.J. de Pablo, N.J. Zaluzec, and P.F. Nealey, *ACS Nano* **9** (2015) 5333–5347.

35. L-Tryptophan on Cu(111): Engineering a molecular labyrinth driven by indole groups, E.N. Yitamben, A. Clayborne, S.B. Darling, and N.P. Guisinger, *Nanotechnology* **26** (2015) 235604.

36. New insight into the mechanism of sequential infiltration synthesis from infrared spectroscopy, M. Biswas, J.A. Libera, S.B. Darling, and J.W. Elam, *Chem. Mater*. **26** (2014) 6135-6141.

37. Visualization of hierarchical nanodomains in polymer/fullerene bulk heterojunction solar cells, J. Wen, D.J. Miller, W. Chen, T. Xu, L. Yu, S.B. Darling, and N.J. Zaluzec, *Microsc. Microanal*. **20** (2014) 1507-1513.

38. Polaron structure and transport in fullerene materials: Insights from first-principles calculations, K.M. Pelzer, M. Chan, S.K. Gray, and S.B. Darling, *J. Phys. Chem. C*. **118** (2014) 21785-21797.
39. Domestic and overseas manufacturing scenarios of silicon-based photovoltaics: Life cycle energy and environmental comparative analysis, D. Yue, F. You, and S.B. Darling, *Solar Energy* **105** (2014) 669-678. [Corrigendum: *Solar Energy* **107** (2014) 380]
40. Isoindigo-based copolymers for high-efficiency polymer solar cells, C.-C. Ho, C.-A. Chen, C.-Y. Chang, S.B. Darling, and W.-F. Su, *J. Mater Chem. A.* **2** (2014) 8026-8032.
41. π-Conjugated gradient copolymers suppress phase separation and improve stability in bulk heterojunction solar cells, E. Palermo, S.B. Darling, and A.J. McNeil, *J. Mater. Chem. C*. **2** (2014) 3401-3406.
42. Process-controlled multiscale morphologies in metal-containing block copolymer thin films, M. Ramanathan and S.B. Darling, *J. Nanosci. Nanotechnol*. **14** (2014) 2653-2657.
43. Improved conductive atomic force microscopy measurements on organic photovoltaic materials via mitigation of contact area uncertainty, M. Nikiforov and S.B. Darling, *Prog. Photovolt.: Res. Appl*. **21** (2013) 1433-1443.
44. Additives for morphology control in high-efficiency organic solar cells, H.-C. Liao, C.-C. Ho, C.-Y. Chang, M.-H. Jao, S.B. Darling, and W.-F. Su, *Materials Today* **16** (2013) 326-336. **[Invited Review]**
45. The case for organic photovoltaics, S.B. Darling and F. You, *RSC Adv*. **3** (2013) 17633-17648.
46. Lanthanides: New metallic cathode materials for organic photovoltaic cells, M.P Nikiforov, J. Strzalka, Z. Jiang, and S.B. Darling, *Phys. Chem. Chem. Phys*. **15** (2013) 13052-13060.
47. Nanofabrication with metallopolymers – Recent developments and future perspectives, M. Ramanathan and S.B. Darling, *Polym. Int.* **62** (2013) 1123-1134. [Review]
48. Model compounds based on poly(p-phenylenevinyleneborane) and terthiopene: Investigating the p–n junction in diblock copolymers, D.M. Hinkens, Q. Chen, M.K. Siddiki, D. Gosztola, M.A. Tapsak, Q. Qiao, M. Jeffries-EL, and S.B. Darling, *Polymer* **54** (2013) 3510-3520.
49. Synthesis and crystallinity of conjugated block copolymers prepared by click chemistry, K.A. Smith, D. Dement, J. Strzalka, S.B. Darling, and R. Verduzco, *Macromolecules* **46** (2013) 2636-2645.
50. Detection and role of trace impurities in high-performance organic solar cells, M.P. Nikiforov, B. Lai, W. Chen, S. Chen, R.D. Schaller, J. Strzalka, J. Maser, and S.B. Darling, *Energy Environ. Sci.* **6** (2013) 1513-1520. **[Cover Story]**


51. Emerging trends in metal-containing block copolymers: Synthesis, self-assembly, and nanomanufacturing applications, M. Ramanathan, Y.-C. Tseng, K. Ariga, and S.B. Darling, *J. Mater*

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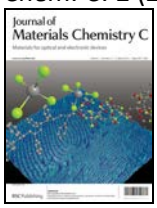


52. Synthesis and photovoltaic effect in dithieno [2,3-d:2',3'-d']benzo[1,2-b:4,5-b']dithiophene-based conjugated polymers, H.J. Son, L. Lu, W. Chen, T. Xu, T. Zheng, B. Carsten, J. Strzalka, S.B. Darling, L.X. Chen, and L. Yu, *Adv. Mater*. **25** (2013) 838-843.
53. Concurrent quantitative conductivity and mechanical properties measurements of organic photovoltaic materials using AFM, M.P. Nikiforov and S.B. Darling, *J. Vis. Exp*. **71** (2013) e50293.
54. Delineation of the effects of water and oxygen on the degradation of organic photovoltaic devices, M.P. Nikiforov, J. Strzalka, and S.B. Darling, *Sol. Energy Mater. Sol. Cells.* **110** (2013) 36-42.
55. Deciphering the uncertainties in life cycle energy and environmental analysis of organic photovoltaics, D. Yue, P. Khatav, F. You, and S.B. Darling, *Energy Environ. Sci*. **5** (2012) 9163-9172.
56. Vacuum-deposited small-molecule organic solar cells with high power conversion efficiencies by judicious molecular design and device optimization, Y.-H. Chen, Y.-L. Lin, C.-W. Lu, Z.-Y. Huang, H.-W. Lin, F. Lin, P.-H. Wang, Y.-H. Liu, K.-T. Wong, J. Wen, D.J. Miller, and S.B. Darling, *J. Am. Chem. Soc*. **134** (2012) 13616-13623.
57. Supramolecular conjugated block copolymers, Y.-H. Lin, S.B. Darling, M.P. Nikiforov, J. Strzalka, and R. Verduzco, *Macromolecules* **45** (2012) 6571-6579.
58. Morphology characterization in organic and hybrid photovoltaics, W. Chen, M.P. Nikiforov, and S.B. Darling, *Energy Environ. Sci*. **5** (2012) 8045-8074. **[Invited Review]**
59. Enhanced lithographic imaging layer meets semiconductor manufacturing specification a decade early, Y.-C. Tseng, A.U. Mane, J.W. Elam, and S.B. Darling, *Adv. Mater*. **24** (2012) 2608-2613.
60. Ultrathin molybdenum oxide anode buffer layer for organic photovoltaic cells formed using atomic layer deposition, Y.-C. Tseng, A.U. Mane, J.W. Elam, and S.B. Darling, *Sol. Eng. Mater. Sol. Cells*. **99** (2012) 235-239.
61. Optimizing luminescent solar concentrator design, H. Hernandez-Noyola, D.H. Potterveld, R.J. Holt, and S.B. Darling, *Energy Environ. Sci*. 5 (2012) 5798-5802. **[Cover Story]**


62. Etch properties of resists modified by sequential infiltration synthesis, Y.-C. Tseng, Q. Peng, L.E. Ocola, D.A. Czaplewski, J.W. Elam, and S.B. Darling, *J. Vac. Sci. Technol. B.* **29** (2011) 06FG01.
63. Hierarchical nanomorphologies promote exciton dissociation in polymer/fullerene bulk heterojunction solar cells, W. Chen, T. Xu, F. He, W. Wang, C. Wang, J. Strzalka, Y. Liu, J. Wen, D.J. Miller, J. Chen, K. Hong, L. Yu, and S.B. Darling, *Nano Letters* **11** (2011) 3707-3713.

64. Enhanced block copolymer lithography using sequential infiltration synthesis, Y.-C. Tseng, Q. Peng, L.E. Ocola, J.W. Elam, and S.B. Darling, *J. Phys. Chem. C* **115** (2011) 17725–17729. **[Cover Story]**


65. Assumptions and the levelized cost of energy for photovoltaics, S.B. Darling, F. You, T. Veselka, and A. Velosa, *Energy Environ. Sci.* **4** (2011) 3133-3139. **[Cover Story]**


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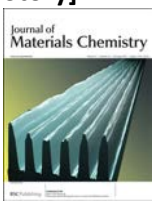


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68. Optoelectronic properties and charge transfer in donor-acceptor all-conjugated diblock copolymers, I. Botiz, R.D. Schaller, R. Verduzco, and S.B. Darling, *J. Phys. Chem. C*. **115** (2011) 9260-9266.

69. Mesoscale morphologies in polymer thin films, M. Ramanathan and S.B. Darling, *Prog. Polym. Sci*. **36** (2011) 793-812. [Review]

70. Tetrathienoanthracene-based copolymers for efficient solar cells, F. He, W. Wang, W. Chen, T. Xu, S.B. Darling, J. Strzalka, Y. Liu, and L. Yu, *J. Am. Chem. Soc*. **133** (2011) 3284-3287.

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74. Self-assembled monolayer-modified block copolymers for chemical surface nanopatterning, N.A. Yufa, S. Fronk, S.J. Rosenthal, S.B. Darling, and S.J. Sibener, *Mater. Chem. Phys.* **125** (2011) 382-385.

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76. Block copolymer nanostructures for technology, Y.-C. Tseng and S.B. Darling, *Polymers* **2** (2010) 470-489. **[Invited Review]**

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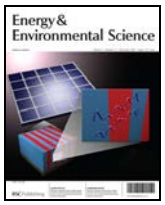


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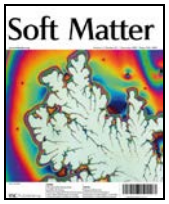


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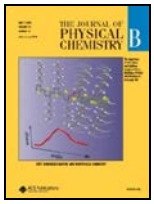


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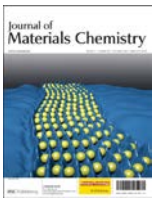


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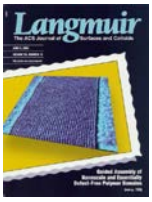


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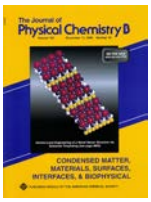


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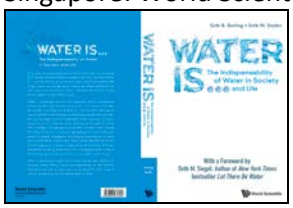


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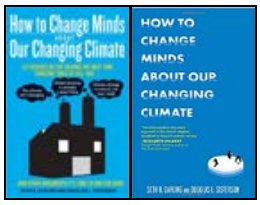


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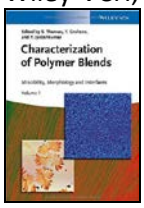


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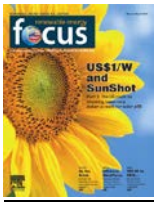
81. Deeper Patterns and Easier Process Comes with New Etching Technique, D. Johnson, *IEEE Spectrum*, August 19, 2011.
82. Argonne nanoscientists invent better etching technique, J. Sagoff & L. Lerner, Argonne press release, August 18, 2011; also *R&D Magazine*, August 19. 2011; and *Nanotech Now*, August 20, 2011.
83. The latest on organic photovoltaics from Argonne National Laboratory and IMEC, *Intertech Pira*, August 9, 2011.
84. New Techniques for Solar Cells, J. Karin, *The Future of Things*, July 21, 2011.
85. Templated Synthesis of Nanostructured Materials by Sequential Infiltration, *Nanomanufacturing Weekly*, July 13, 2011; also *InterNano*, J. Morse, July 13, 2011.

86. The Biggest Challenge, J. Laird, *Renewable Energy Focus*, May/June 2011. **[Cover Story]** Also *Renewable Energy Focus Int. Ed.*, July/August 2011.


87. SunShot takes aim at PV costs, J. Laird, *Renewable Energy Focus*, May/June 2011.
88. Focus: Perspective / Insights on renewables, J. Laird, *Renewable Energy Focus*, May/June 2011.
89. Modeling Solar Costs: Evaluating Financial Risk, S. Salamone, *EnergyBiz Magazine*, May/June 2011.
90. US$1/W and SunShot, J. Laird, *Renewable Energy Focus*, April 2011. **[Cover Story]**




91. Modeling Effort Estimates Financial Uncertainties and Risks of Solar Generation, S. Salamone, *Smarter Technology*, March 23, 2011.
92. Roskam defends scientific research cuts, M. Santana, *Daily Herald*, March 2, 2011.
93. Out of the Box, J. Laird, *Renewable Energy Focus*, January/February 2011.
94. Picture of the Day, *Science360 News Service (NSF)*, February 24, 2011.
95. US project looks to calculate solar energy prices accurately, *Platts Renewable Energy Report*, February 21, 2011.
96. Argonne/UChicago image takes first prize in Visualization Challenge, S. Koppes, *University of Chicago News*, February 21, 2011.
97. Science visualization winners announced, D. Vergano, *USA Today*, February 19, 2011.
98. EyePoppers: The Best Science Images of 2010, *FoxNews.com*, February 18, 2011.
99. Visualizing Science, *New York Times*, February 17, 2011.
100. Best Science Pictures of 2010 Announced, *National Geographic News*, February 17, 2011.
101. 2010 Visualization Challenge Winners Announced: As Always, Chemists Rule, L. Wolf, *Chemical & Engineering News*, February 17, 2011.
102. Calculating solar technology costs beyond dollars per watt, N. Lamontagne, *Solar Novus Today*, February 17, 2011; also *Positives of Solar Energy*, February 17, 2011.

103. International Science & Engineering Visualization Challenge 2010, *Science* **331** 852-853 (2011). **[Cover Story]**


104. 2010 International Science and Engineering Visualization Challenge winners announced, N. Pinol, *EurekAlert!*, February 17, 2011.

105. Calculating the true cost of solar electricity, U. Wang, *Renewable Energy World*, February 13, 2011.

106. Sun Tracking Tools, A. Bruns, *Site Selection Energy Report* **3** (2) (2011).

107. DOE, Gartner urge use of LCOE metric to replace dollars per watt for PV, *SolarServer*, February 10, 2011.

108. New instructive approach calculates lifetime solar energy cost, A. Hardin, *R&D Magazine*, February 8, 2011; also *PhysOrg.com*, February 8, 2011; *Scandinavian Oil & Gas Magazine*, February 9, 2011; *My Solar News* blog, February 10, 2011; and *SciGuru*, February 12, 2011.

109. New process for generating cost of solar power, N. Lew, *Cooler Planet*, February 8, 2011

110. The true cost of getting energy from the sun, E. Richards, *Chemistry World*, February 8, 2011.

111. New photovoltaic material could deliver twice the solar power, M. O'Connor and J. Eure, *Medill Reports*, February 3, 2011.

112. 2010 NSF International Science and Engineering Visualization Challenge, First Place in Photography, S.B. Darling and S.J. Sibener.

113. A Novel Technique to Grow Materials for Solar Cell Applications, Frost & Sullivan, *Advanced Coatings and Surface Technology Alert*, December 2010.

114. PV Innovations – Not Quite Sci-Fi Anymore, J. Laird, *Renewable Energy Focus USA*, December 2010.

115. Geek-Up: Molecular Stencils, GRETINA and Trapped Antimatter, N. Kumar, *DOE EnergyBlog*, November 19, 2010.

116. Argonne, Tollway in research deal, M. Wisniewski, *Chicago Sun-Times*, November 19, 2010.

117. Molecular "Stencil" Draws a Path to Low Cost Solar Energy, T. Casey, *Clean Technica*, November 26, 2010; also *Scientific American*, November 26, 2010.

118. Molecular 'stencils' open up new possibilities for solar energy, *Nanowerk News*, November 15, 2010; also *Solar Novus Today*, November 16, 2010; *Future Photovoltaics*, November 16, 2010; and *PhysOrg.com*, November 16, 2010.

119. New Nanofabrication Technique Opens Door to Future Generations of Solar Cells, *AZoNano*, November 15, 2010.

120. Capturing Solar & Putting It To Work In New Ways To Make Electricity, Cliff, *Blue Pacific Solar* blog, November 7, 2010.

121. Shining Light on the Cost of Solar Energy, M. Koerth-Baker, *National Geographic News*, November 5, 2010.

122. pARTicles, B. O'Neill, *University of Chicago Magazine*, May/June 2010.

123. Argonne offers integrated approach, G. Boas, *Photonics Spectra*, May 2010.

124. EIPBN 2010 Photon Micrograph Contest, 1st place, May 2010.

125. Argonne launches unique research initiative to realize solar energy's full potential, Argonne press release, February 22, 2010; also *YouTube* video.

126. Schneider unveils solar energy system at Palatine headquarters, A. Kukec, *Daily Herald*, December 11, 2009.

127. 2010: PV innovations on the leading edge, J. Laird, *Renewable Energy Focus*, Nov/Dec 2009.

128. Nanotubular belles, D. Snieckus, *Recharge News*, November 20, 2009.

129. Argonne 'homegrown' hybrid solar cell aims for low-cost power, *PhysOrg.com*, November 10, 2009; also Argonne press release.

130. Argonne Touts Hybrid PV Cell with "Homegrown" Polymer, J. Montgomery, *Renewable Energy World*, November 16, 2009; also *Photovoltaics World*, November 12, 2009; highlighted in *PV Times*, November 12 issue.

131. Everything under the sun: Refining solar cell technology at Argonne, J. Sagoff, *Argonne Now*, Fall 2009. **[Cover Story]**


132. Image on *Materials Today* cover and calendar, September 2009.


133. Cheaper Plastic Solar Cells in the Works, D. Hinkens, *LiveScience.com*, December 12, 2008; also *NSF Discoveries*, January 13, 2009.

134. AVS 55th International Symposium Art Zone, 2nd place, November 2008.

135. Solar Cells Go Organic, *LiveScience.com*, October 21, 2008.

136. SDSU Postdoctoral Research Assistant Receives Award from the National Science Foundation, South Dakota State University press release, September 2, 2008.

137. Small is Beautiful, S. Rana, *Flanders Today*, May 14, 2008.

138. Nano Photos Rival Modern Art, *Wired*, April 25, 2008.

139. Image on *Materials Today* calendar, September 2007.

## FUNDING AWARDS

DOE Basic Energy Sciences; "Advanced Materials for Energy-Water Systems (AMEWS) Energy Frontier Research Center (EFRC)" (2018–2022)

Anthropocene Institute; "Oleo Sponge Field Test Phase I" (2017–2018)

Argonne National Laboratory LDRD Prime "Advanced Materials for the Energy-Water Nexus" (2016–2018)

Department of Homeland Security / Coast Guard; "Reusable, Environmentally Benign Absorbent Foams for Oil Spill Pollution Mitigation"; with J. Elam (2015–2017)

NSF Division of Human Resource Development; "Developing a Model of Solar Energy Performance"; with L. Bosman (2014–2016)

NASA Innovations in Climate Education-Tribal (NICE-T) Program; "A Decision Support System to Analyze, Compare, Simulate and Evaluate Expected Performance Outcomes of Different PV Panels Installed in the U.S. Midwest, Providing Recommendations Based on User Inputs"; with L. Bosman and W. Otieno (2014–2017)

Argonne-University of Chicago-Ben Gurion University Water Research Initiative; "Self-Assembled Functional Membranes for Filtration and Photocatalytic Water Treatment"; with J. Elam and R. Bitton (2013–2015)

NSF Chemical, Bioengineering, Environmental, and Transport Systems (CBET); "Block Copolymer Compatibilizers for Controlled Morphology and Interfacial Properties in Polymer-Fullerene Blends"; with R. Verduzco and V. Ganesan (2013–2016)

EPA Tribal ecoAmbassador Program; "Upgrade to Energy Efficient Appliances or Invest in Alternative Energy Sources?"; with L. Bosman (2013–2014)

Argonne Technology Maturation and Commercialization Program; "Sequential Infiltration Synthesis for Lithography"; with J.W. Elam (2012–2013)

Taiwan National Science Council Dragon Gate Program; "Morphology and Interface Investigation of Materials and Devices for Bulk Heterojunction Solar Cells"; with W.-F. Su and L.-Y. Wang (2012–2014)

Institute for Sustainability and Energy at Northwestern; "Life Cycle Assessment of Organic Photovoltaic Cells"; with F. You (2012)

Shell Center for Sustainability; "High Performance Polymer Photovoltaics"; with R. Verduzco (2011–2012)

DOE Office of Electricity; Solar Resource Focus Team for "Study of Energy Zones in the Eastern Interconnection" (2011–2012)

Illinois State Tollway Authority; "Midwest Photovoltaics Analysis Facility" (2011)

University of Chicago-Argonne Strategic Collaborative Initiative "Chain Conformation, Aggregation, and Miscibility in Polymer/Fullerene Blends for Photovoltaics"; with Luping Yu (2010–2012)

Argonne National Laboratory Strategic LDRD "Optimization of Luminescent Solar Concentrators" (2009–2011)

NSF-Materials Science and Engineering Center at the University of Chicago; Co-PI for IRG entitled "Rational Design of Nanoparticle and Molecule-Based Functional Materials" (2008–2013)

Argonne National Laboratory Director's Competitive LDRD "Hedvall Effect Catalysis Studies of Size-Selected Magnetic Nanoclusters"; with J. Greeley, S. Vajda, and M. Knickelbein (2007–2010)

Argonne National Laboratory Director's Competitive LDRD "Hybrid Block Copolymer-Nanocrystal Material for Efficient Photovoltaics" (2007–2010)

Argonne National Laboratory Strategic LDRD "Novel Hybrid Nanomaterials via Uniting Top-Down and Bottom-Up Assembly Methods" (2006–2009)

Argonne National Laboratory Strategic LDRD "Nanoscale Materials Synthesis and Self-Assembly"; with S.D. Bader (2004–2006)

Argonne National Laboratory Strategic LDRD "Adaptive Nanoscale Self-Assembly"; with S.D. Bader (2003–2004)

Concurrent Technologies Corporation Seed R&D "$SrTiO_3$ Films for Naval Surface Protection" (1994–1995)

## POSTDOCTORAL ADVISEES

Sanja Tepavcevic, with Steven Sibener, 2006–2008 (Argonne National Laboratory)
Muruganathan Ramanathan, 2007–2010 (First Solar)
Ioan Botiz, 2008–2010 (University of Freiburg)
Diane Hinkens, with Qiquan Qiao; NSF ACC Fellow, 2008–2011 (Aerotek Scientific)
Yu-Chih Tseng, 2009–2011 (CANMET Materials Technology Laboratory)
Wei Chen, 2010–2012 (Institute for Molecular Engineering)
Maxim Nikiforov, 2011–2013 (HGST)
Ji Sun Moon, 2012–2013 (Samsung)
Chun-Chih Ho, with Wei-Fang Su; 2013–2014 (National Taiwan University)
Mahua Biswas, with Jeff Elam; 2013–2015 (Missouri State University)
Anna Lee, 2014–2015
Kenley Pelzer, with Stephen Gray; 2014–2016 (Argonne National Laboratory)
Muge Acik, 2015–2016
Ed Barry, 2015–2017 (Argonne National Laboratory)
Yu Jin Kim, 2016–2017
Hao-Cheng Yang, 2017–2018

## STUDENT ADVISEES

Elizabeth Nettleton, Summer 2007 (Trinity Consultants)
Grant Skudlarek, 2008–2009 (Snapchat, Inc.)
Rade Kuljic (with Mitra Dutta, Univ. of Illinois Chicago); 2010–2011 (Caterpillar, Inc.)
Naga Ravikanth Putrevu (with Ishaque Khan, Illinois Institute of Technology); 2011–2013 (Intel)
Maksym Plakhotnyuk (with Mitra Dutta, Univ. of Illinois Chicago); Spring 2012
Sidra Farid (with Mitra Dutta, Univ. of Illinois Chicago); 2012–2013
Shripriya Poduri (with Mitra Dutta, Univ. of Illinois Chicago); 2012–2013
Shoubin Xu (Sichuan University); 2012–2013
Shang-Jung Wu, Summer 2013 (NTU PhD)
Luísa Luna, Summer 2013 (LANXESS Elastomeros)
Kenley Pelzer (with Greg Engel, Univ. of Chicago); 2013–2014 (Argonne)

Lisa Bosman (with Wilkistar Otieno, Univ. Of Wisconsin-Milwaukee); 2013–2014 (College of Menominee Nation)
Michael Glinski (Northwestern BS), 2014–2015
Marjorie Segovia (Univ. of Chile), 2015–2016
Sydney Costello (Univ. of Minnesota-Duluth), Summer 2016
Anthony Edgeton (Univ. of Minnesota-Duluth), Summer 2016
Zijing Xia (Tsinghua University BS), Summer 2016
Rachna Bhoonah (Univ. of Chicago BS), Spring 2017
Ruben Waldman (Univ. of Chicago), 2015–
Zijing Xia (Univ. of Chicago), 2017–
Savannah Steadman (Tulane University), Summer 2018
Cheng Zhang (Zhejiang University), Summer 2018

## OTHER ADVISEES

Lt. Col. Eric Forsythe (Air Force Fellow), 2012–2013

## WORKSHOPS AND SYMPOSIA ORGANIZATION

Telluride Science Research Center: Water: Grand Challenges for Molecular Science and Engineering, with J. Skinner (July 2018)
ACS Fall National Meeting symposium on 1D Nanomaterials: Synthesis, Assembly, Properties, and Applications, with J. Hahm (August 2017)
ACS Spring National Meeting symposium on 1D Nanomaterials: Synthesis, Assembly, Properties, and Applications, with J. Hahm (April 2017)
Solar Energy Capture & Conversion at the Nanoscale, 2014 Argonne Users Meeting, with M. Chan and S.K. Gray (May 14, 2014)
MRS National Meeting workshop on Hierarchically Structured Materials for Energy Conversion and Storage; with J.H. Moon, P.-X. Gao, and C.-Y. Nam (November 2012)
AVS Prairie Chapter Meeting; with Julio Soares and Jerry Moore (September 1, 2011)
Current Challenges and Emerging Areas in Soft Matter; Oak Ridge, TN; Panelist (July 21-22, 2011)
TechConnect World 2011 (Nanotech Conference & Expo); Fabrication Committee (June 13-16, 2011)
Physics of Energy Storage Materials, APS March Meeting Focus Topic; with Don Siegel and Gholam-Abbas Nazri (March 2011)
70$^{th}$ Physical Electronics Conference; Organizing Committee member (June 15-18, 2010)
Workshop on Nanoscale Materials for Solar Energy Utilization, CNM Users' Meeting (October 6, 2009)
AVS Prairie Chapter Meeting; with Paul Lyman (June 9, 2008)
AVS Prairie Chapter Meeting; with Jerry Moore (June 12, 2006)
Finding a Job after Your Postdoc; with Brian Reiss (November 15, 2005)
Designing Research Budgets; with Brian Reiss & Geralyn Becker (April 25, 2005)
Building Visibility for Postdocs at Argonne and Beyond; with Michelle Arora & Brian Reiss (February 9, 2005)
Successful LDRD Writing for Postdocs; with Michelle Arora & Brian Reiss (January 12, 2005)
APS/CNM Users' Meeting Nanomagnetism Workshop; with Dongqi Li (May 4, 2004)

## INVITED PRESENTATIONS

Frontiers of Molecular Engineering; Chicago, IL (September 2018)

Telluride Town Talk; Telluride, CO (July 2018)
Telluride Science Research Center: "Water: Grand Challenges for Molecular Science and Engineering"; Telluride, CO (July 2018)
Chicago Section ACS; Chicago, IL (June 2018)
2018 Gordon Research Conference on Hybrid Electronic and Photonic Materials and Phenomena; Hong Kong (June 2018)
University of California-Davis, Physics Department; Davis, CA (February 2018)
University of Ottawa, Physics Department; Ottawa, Canada (January 2018)
Princeton University, Andlinger Center for Energy and the Environment; Princeton, NJ (December 2017)
University of Texas-Austin, Chemistry Department; Austin, TX (November 2017)
SolTech 2017; Munich, Germany (October 2017)
Homewood-Flossmoor Science Pub; Homewood, IL (September 2017)
Climate Carnival 2017, Abundance NC; Pittsboro, NC (May 2017)
2017 ANSER Symposium; Evanston, IL (April 2017)
National Research Council; Ottawa, Canada (April 2017)
Illinois Wesleyan University, Physics Department; Bloomington, IL (April 2017)
TMS2017 National Meeting; San Diego, CA (February 2017)
Nineteenth Century Club; Oak Park, IL (February 2017)
Brewer Science; Rolla, MO (February 2017)
Illinois Institute of Technology, Chemistry Department; Chicago, IL (January 2017)
DOE Basic Research Needs for the Energy-Water Nexus Workshop; Bethesda, MD (January 2017)
TEDx Naperville; Naperville, IL (November 2016)
US-China Forum on Water Management & Urban Development; Chicago, IL (October 2016)
Nanjing Technical University; Nanjing, China (September 2016)
US-China Water Workshop; Beijing, China (September 2016)
Shedd Aquarium Science Pub; Chicago, IL (August 2016)
Chicago Mensa; Rolling Meadows, IL (August 2016)
Argonne Training Program on Extreme-Scale Computing (ATPESC) 2016; St. Charles, IL (August 2016)
Fermilab Colloquium; Batavia, IL (July 2016)
Brookfield Zoo; Brookfield, IL (July 2016)
TEDx Savannah; Savannah, GA (June 2016)
Peggy Notebaert Nature Museum; Chicago, IL (June 2016)
Northwestern University Environmental Science, Engineering, and Policy Program; Evanston, IL (May 2016)
UChicago Innovation Week 2016 - Energy; Chicago, IL (May 2016)
UChicago Innovation Week 2016 - Water; Chicago, IL (May 2016)
Chicago Science Fest 2016; Chicago, IL (May 2016)
Northwestern University, Department of Environmental Engineering; Evanston, IL (May 2016)
UIUC-CNST Nanotechnology Workshop; Champaign, IL (May 2016)
National Louis University; Lisle, IL (April 2016)
36$^{th}$ annual Tornado and Severe Weather Seminar; Batavia, IL (April 2016)
2016 South by Southwest (SXSW) Interactive Festival; Austin, TX (March 2016)
Chicago Council on Science and Technology; Chicago, IL (March 2016)
Metropolitan Mayors Caucus; Joliet, IL (February 2016)
Museum of Science & Industry; Chicago, IL (January 2016)
League of Women Voters; Lake Forest, IL (October 2015)
Climate Ride; Sawyer, MI (October 2015)
EPRI Generation Sector Program Advisory Meeting; Chicago, IL (August 2015)

The Real Truth about Health 2015; Orlando, FL (May 2015)
E-MRS Spring 2015 Meeting; Lille, France (May 2015)
Utility Solar Conference 2015; San Diego, CA (April 2015)
QEERI International Computational Workshop on Solar Energy; Doha, Qatar (April 2015)
ACS National Meeting; Denver, CO (March 2015)
MRS National Meeting; Boston, MA (December 2014)
Ameren Corporation Photovoltaics Workshop; St. Louis, MO (November 2014)
Postdoctoral Research and Career Symposium; Argonne, IL; **Keynote address** (October 2014)
2014 International Symposium on Materials for Enabling Nanodevices (ISMEN2014); Tainan, Taiwan (September 2014)
ACS National Meeting; San Francisco, CA (August 2014)
2014 IUMRS-ICEM (International Union for Materials Research Societies - International Conference on Electronic Materials); Taipei, Taiwan; **Plenary talk** (June 2014)
National Taiwan University; Taipei, Taiwan (June 2014)
Renewable Energy Center of the Nuclear Research Institute; Taipei, Taiwan (June 2014)
University of Tennessee College of Engineering; Knoxville, TN (March 2014)
ACS National Meeting; Dallas, TX (March 2014)
University of Chicago, Institute for Molecular Engineering; Chicago, IL (February 2014)
2014 AAAS Annual Meeting; Chicago, IL (February 2014)
Optics & Photonics Taiwan, International Conference (OPTIC 2013); Chung-Li, Taiwan (December 2013)
ACS National Meeting; New Orleans, LA (April 2013)
Renewable Energy: From the research in basic science to technological application and innovation; Santiago, Chile (April 2013)
APS March Meeting; Baltimore, MD (March 2013)
University of Illinois Department of Earth and Environmental Sciences colloquium; Chicago, IL (February 2013)
Loyola University Department of Chemistry; Chicago, IL (January 2013)
University of Michigan Center for Solar and Thermal Energy Conversion; Ann Arbor, MI (October 2012)
University of Illinois at Chicago Energy Initiative; Chicago, IL (October 2012)
Advanced Research Workshop on Recent Trends and Prospects for Renewable Energy; Tashkent, Uzbekistan; **Keynote address** (October 2012)
Challenges in Photovoltaic Science, Technology, and Manufacturing: A workshop on the role of theory, modeling, and simulation (TMS); Lafayette, IN (August 2012)
National Cheng Kung University; Tainan, Taiwan (May 2012)
APS Users Meeting 2012; Argonne, IL (May 2012)
ACS National Meeting; Adamson Award symposium; San Diego, CA (March 2012)
ACS National Meeting; San Diego, CA (March 2012)
Smart Coatings 2012; Orlando, FL (February 2012)
Purdue University Department of Physics Colloquium; Lafayette, IN (February 2012)
Physical Society of the Republic of China; Chiayi, Taiwan (January 2012)
2011 International Symposium of Energy Technology and Strategy; Tainan, Taiwan; **Keynote address** (November 2011)
2011 ALS User Meeting; Berkeley, CA (October 2011)
Organic Photovoltaics 2011; Philadelphia, PA (September 2011)
ACS National Meeting; Denver, CO (August 2011)
Lawrence Berkeley National Laboratory Molecular Foundry; Berkeley, CA (August 2011)
Fermilab Colloquium; Batavia, IL (August 2011)
World Presidents' Organization; Argonne, IL (May 2011)

Science Careers in Search of Women Conference; Argonne, IL (April 2011)
ANSER Center colloquium; Evanston, IL (April 2011)
International School & Symposium on Multifunctional Molecule-Based Materials 2011; Argonne, IL (March 2011)
Bar Ilan University-Argonne Workshop; Argonne, IL (October 2010)
Argonne Math and Computer Science Division; Argonne, IL (September 2010)
Michigan State University conference on Complex Materials for Energy Applications; East Lansing, MI (June 2010)
Purdue University Department of Chemical Engineering; Lafayette, IN (May 2010)
Illinois Institute of Technology Department of Chemistry; Chicago, IL (April 2010)
Physical Society of the Republic of China; Tainan, Taiwan (February 2010)
Joint Argonne-Taiwan Workshop; Tainan, Taiwan (February 2010)
Yale University Department of Chemical Engineering; New Haven, CT (December 2009)
AVS National Meeting; San Jose, CA (November 2009)
DEP Summer Seminar; Argonne, IL (July 2009)
Brookhaven National Laboratory Center for Functional Nanomaterials; Upton, NY (May 2009)
DOE Review of LDRD; Argonne, IL (May 2009)
Northwestern-Argonne Workshop on Energy Supply; Argonne, IL (April 2009)
Plextronics, Inc.; Pittsburgh, PA (April 2009)
Postdoctoral Research Symposium [Plenary Keynote]; Argonne, IL (September 2008)
DEP Nanoscience Workshop; Argonne, IL (July 2008)
South Dakota State University Department of Electrical Engineering; Brookings, SD (April 2008)
DEP Nanoscience Workshop; Argonne, IL (July 2007)
Westmont Public Library, Westmont, IL (December 2006)
DEP Nanoscience Workshop; Argonne, IL (July 2006)
International Conference on Nanostructures Self-Assembling; Aix-en-Provence, France (July 2006)
APS & CNM 2006 Users Meeting Plenary Session; Argonne, IL (May 2006)
University of California at Davis Department of Chemical Engineering & Materials Science; Davis, CA (February 2006)
Argonne Center for Nanoscale Materials; Argonne, IL (January 2006)
University of Pittsburgh Department of Materials Science & Engineering; Pittsburgh, PA (January 2006)
University of Pittsburgh Department of Chemistry; Pittsburgh, PA (January 2006)
Haverford College Department of Chemistry; Haverford, PA (November 2005)
University of Illinois at Chicago Department of Chemistry; Chicago, IL (November 2005)
University at Buffalo Department of Chemistry; Buffalo, NY (November 2005)
Northwestern University Medill School of Journalism; Evanston, IL (March 2005)
ANL Materials Science Division Colloquium; Argonne, IL (June 2004)
DOE CSP Nanocomposite Magnets Meeting; Asilomar, CA (October 2003)
ANL Nanolunch Lecture Series; Argonne, IL (February 2003)

## CONTRIBUTED PRESENTATIONS

ALD 2018; J. Elam presenter; Incheon, Korea (July 2018)
ACS National Meeting; San Francisco, CA (April 2017)
Asia Pacific Hybrid and Organic Photovoltaics Conference (AP-HOPV17); M. Acik presenter; Yokohama, Japan (February 2017)

Asia Pacific Hybrid and Organic Photovoltaics Conference (AP-HOPV17); M. Acik presenter; Yokohama, Japan (February 2017)
Pacific Rim Symposium on Surfaces, Coatings and Interfaces (PacSurf 2016); M. Acik presenter; Kohala Coast, HI (December 2016)
Pacific Rim Symposium on Surfaces, Coatings and Interfaces (PacSurf 2016); M. Acik presenter; Kohala Coast, HI (December 2016)
AVS 2016; M. Acik presenter; Nashville, TN (November 2016)
AVS 2016; M. Acik presenter; Nashville, TN (November 2016)
2nd International Conference on Renewable Energy and Conversation (ICREC 2016); L. Bosman presenter; Perth, Australia (November 2016)
ECS Prime 2016; M. Acik presenter; Honolulu, HI (October 2016)
ECS Prime 2016; M. Acik presenter; Honolulu, HI (October 2016)
XXV International Materials Research Congress; M. Acik presenter; Cancun, Mexico (August 2016)
SXNS-14 (Surface X-ray and Neutron Scattering) Conference; J. Lal presenter; Stony Brook, NY (July 2016)
43rd IEEE PVSC; S. Garner presenter; Portland, OR (June 2016)
MRS National Meeting; M. Acik presenter; Phoenix, AZ (March 2016)
ACS National Meeting; R. Verduzco presenter; Boston, MA (August 2015)
ALD 2015; J. Elam presenter; Portland, OR (June 2015)
ALD 2015; J. Emery presenter; Portland, OR (June 2015)
ECS National Meeting; K. Pelzer presenter; Chicago, IL (May 2015)
ACS National Meeting; R. Verduzco presenter; Denver, CO (March 2015)
Coherence 2014; J. Lal presenter; Argonne, IL (September 2014)
Nanoscale Spectroscopy and Nanotechnology 8 (NSS-8); Chicago, IL (July 2014)
ALD 2014; M. Biswas presenter; Kyoto, Japan (June 2014)
SPIE Advanced Lithography; M. Biswas presenter; San Jose, CA (February 2014)
AIChE National Meeting; Q. Peng presenter; San Francisco, CA (May 2013)
IIE Annual Conference; L. Bosman presenter; San Juan, Puerto Rico (May 2013)
SPIE Advanced Lithography; J. Elam presenter; San Jose, CA (February 2013)
MRS National Meeting; Boston, MA (October 2012)
MRS National Meeting; W. Chen presenter; Boston, MA (October 2012)
MRS National Meeting; M. Nikiforov presenter; Boston, MA (October 2012)
MS&T 2012 Conference; M. Nikiforov presenter; Pittsburgh, PA (October 2012)
AIChE National Meeting; R. Verduzco presenter; Pittsburgh, PA (October 2012)
Microscopy & Microanalysis; J.G. Wen presenter; Phoenix, AZ (August 2012)
15th International Congress on Thermal Analysis and Calorimetry; M.P. Nikiforov presenter; Osaka, Japan (August 2012)
SPIE Optics and Photonics 2012; M. Nikiforov presenter; San Diego, CA (August 2012)
American Conference on Neutron Scattering 2012; W. Chen presenter; Washington, DC (June 2012)
MRS National Meeting; Y.-C. Tseng presenter; San Francisco, CA (April 2012)
APS National Meeting; W. Chen presenter; Boston, MA (March 2012)
MRS National Meeting; M. Nikiforov presenter; Boston, MA (November 2011)
MRS National Meeting; W. Chen presenter; Boston, MA (November 2011)
AIChE National Meeting; Minneapolis, MN; J. Elam presenter (October 2011)
ACS National Meeting; R. Verduzco presenter; Denver, CO (August 2011)
EIPBN 2011; Y.-C. Tseng presenter; Las Vegas, NV (June 2011)
CNM Users Meeting; N. Putrevu presenter; Argonne, IL (April 2011)
APS National Meeting; H. Hernandez-Noyola presenter; Anaheim, CA (April 2011)
MRS National Meeting; W. Chen presenter; Boston, MA (December 2010)

AIChE Annual Meeting; R. Verduzco presenter; Salt Lake City, UT (November 2010)
AVS National Meeting; Albuquerque, NM (October 2010)
EIPBN 2010; M. Ramanathan presenter; Anchorage, AK (June 2010)
ACS National Meeting; San Francisco, CA (March 2010)
AVS National Meeting; M. Ramanathan presenter, San Jose, CA (November 2009)
Organic Photovoltaics X; D. Hinkens presenter, San Diego, CA (August 2009)
NSRC Contractors' Meeting; S. Sibener presenter, Annapolis, MD (June 2009)
MRS National Meeting; I. Botiz presenter, San Francisco, CA (April 2009)
EMC User Workshop; Z. Zeng presenter, Argonne, IL (November 2008)
AVS National Meeting; Boston, MA (October 2008)
ACS Midwest Regional Meeting; C. Johnson presenter, Kearney, NE (October 2008)
SXNS-10, 10th International Conference on Surface X-ray and Neutron Scattering; J. Lal presenter; Paris, France (July 2008)
APS National Meeting; New Orleans, LA (March 2008)
The Future of Nanotechnology; Ithaca, NY (June 2007)
France-U.S. Nanoscience Workshop; Argonne, IL (June 2007)
CNM Users Meeting 2007; Argonne, IL (May 2007)
ACS National Meeting; Chicago, IL (March 2007)
AVS National Meeting; San Francisco, CA (November 2006)
Arrott Fest; Argonne, IL (September 2005)
MRS National Meeting; San Francisco, CA (March 2005)
AVS National Meeting; Anaheim, CA (November 2004)
CNR Meeting; Argonne, IL (November 2004)
Argonne Nanoscience Workshop; Argonne, IL (July 2004)
DOE NanoSummit; Washington, DC (June 2004)
APS March Meeting 2004; Montreal, Canada (March 2004)
MRS National Meeting; Boston, MA (December 2003)
Self-Assembly Workshop in Biology, Chemistry, and Hard Materials; Argonne, IL (July 2003)
Argonne Postdoctoral Round Table; Argonne, IL (July 2003)
APS March Meeting 2003; Austin, TX (March 2003)
CNR Postdoctoral Workshop; Chicago, IL (February 2003)
AVS National Meeting; Denver, CO (November 2002); Traum Competition
CNR Meeting; Argonne, IL (September 2002)
Space Materials MURI Meeting; Chicago, IL (June 2002)
Physical Electronics Conference; Atlanta, GA (June 2002); Nottingham Competition
Magnetic Films Group Seminar; Argonne, IL (June 2002)
7th Annual James Franck Institute Symposium; Chicago, IL (May 2002)
ACS National Meeting; Chicago, IL (August 2001)
Museum of Science & Industry Seminar Series; Chicago, IL (June 2001)
AVS Prairie Chapter Spring Meeting; Evanston, IL (May 2001)
Gordon Research Conference on Chemical Reactions at Surfaces; Ventura, CA (February 2001)
University of Chicago Student Lecture Series; Chicago, IL (October 2000)
AVS Prairie Chapter Fall Meeting; Rosemont, IL (September 2000)
APS March Meeting 2000; Minneapolis, MN (March 2000)
AVS Prairie Chapter Fall Meeting; Chicago, IL (October 1999)
Ninth Workshop on Surface Dynamics; Charlottesville, VA (June 1999)
APS Centennial Meeting; Atlanta, GA (March 1999)
Eastern Regional Photosynthesis Conference; Martha's Vineyard, MA (September 1996)

ACS National Meeting; New Orleans, LA (March 1996)

## PROFESSIONAL SOCIETIES AND SERVICE

AVS Prairie Chapter Chair (2010–2011)
AVS Prairie Chapter Vice-Chair (2008–2010)
AVS Prairie Chapter Executive Committee, Member (2003–2013)
American Chemical Society (1995–present)
American Physical Society (1999–present)
AVS Science & Technology Society (2002–present)
Materials Research Society (2003–present)
Sorter for APS March Meeting (2011 meeting)

Kohl Children's Museum Advisory Panel for "Powered by Nature", Member (2010–2011)
Museum of Science and Industry Advisory Panel for "Future Energy", Member (2011)
Museum of Science and Industry "Extreme Ice" Exhibit, Advisor (2016–2017)
Clean Energy Challenge 2012, Student team mentor (2012)
Numerous (>200) presentations on energy, water, and climate to students (elementary and high school, college, grad school) and representatives from museums, foundations, governments, industry, academia, and the general public

DOE Basic Research Needs Workshop for the Energy-Water Nexus, Co-organizer (2016–2017)
Institute for Molecular Engineering Faculty Recruitment Advisory Committee, Member (2011–2013)
Argonne Physical Sciences and Engineering Advisory Group, Member (2010–2011)
Argonne Energy Sciences and Engineering Advisory Group, Member (2009–2010)
Argonne Performance Evaluation Process Committee, Member (2007–2010)
CNM Nanoscience Colloquium Committee, (Founder and) Member (2007–2014)
Argonne Diversity & Inclusion Focus Group, Member (2012)
Argonne Sustainability Council, Member (2013–2014)
Argonne Director's Diversity & Inclusion Advisory Council, Member (2013–2015)
Argonne Working Group for Joint Center for Energy Secure Science & Policy (2014)
Argonne Review Team for Women and Minority Employee Concerns, Member (2015)

*Sustainable Energy & Fuels*, Advisory Board, Member (2016–present)
*Materials and Energy* (World Scientific Press) Series Board, Member (2016–present)
*Scientific Reports* (a *Nature* Group journal) Editorial Board, Member (2013–present)
*Journal of Virtual Experiments* (*JoVE*) Editorial Board, Member (2013–present)
*Polymers* Editorial Board, Member (2009–present)

Reviewer for Dutch Technology Foundation (2007)
Reviewer for ACS Petroleum Research Fund (2008, 2010, 2011, 2013, 2015, 2016, 2017)
Reviewer for Center for Functional Nanomaterials at Brookhaven (2008–2011)
Reviewer for DOE BES SBIR/STTR Program (2008)
Reviewer for DOE Solar SBIR/STTR Program (2009, 2010)
Reviewer and panelist for NSF Materials Processing and Manufacturing Program (2010)
Reviewer for DOE BES Materials Science and Engineering Division (2010, 2012, 2013, 2018)
Reviewer for DOE BES Chemical Sciences, Geosciences, and Biosciences Division (2018)
Reviewer for Stanford Synchrotron Radiation Lightsource (SSRL) (2010, 2013, 2014, 2016)

Reviewer for Israeli Ministry of Science (2010)
Reviewer for Iowa Energy Center (2011, 2014)
Reviewer for Experimental Program to Stimulate Competitive Research (DOE EPSCoR) (2011)
Reviewer for Advanced Light Source "Approved Program" (AP) (2011)
Reviewer and panelist for NSF Nano Micro/Opto Electronics, Sensing & Information Systems (2011)
Reviewer and panelist for NSF ECCS Program (2012)
Reviewer for Research Foundation – Flanders (FWO) (2013, 2014)
Reviewer for FONDECYT National Research Funding Competition (Chile) (2013)
Reviewer for ARO (2014)
Reviewer for National Science Center, Poland (2014, 2016, 2017)
Reviewer for DOE Early Career Award (2015)
Reviewer for NSF CMI Program (2015)
Reviewer for Chain Reaction Innovations (2016)
Reviewer for Israel Science Foundation (2018)
Reviewer for NSF Macromolecular, Supramolecular and Nanochemistry (MSN) Program (2018)
Reviewer for State Natural Science Award of the People's Republic of China (SNSA) (2018)
Active reviewer for >30 journals and the occasional book