

SETH DARLING

Scientist

Quantum and Energy Materials Group

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Education

Strategic Laboratory Leadership Program, UChicago Argonne, LLC
Glenn Seaborg Postdoctoral Fellow, Argonne National Laboratory
Ph.D. Physical Chemistry, University of Chicago
B.A. Chemistry and Astronomy, Haverford College

Awards and honors

- 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 (September 2012)
- ACS Leadership Development Award (January 2010)

Research interests

- Advanced materials for water treatment
- Solar energy materials, devices, and life cycle assessment
- Self-assembly of soft matter and hybrid nanomaterials
- Sequential infiltration synthesis (SIS)

Professional experience

- Argonne National Laboratory – Center for Nanoscale Materials (CNM) *2010–present*
Scientist
- Argonne National Laboratory – Physical Sciences and Engineering *2015–present*
Materials-for-Water Initiative Leader
- University of Chicago – Institute for Molecular Engineering *2013–present*
Fellow
- Argonne National Laboratory *2009–present*
Solar Energy Strategy Leader
- Argonne National Laboratory – Center for Nanoscale Materials (CNM) *2006–2010*
Assistant Scientist

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Selected recent publications

Selected from 100+ publications:

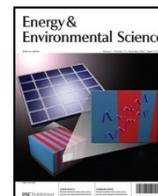
Water

1. 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.



Solar energy

2. 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.
3. 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.
4. 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.
5. Block copolymers for photovoltaics, S.B. Darling, *Energy Environ. Sci.* **2** (2009) 1266-1273.



Self-assembly

6. 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.
7. Directing the self-assembly of block copolymers, S.B. Darling, *Prog. Polym. Sci.* **32** (2007) 1152-1204.



Sequential infiltration synthesis (SIS)

8. 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.
9. 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.
10. Nanosopic patterned materials with tunable dimensions via atomic layer deposition on block copolymers, Q. Peng, Y.-C. Tseng, S.B. Darling, and J.W. Elam, *Adv. Mater.* **22** (2010) 5129-5133.



Books

- How to Change Minds about Our Changing Climate, Seth B. Darling and Douglas L. Sisterson, New York: The Experiment, 2014. (ISBN-10: 1615192239)



Patents

- Sequential infiltration synthesis for advanced lithography, S.B. Darling, Y.-C. Tseng, Q. Peng, and J.W. Elam, US Patent 8,980,418 B2; March 17, 2015.
- Spatially resolved imaging of opto-electrical property variations, M. Nikiforov, S.B. Darling, O. Suzer, J.R. Guest, and A. Roelofs, US Patent 8,836,944; Sept. 16, 2014.
- Hybrid solar cells via UV-polymerization of polymer precursor, S.B. Darling, S. Tepavcevic, T. Rajh, N.M. Dimitrijevic, and S.J. Sibener, US Patent 8,269,100; Sept. 18, 2012.