

KIMBERLY A. SEE, PH.D.

CURRICULUM VITAE

St. Elmo Brady Future Faculty Post-Doctoral Fellow
University of Illinois, Urbana-Champaign, IL
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EDUCATION

- 2014** **University of California**, Santa Barbara, CA
Ph.D. in Chemistry
Advisors: Professors Ram Seshadri and Galen Stucky
Thesis title: *Hybrid Architectures for Next Generation Batteries*
- 2009** **Colorado School of Mines**, Golden, CO
B.S. in Chemistry, *cum laude*

RESEARCH EXPERIENCE

- 2014 - present** **St. Elmo Brady Future Faculty Postdoctoral Fellow** University of Illinois, Urbana-Champaign, IL
Advisor: Prof. Andrew A. Gewirth
characterization of the bulk and surface speciation in Mg and Zn battery electrolytes
- 2011-2014** **Graduate student researcher** University of California, Santa Barbara, CA
Advisors: Profs. Ram Seshadri and Galen D. Stucky
synthesis and characterization of materials for use in the Li-S battery; development and understanding of Ca-based battery systems; investigation of charge storage mechanisms in organic electrode materials
- 2013, Oct-Nov** **Visiting researcher** University of Cambridge, Cambridge, UK
Advisor: Prof. Clare P. Grey
in-situ ⁷Li NMR during the discharge of a Li-S battery to evaluate the behavior of the discharge products and gain a fundamental understanding of the discharge mechanism
- 2010-2011** **R&D Chemist I** NuSil Technology, Carpinteria, CA
synthesis, characterization, and development of silicone materials for application in photonics devices and implantable inks
- 2009-2010** **Graduate student researcher** University of Colorado, Boulder, CO
Advisor: Prof. Gordana Dukovic
synthesis and characterization of oxy(nitride) photocatalytic nanocrystals
- 2008-2010** **Undergraduate research intern** National Renewable Energy Lab, Golden, CO
Advisors: Drs. John Turner and Todd Deutsch
characterization of thin film CuGaSe₂ for photoelectrochemical water splitting and development of photo-assisted electrodeposition of catalytic Pt clusters

AWARDS AND RECOGNITIONS

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|-------------|------|--|
| Fellowships | 2014 | St. Elmo Brady Future Faculty Fellowship (UIUC) |
| | 2012 | NSF ConvEne IGERT Fellowship (UCSB) |
| | 2009 | University of Colorado Graduate School Fellowship Award (CU) |
| Awards | 2013 | Outstanding Service to K-12 Education Outreach Programs (UCSB) |
| | 2009 | DOE Science and Energy Research Challenge Finalist (NREL) |
| | 2009 | Engineering Days Engineer: Chemistry (CSM) |
| | 2005 | Colorado School of Mines Medal in Math and Science (CSM) |

15. **Kimberly A. See**, Margaret A. Lumley, Galen D. Stucky, Clare P. Grey, and Ram Seshadri, "Reversible Capacity of Conductive Carbon Additives at Low Potentials: Caveats for Testing Alternative Anode Materials for Li-Ion Batteries," *J. Electrochem. Soc.* **2017**, 164, A327-A333. [DOI]
14. Heng-Liang Wu, Minjeong Shin, Yao-Min Liu, **Kimberly A. See**, and Andrew A. Gewirth, "Thiol-Based Electrolyte Additives for High-Performance Lithium-Sulfur Batteries," *Nano Energy* **2017**, 32, 50-58. [DOI]
13. **Kimberly A. See**[†], Heng-Liang Wu[†], Kah Chun Lau, Mingjeong Shin, Lei Cheng, Mahalingam Balasubramanian, Kevin G. Gallagher, Larry A. Curtiss, and Andrew A. Gewirth, "Effect of Hydrofluoroether Cosolvent Addition on Li Solvation in Acetonitrile-Based Solvate Electrolytes and Its Influence on S Reduction in a Li-S Battery," *ACS Appl. Mater. Interfaces* **2016**, 8, 34360-34371 († contributed equally). [DOI]
12. Albert L. Lipson, Sang-Don Han, Baofei Pan, **Kimberly A. See**, Andrew A. Gewirth, Chen Liao, John T. Vaughey, and Brian J. Ingram, "Practical Stability Limits of Magnesium Electrolytes," *J. Electrochem. Soc.* **2016**, 163, A2253-A2257. [DOI]
11. **Kimberly A. See**, Karena W. Chapman, Lingyang Zhu, Kamila M. Wiaderek, Olaf J. Borkiewicz, Christopher J. Barile, Peter J. Chupas, and Andrew A. Gewirth, "The Interplay of Al and Mg Speciation in Advanced Mg Battery Electrolyte Solutions," *J. Am. Chem. Soc.* **2016**, 138, 328-337. [DOI]
10. Hongmei Zeng, Deyu Liu, Yichi Zhang, **Kimberly A. See**, Young-Si Jun, Guang Wu, Jeffrey A. Gerbec, Xiulei Ji, and Galen D. Stucky, "Nanostructured Mn-Doped V₂O₅ Cathode Material Fabricated from Layered Vanadium Jarosite," *Chem. Mater.* **2015**, 27, 7331-7336. [DOI]
9. **Kimberly A. See**, Stephan Hug, Katharina Schwinghammer, Margaret A. Lumley, Yonghao Zheng, Jaya M. Nolt, Galen D. Stucky, Fred Wudl, Bettina V. Lotsch,* and Ram Seshadri,* "Lithium Charge Storage Mechanisms for Cross-Linked Triazine Networks and Their Porous Carbon Derivatives," *Chem. Mater.* **2015**, 27, 3821-3829. [DOI]
8. Kristin M. Ø. Jensen, Xiaohao Yang, Josefa Vidal Laveda, Wolfgang G. Zeier, **Kimberly A. See**, Marco D. Michiel, Brent C. Melot, Serena A. Corr, and Simon J. L. Billinge, "X-ray Diffraction Computed Tomography for Structural Analysis of Electrode Materials in Batteries," *J. Electrochem. Soc.* **2015**, 162, A1310-A1314. [DOI]
7. **Kimberly A. See**, Michal Leskes, John M. Griffin, Sylvia Britto, Peter D. Matthews, Alexandra Emly, Anton Van der Ven, Dominic S. Wright, Andrew J. Morris,* Clare P. Grey,* and Ram Seshadri,* "Ab initio Structure Search and in situ ⁷Li NMR Studies of Discharge Products in the Li-S Battery System," *J. Am. Chem. Soc.* **2014**, 136, 16368-16377. [DOI]
6. David Vonlanthen, Pavel Lazarev, **Kimberly A. See**, Fred Wudl, and Alan J. Heeger, "A Stable Polyaniline-Benzoquinone-Hydroquinone Supercapacitor," *Adv. Mater.* **2014**, 26, 5095-5100. [DOI]
5. **Kimberly A. See**, Young-Si Jun, Jeffrey A. Gerbec, Johannes K. Sprafke, Fred Wudl, Galen D. Stucky, and Ram Seshadri, "Sulfur-functionalized Mesoporous Carbons as Sulfur Hosts in Li-S Batteries: Increasing the Affinity of Polysulfide Intermediates to Enhance Performance," *ACS Appl. Mater. Interfaces* **2014**, 6, 10908-10916. [DOI]
 - This research was highlighted as an impactful publication in the battery field in the virtual issue "Recent Advances in Battery Science and Technology" in *Chemistry of Materials* (<http://pubs.acs.org/page/vi/2015/batteries.html>) and by the Institute for Energy Efficiency (IEE) at UCSB (<http://iee.ucsb.edu/higher-performing-rechargeable-batteries>).
4. Kyoung Hwan Kim, Young-Si Jun, Jeffrey A. Gerbec, **Kimberly A. See**, Galen D. Stucky, Hee-Tae Jung, "Sulfur Infiltrated Mesoporous Graphene-Silica Composite as a Polysulfide Retaining Cathode Material for Lithium-Sulfur Batteries," *Carbon* **2014**, 69, 543-551. [DOI]
3. Jihee Park, Young-Si Jun, Woo-ram Lee, Jeffrey A. Gerbec, **Kimberly A. See**, and Galen D. Stucky, "Bimodal Mesoporous Titanium Nitride/Carbon Microfibers as Efficient and Stable Electrocatalysts for Li-O₂ Batteries," *Chem. Mater.* **2013**, 25, 3779-3781. [DOI]
2. **Kimberly A. See**, Jeffrey A. Gerbec, Young-Si Jun, Fred Wudl, Galen D. Stucky, and Ram Seshadri, "A High Capacity Calcium Primary Cell Based on the Ca—S System," *Adv. Energy Mater.* **2013**, 8, 1056-1061. [DOI]
1. Luke A. Connal, Nathaniel A. Lynd, Maxwell J. Robb, **Kimberly A. See**, Se Gyu Jang, Jason M. Spruell, and Craig J. Hawker, "Mesostructured Block Copolymer Nanoparticles: Versatile Templates for Hybrid Inorganic/Organic Nanostructures," *Chem. Mater.* **2012**, 24, 4036-4042. [DOI]

PRESENTATIONS

Invited Oral Presentations

- 2016 July** **Invited Speaker at the STFC Batteries Meeting**, *The Cosener's House, Abingdon, UK*
"Solvation structures of Mg cations in the MACC electrolyte"
- 2015 March** **Invited Seminar at the University of Michigan**, *University of Michigan, Ann Arbor, MI*
"All inorganic electrolytes for Mg batteries: Investigating speciation in the magnesium aluminum chloride complex"
- 2014 Feb.** **Materials Research Outreach Program Symposium**, *University of California, Santa Barbara, CA*
"Beyond Li-ion: Conversion reaction systems for next generation batteries"
- 2012 June** **Materials for Catalysis and Energy Applications**, *Chalmers University, Gothenburg, Sweden*
"Lithium-sulfur battery systems"

Oral Presentations

- 2016 March** **American Chemical Society Spring Meeting**, *San Diego, CA*
"Codependence of Mg and Al speciation in advanced Mg electrolytes: Identifying the active complexes in the MACC electrolyte"
- 2015 Dec.** **PacifiChem**, *Honolulu, HI*
"Investigation of discharge products in the Li-S battery using *in situ* ^7Li NMR coupled with ab initio structure search calculations"
- 2014 April** **Materials Research Society Spring Meeting**, *San Francisco, CA*
"Beyond Li-ion chemistry: Calcium – sulfur reaction conversion energy storage"
- 2013 April** **American Chemical Society Spring Meeting**, *New Orleans, LA*
"Beyond lithium intercalation chemistry: Calcium – sulfur reaction conversion energy storage"
- 2012 Nov.** **Materials Research Society Fall Meeting**, *Boston, MA*
"Lithium-sulfur energy storage: Sulfur-modified carbons as sulfur hosts"

Poster Presentations

- 2016 July** **Gordon Research Conference: Solid State Chemistry**, *Colby-Sawyer College, New London, NH*
"Cross-linked triazines and their porous carbon derivatives as cathode materials in Li batteries"
- 2016 June** **18th International Meeting on Lithium Batteries**, *Chicago, IL*
"The speciation of Mg and Al in chloride-containing Mg battery electrolyte solutions"
- 2016 Feb.** **Gordon Research Conference: Batteries**, *Ventura, CA*
"Investigation of the active complexes in the magnesium aluminum chloride complex electrolyte"
- 2014 March** **Gordon Research Conference: Batteries**, *Ventura, CA*
"The calcium-sulfur primary conversion reaction battery system"
- 2013 July** **North American Solid State Chemistry Conference**, *Oregon State University, Corvallis, OR*
"Towards sustainable and green energy storage: The successes and challenges of the Ca-S room temperature primary cell"
- 2013 Feb.** **Materials Research Outreach Program Symposium**, *University of California, Santa Barbara, CA*
"Sustainable and Earth abundant materials for energy storage: the Li-air and Ca-S systems"
- 2012 March** **Gordon Research Conference: Batteries**, *Ventura, CA*
"Beyond Intercalation Energy Storage: Lithium-Sulfur Conversion Reaction Batteries"
- 2012 Feb.** **International Workshop on Advanced Materials**, *Ras Al Khaimah Center for Advanced Materials, United Arab Emirates*
"Beyond Intercalation Energy Storage: Lithium-Sulfur Conversion Reaction Batteries"
- 2009 Nov.** **DOE Science and Energy Research Challenge (SERCh)**, *Oak Ridge National Laboratory, Oak Ridge, TN*
"Analysis of CuGaSe₂ Films for Photoelectrochemical Water Splitting"
- 2009 March** **American Chemical Society Spring Meeting**, *Salt Lake City, UT*
"Analysis of CuGaSe₂ Films for Photoelectrochemical Water Splitting"

TEACHING AND MENTORING

Mentoring Positions

Summer 2015	Mentor and research supervisor Research Experience for Undergraduates (REU) program, University of Illinois, Urbana, IL
2012-2014	Mentor and research supervisor Research Internships in Science and Engineering (RISE) program, UC Santa Barbara, CA
2012, Fall	Lead Teaching Assistant Department of Chemistry & Biochemistry, UC, Santa Barbara, CA

Teaching Assistant Positions

2011-2012	General Chemistry Lab , University of California, Santa Barbara, CA
2009, Fall	General Chemistry for Engineers , University of Colorado, Boulder, CO
2006, Spring	Forensic Chemistry , Trinity College, Hartford, CT

AFFILIATIONS AND MEMBERSHIPS

Service	NSF Panel Reviewer, NSF CBET Division (Spring 2015, Spring 2016) Reviewer, <i>Scientific Reports</i> (2016 –present) Reviewer, <i>Nano Energy</i> (2016 – present) Reviewer, <i>Chemistry of Materials</i> (2014 – present) Reviewer, <i>Journal of Materials Chemistry</i> (2011 – present)
Professional Societies	American Chemical Society, Member Materials Research Society, Member Electrochemical Society, Member
UCSB	Materials Science Ambassador, Partnerships for Research and Education in Materials program (2012 – 2014) Graduate Students for Diversity in Science, Scheduling Chair (2011- 2014)
Mines	Blue Key National Honors Society Student Affiliate, Secretary and Member Earthworks, Member

OUTREACH ACTIVITIES *

UIUC	Retreat for Graduate Women in Chemistry Planning Committee Retreat for Graduate Women in Chemistry, Invited Speaker and Mentor Women Chemists Committee's Girls Day Camp, Volunteer
UCSB	Materials Science Ambassador for Partnerships for Research and Education in Materials Graduate Students for Diversity in Science, Scheduling Chair Solar car workshop volunteer through the Materials Research Laboratory (MRL) Buckyball and "It's a Materials World" workshop volunteer through the MRL

*Outreach activities at CU Boulder and Colorado School of Mines are omitted and are available upon request

REFERENCES

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