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Engineering & Scientific Consulting

Katie Hamann, Ph.D.

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Professional Profile

Dr. Hamann has expertise in the areas of electrochemistry, photoelectrochemistry, nanostructured materials, and materials characterization. She has experience with general electrochemical methods as well as numerous materials characterization techniques including scanning electron microscopy (SEM), energy dispersive X-ray spectroscopy (EDS), atomic force microscopy (AFM), and X-ray diffraction (XRD). She has used this knowledge to understand and characterize corrosion and material failure, as well as to study corrosion protection and mitigation strategies.

Dr. Hamann completed her doctoral work at Caltech where she developed light-directed electrodeposition techniques for the generation of highly ordered mesostructured semiconductors. As a National Science Foundation (NSF) Fellow, she expanded the materials accessible via the technique and investigated how optical inputs could be adjusted to direct the synthesis of unique and complex nanostructures with multidimensional anisotropy.

Academic Credentials & Professional Honors

Ph.D., Chemistry, California Institute of Technology (Caltech), 2022

B.A., Chemistry, Eastern Oregon University, 2016

National Science Foundation Graduate Research Fellowship, 2018-2021

Publications

Hamann, K. R.; Meier, M. C.; Lewis, N. S.; Carim, A. I., Plastic Morphological Response to Spectral Shifts during Inorganic Phototropic Growth. *JACS Au* 2022, 2, 865-874. DOI: 10.1021/jacsau.1c00588.

Hamann, K. R.; Carim, A. I.; Meier, M. C.; Lewis, N. S. Path-Dependent Morphological Evolution of Se–Te Mesostructures Prepared by Inorganic Phototropic Growth. *J. Am. Chem. Soc.* 2020, 142, 19840–19843. DOI: 10.1021/jacs.0c09798.

Hamann, K. R.; Carim, A. I.; Meier, M. C.; Thompson, J. R.; Batara, N. A.; Yermolenko, I. S.; Atwater, H. A.; Lewis, N. S. Optically Tunable Mesoscale CdSe Morphologies via Inorganic Phototropic Growth. *J. Mater. Chem. C* 2020, 8, 12412–12417. DOI: 10.1039/D0TC02126A.

Carim, A. I.; Hamann, K. R.; Batara, N. A.; Thompson, J. R.; Atwater, H. A.; Lewis, N. S. Template-Free Synthesis of Periodic Three-Dimensional PbSe Nanostructures via Photoelectrodeposition. *J. Am. Chem. Soc.* 2018, 140, 6536–6539. DOI: 10.1021/jacs.8b02931.

Presentations

Hamann, K. R.; Carim, A. I.; Thompson, J. R.; Batara, N. A.; Atwater, H. A.; Lewis, N. S. Maskless Photoelectrochemical Fabrication of Anisotropic Three-Dimensional Nanostructured Semiconductors. In Nanotechnology General Session, Proceedings of the 233rd ECS Meeting, Seattle, WA, May 12-17, 2018.

Hamann, K. R.; Carim, A. I.; Thompson, J. R.; Batara, N. A.; Atwater, H. A.; Lewis, N. S. Template Free Photoelectrodeposition of Highly Periodic Three-Dimensional PbSe Nanostructures. In Fundamentals of Electrochemical Growth from UPD to Microstructures, Proceedings of the 232nd ECS Meeting, National Harbor, MD, October 1-5, 2017.