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**Presentation:** Late News - Hot Topic Poster Presentation

Symposium: **ES05: Cooperative Catalysis for Energy and Environmental Applications**

**Abstract Title:** Modeling Current-Potential Responses of Homogeneous-Heterogeneous Photocathodes

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**Abstract Body:**

Chemical modification of semiconductor surfaces with molecular electrocatalysts provides a strategy for developing integrated homogeneous-heterogeneous materials capable of converting sunlight to fuels and other value-added products, but their development is hampered by an incomplete understanding of the factors limiting their performance. [1-5] Although kinetic models have been separately developed to describe photoelectrochemical or homogeneous electrocatalytic reactions, related modeling for molecular-modified hybrid photoelectrodes has not been as extensively elaborated. This presentation addresses the interplay between light absorption, charge transfer, and catalytic activity during photoelectrosynthetic transformations at a molecular-modified semiconductor surface. The analysis provides opportunities to better understand the principles governing these hierarchical constructs and develop improved photocatalytic assemblies.

1. B. L. Wadsworth, D. Khusnutdinova, G. F. Moore, J. Matter. Chem. A., 6, 21654–21665 (2018); DOI:10.1039/C8TA05805A.

2. D. Khusnutdinova, A. M. Beiler, B. L. Wadsworth, S. I. Jacob, G. F. Moore, Chem. Sci., 8, 253–259 (2017); DOI: 10.1039/c6sc02664h.

3. A. M. Beiler, D. Khusnutdinova, B. L. Wadsworth, G. F. Moore, Inorg. Chem., 56, 12178–12185 (2017); DOI:10.1021/acs.inorgchem.7b01509.

4. A. M. Beiler, D. Khusnutdinova, S. I. Jacob, G. F. Moore, ACS Appl. Mater. Interfaces, 8, 10038–10043 (2016); DOI: 10.1021/acsami.6b01557.

5. B. L. Wadsworth, A. M. Beiler, D. Khusnutdinova, S. I. Jacob, G. F. Moore, ACS Catal., 6, 8048–8057 (2016); DOI: 10.1021/acscatal.6b02194.