**From oxidative cyclizations to microelectrode arrays to the processing of lignin derived materials: Using electrochemistry to solve synthetic problems of structure and location.**

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Organic electrochemistry is a powerful tool for conducting oxidation and reduction reactions. It allows for the generation of highly reactive intermediates, the initiation of interesting new umpolung reactions, the confinement of chemical reactions to site-specific sites on microelectrodes arrays that have over 12,000 electrodes/cm2, and the recycling of a wide variety of chemical reagents in a manner that is both atom and energy economical. For each challenge, a constant current electrolysis can be employed so that the potential at the electrode automatically adjusts to that of a substrate or catalyst. This means that structure activity studies on reactive radical ion intermediates originating from a variety of substrates, and sustainable approaches for conducting a wide variety of oxidation and reduction reactions can be designed in a simple, straight forward manner.

The talk presented will highlight the synthetic utility of electrochemistry, as well as discuss the mechanistic principles that allow organic chemists to take full advantage of the technique.

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AWARDS:

Manuel M. Baizer Award for Contributions to Organic Electrochemistry: Division of Organic and Biological Electrochemistry, The Electrochemical Society. To be Awarded: Spring 2016.

American Chemical Society’s “St. Louis Award”, 1997