

MIT Chemical Engineering Department

Spring 2019 Seminar Series

<http://cheme.mit.edu/seminar-series/>

Electrochemistry for Sensors and Energy



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Tuesday, February 26, 2019
4:15pm (Reception at 4:00pm)
66-110

Abstract: Electrochemistry is an exceptionally powerful tool to form chemical bonds and monitor chemical and biological interactions. By improving the chemistry used to assemble biomolecules on electrode surfaces, the selectivity and sensitivity of these devices has been significantly improved. Superior fabrication methods have led to direct electrochemical detection of the methyltransferase DNMT1, a cancer biomarker, from human tissue samples. Improvements have also been made to the patterning of non-adherent cells for microbial fuel cell applications. Additionally, electrochemistry combined with synthetic biology has enabled the detection of environmental pollutants at sub-ppb levels. By combining improved chemistries for biomolecule modification with unique signal amplification strategies, we have successfully detected targets from extremely complex solutions and improved current generation in microbial fuel cells.