Electrochemical Determination and Speciation of Mercury in Aqueous Systems

Motivation:

Current methods of dissolved mercury and methylmercury determination in sediment porewater are time-consuming and often disturb the *in-situ* conditions, resulting in either gross over- or under-estimations of the true dissolved concentrations. Also, real-time monitoring for mercury and methylmercury could result in safer public and private drinking water supplies by alerting operators or homeowners of mercury levels above the EPA's MCL.

Methodology:

- Synthesize various materials shown to electrochemically detect mercury and/or methylmercury in aqueous, laboratory settings.
- Modify electrodes to simultaneously determine mercury(II) and methylmercury without chemical addition to the aqueous solution.
- Demonstrate and verify efficacy of the electrode in an impacted-sediment site.
- Develop user-friendly software for determination of mercury concentrations with limited user knowledge.