**Department of Chemical Engineering**

**Seminar Schedule**

**Environmental Applications of Electroactive Membranes**

Chad D. Vecitis

Associate Professor of Environmental Engineering

Harvard Paulson School of Engineering and Applied Sciences

**Abstract**

Conventional water treatment technologies have fallen into two categories; separations where the hazardous species is separated from the water and transformations where the hazardous species is transformed into an innocuous species. Nanotechnology has enabled the development of separation-transformation hybrids. The hybridization of electrochemistry and filtration yields a number of synergisms between the two normally disparate processes such as increases in electrochemical kinetics by >10-fold due to internal electrode convection and in situ reduction of foulant accumulation. The electrochemical filter has been observed to be effective and efficient for drinking water (bacteria/virus/arsenic removal/inactivation), groundwater (sequential reduction-oxidation of nitrobenzene), capacitive deionization, and wastewater (oily & municipal polishing) as well as resource recovery (mining wastewater Cu) and waste-to-energy (wastewater-to-H2). Recent results on conductive non-Faradaic membranes and surface coatings for organic- and bio- fouling reduction via low power capacitive charging, electrophoresis, and dielectrophoresis as well as design and scale-up of the device will also be discussed.

**Bio**

Chad D. Vecitis is an Associate Professor of Environmental Engineering at the Paulson School of Engineering and Applied Sciences, Harvard University, where he has been actively involved in teaching and research since 2010. Dr. Vecitis received B.A. in Chemistry from Johns Hopkins and his Ph.D. degree in Chemistry from the California Institute of Technology. Dr. Vecitis’ research involves development of novel technologies including (re)active antifouling materials, carbon nanoarchitectures for membranes and electrodes, interfacial processes in the environment, fate and transport of emerging contaminants, advanced oxidation processes, electrochemistry for energy and the environment, and application of analytical and characterization techniques in environmental science and engineering. Along with students and colleagues, he has published over 70 peer-reviewed journal articles. Currently, Dr. Vecitis is teaching 1) Water Engineering, 2) Advanced Water Treatment, and 3) Environmental Nanotechnology. He has been invited to discuss his research at many universities, institutions, and symposia and his research program is recognized internationally.

**Seminar**

**Wednesday, Feb 7, 2018**

**3:00 pm**

**Livermore 101**