HAJIM SCHOOL OF ENGINEERING AND APPLIED SCIENCES
UNIVERSITY of ROCHESTER

Department of Chemical Engineering presents

Professor Paul W. Bohn

Arthur J. Schmitt Professor of Chemical and Biomolecular Engineering
University of Notre Dame
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Goergen Hall 101 @ 3:30pm

"Bifunctional Nanostructures for Studies of Single Electron Transfer Reactions"

One limit in chemical reaction engineering is the control of single reaction events, a goal which can now be achieved with the aid of a special nanophotonic-nanoelectrochemical architecture - the electrochemical zero-mode waveguide (E-ZMW). These bimodal nanopore structures link single electron-transfer events to changes in light emission through fluorigenic redox reactions, such as the conversion of flavin mononucleotide, FMN, which contains an isoalloxazine chromophore that is fluorescent in the oxidized state, FMN, but not in the reduced state, $FMNH_2$. The bimodal optical-electrochemical functionality of the E-ZMW enables a variety of non-classical reaction studies ultimately enabling the characterization and control of reaction dynamics of single molecules and single nanoparticles.