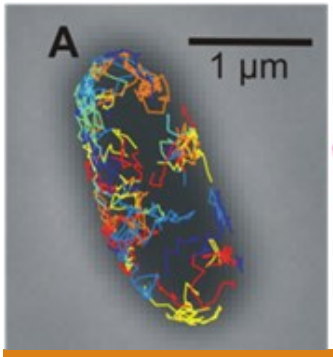
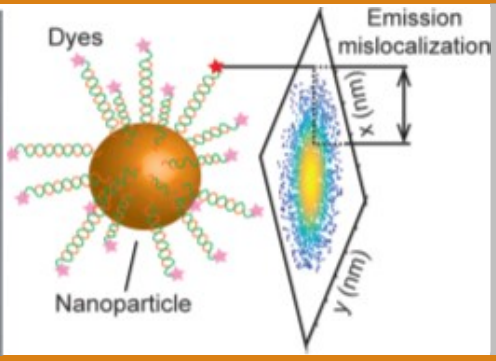
PHYSICAL SEMINAR

Professor Julie Biteen

University of Michigan

Department of Chemistry





Monday, May 20, 4:00pm

473 Hutchison Hall

University of Rochester

Department of Chemistry

Title: "Single-molecule imaging uncovers nanometer-scale fundamentals of cell biology and plasmonics"

Abstract:

Our lab has been developing new super-resolution fluorescence microscopy methods to locate, track, and analyze single molecules to answer fundamental, unanswered questions in living bacterial cells. I will discuss how we are measuring and understanding the dynamical interactions essential for carbohydrate catabolism in the human gut microbiome. Overall, our results provide fundamental insight of relevance to human health and disease.

On the other hand, the resolution of single-molecule bio-imaging is limited by the brightness of fluorescent probes. I will discuss how we are addressing this limitation by taking advantage of the localized surface plasmon resonances that result from the interaction of light with metal nanoparticles to improve the brightness and photostability of nearby fluorescent labels. We have measured plasmon-enhanced fluorescence one dye at a time in a single-molecule approach that eliminates ensemble averaging to discover how coupling leads to a predictable shift of the emission position, angle, and polarization.

Host: Professor Kathryn Knowles • Email: knowles@chem.rochester.edu