

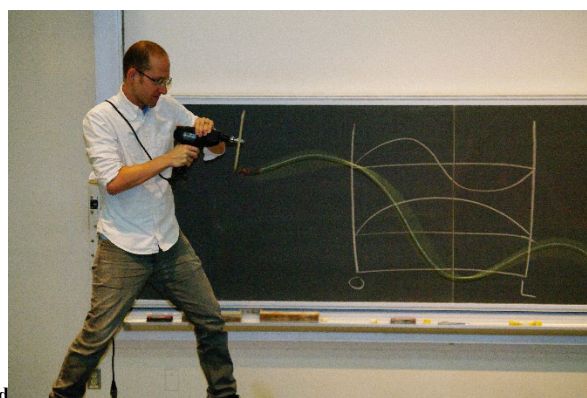


## Analytical Chemistry Seminar

Tuesday, April 5, 2022

3:30 PM, WTHR 320

*“Melding Photonics and Chemistry for New Forms  
of Single-Molecule Spectroscopy”*



**Professor Randall Goldsmith**  
**Department of Chemistry**  
**University of Wisconsin Madison**

### Abstract

Photonic devices offer new ways of sculpting light-matter interactions to alter how scientists use light to probe the behavior of molecules. I will tell three stories to illustrate this exciting notion. In the first story, I will describe how we can use Zero-Mode Waveguides to do high-concentration single-molecule biophysical studies and elucidate the mechanism of an important regulator of pacemaking ion channels. In the second story, I will discuss how high-Q optical microresonators can be used as spectrometers for non-emissive molecules and show an application in the exploration of the electronic structure of a conducting polymer, PEDOT:PSS. Finally, I will describe the beginnings of a new project on using topological photonics for spectroscopy, including the development of new 3D-printed topological waveguides