



Department of Chemistry

2019 Rothchild Lecture

Welcomes

**Professor Gregory Scholes**

Department of Chemistry

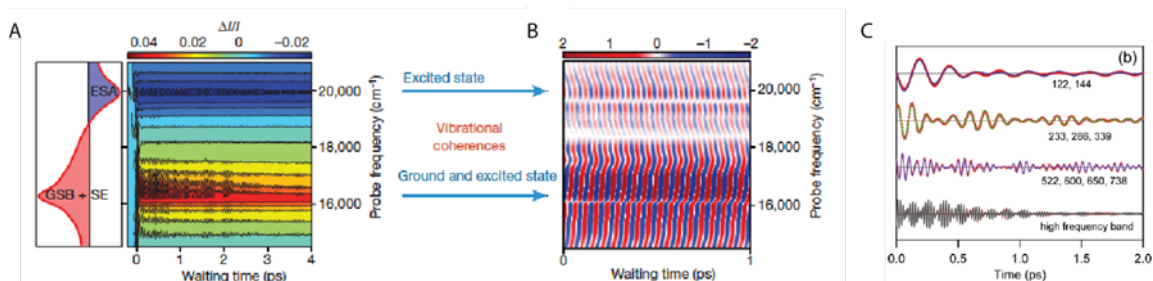
Princeton University

Monday, January 28<sup>th</sup>, at 4:00 pm  
Lander Auditorium, 140 Hutchison Hall

**Welcome Reception – First Floor Lounge Area at 5:15 p.m.**



*“Probing Ultrafast Chemical Dynamics Inspired by the Rhythms of Fireflies”*



**Abstract:**

Coherence phenomena arise from interference, or the addition, of wave-like amplitudes in phase [1]. While coherence has been shown to yield transformative new ways for improving function, advances have been limited to pristine matter, as quantum coherence is considered fragile. Here I will discuss how vibrational and vibronic wavepackets entrain ensembles of molecules, like the synchronized flashing of fireflies. I will discuss how this can be used to probe mechanisms of ultrafast dynamics and how in-step vibrational motion might be employed to control function on ultrafast timescales. I will give examples that include light-harvesting in photosynthesis, energy flow in organometallic molecules that is ‘wired’ by Fermi resonance, and ultrafast electron transfer in molecular systems.

**Host: Zachary Piontkowski, B28 Hutchison Hall, (585) 275-6482, zpiontko@ur.rochester.edu**