

Eavesdropping on Conversations Between Molecular Vibrations

Fri, February 17
3:15 pm
RNS 310

Chemistry Seminar

Infrared spectroscopy is often used as an analytical tool to determine what functional groups are present on a solute. Beyond telling us what molecules are present, vibrations can also be used as a probe of their surroundings; they can communicate their interactions with other vibrations on the same molecule or with the surrounding solvent bath. With the right measurement tool, their stories can be heard. The question is: are they telling us the whole story or even the true story of their experiences, or are we losing the message in translation? Our group uses two-dimensional IR spectroscopy to eavesdrop on communications between molecular vibrations. From these measurements, we determine the time scales of molecular dynamics experienced by vibrations on organometallic catalysts and semiconducting nanoparticles. With the help of experimental design and MD simulations, we explore the fidelity of our interpretations to separate fact from fiction.



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Aaron received his BS in Chemistry from Arizona State University in 1999, doing undergraduate research with Prof. J. Devens Gust, a synthetic chemist of all things. He went on to get his PhD at Northwestern University working with Prof. Joe Hupp, an electrochemist of all things. And he was then an NIH Ruth Kirschstein Fellow working with Prof. Michael Fayer at Stanford, finally a spectroscopist. He began his independent career at the U of MN in 2006.

Donuts will be provided