University of Miami, Physics Department Colloquium

Date: Wednesday, Oct 30, 2024
Time: 4:00 pm – 5:00 pm
Location: Wilder Auditorium – Rm 112, Knight Physics Building

Understanding and Controlling Emission from Individual and Coupled Emit

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Abstract

Photoluminescence imaging and spectroscopy are powerful tools that can reveal structure in biological systems, charge dynamics in electronic systems, and reaction dynamics in chemical systems, among others. Additionally, photoluminescence from single emitters is a critical to quantum technologies such as quantum sensing and quantum communication. Here, I investigate the distance and spectral dependencies of enhanced light emission from single fluorophores coupled to plasmonic gold nanoparticles and the photoluminescence from gold nanoparticles themselves using custom built, single-particle, fluorescence microscopes. This understanding of emission mechanisms and enhancement can enable new technologies for quantum sensing and quantum communication.

Bio

Stephen A. Lee is an Assistant Professor of Chemistry at the University of Miami. His research group studies the interaction and control of individual quantum emitters coupled to plasmonic cavities for quantum sensing and quantum communication purposes using frequency and time-resolve emission microscopy. Stephen obtained his bachelor's degree in chemistry at Sam Houston State University in 2014 with an undergraduate thesis under Professor David E. Thompson. Stephen then completed his PhD in Chemistry in 2019 in Professor Julie S. Biteen's group at the University of Michigan, where he earned Dow and PPG Summer Research Fellowships and the Rackham Graduate Dissertation Fellowship. He then moved to Rice University as a Post-Doctoral Researcher in Professor Stephan Link's group from 2019-2023 and finally to the University of Illinois at Urbana-Champaign in Professor Christy F. Landes's group in 2023-2024.