CHEMISTRY & BIOCHEMISTRY COLLOQUIUM: Molecular access to the high density of QD states for Photon Upconversion

MingLee Tang
Associate Professor, Department of Chemistry
University of Utah

Date:
12/9/2022

Time:
1:30 PM - 2:50 PM

Location:
COB 267

About The Speaker:

Ming Lee Tang is an Associate Professor of Chemistry at the University of Utah very interested in fostering electronic communication between conjugated molecules and nanoparticles. After her B.S. from Brandeis University and Ph.D. from Stanford University, she did a postdoctoral stint at the University of California, Berkeley. She launched her independent career at the University of California, Riverside in 2012. In 2020, she was highlighted by the journal ACS Energy Letters as one of the "Women scientists at the forefront of energy research". Tang is a participant in the 2018 Department of Energy Early Career Research Program, a 2017 Sloan Research Fellow, and a 2014 National Science Foundation (NSF) CAREER awardee.

Abstract:

In order to harness the intrinsic ability of colloidal semiconductor nanocrystals to couple strongly with light, it is important to efficiently outcouple energy from photoexcited quantum dots (QDs), much like how nature uses molecular antennas to direct light during photosynthesis. This talk focuses on aromatic acceptor ligands for triplet-fusion based photon upconversion, where orbital overlap between the QD donor and molecular acceptor is critical for efficient energy transduction. In the past 5 years, we have learnt a great deal about how the electronic interactions between chalcogenide nanocrystals and acene conjugated molecules affect the photon upconversion quantum yield. We apply the lessons learnt to extending photon upconversion to silicon nanocrystal light absorbers and thin films, addressing synthetic and self-assembly challenges with invaluable insight from time-resolved spectroscopy.

For more information, contact : Son Nguyen
son@ucmerced.edu