

Appl. Chem. Department seminar, The 75th CMS International Seminar

The 8th Excited-state Functional Chemistry Seminar, The 30th Q-Colloquium

Prof. Ming Lee Tang (Lab HP)

University of Utah, USA

“Photon upconversion: getting molecules and nanocrystals to talk triplets”

Date: June 20th (Tue) 2023, 16:00~ (JST)

Place: Big Leaf 301, Ito Campus, and YouTube

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 7 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, addressing synthetic and self-assembly challenges with invaluable insight from time-resolved spectroscopy.

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Admission: free

