

Polariton Chemistry: Molecules in Optical Cavities

Abstract:

The strong coupling of spatially confined photons to the electronic and vibrational transitions of molecules causes the formation of cavity polaritons whose properties differ from those of each constituent. While researchers have elucidated some of the physical properties of cavity polaritons formed from molecules, the changes induced in chemical process by cavity polariton formation remain unclear and have begun attracting significant research interest in the physical chemistry community. In particular, a gap remains in the community's understanding if the parameters of cavity polariton formation can provide a novel means to control chemical processes.

With this symposium the organizers intend to enable the communication of experimental, computational, and theoretical determination and prediction of the photoinduced and thermally-activated properties of cavity polaritons central to their potency to solve chemical problems. We intend to plan 6 half day sessions with 5-6 invited speakers and 1-2 contributed talks per session. The list of prospective invited speakers found below covers a wide range of experts in the experimental, theoretical, and computational aspects of the chemical properties of cavity polaritons and includes 7 women (indicated by *), 2 underrepresented minorities (indicated by **), and 6 junior faculty members (indicated by ***).

Organizers:

Aaron Rury (Wayne State)
Joel Yuen-Zhou (UCSD)
Wei Xiong (UCSD)

List of tentative invited speakers

THz

Keith Nelson
Sharly Fleischer***

Infrared

Kevin Kubarych
Jeff Owrutsky
Blake Simpkins
Justin Sparks***
Thomas Ebbesen
Bill Barnes

Photochemistry

Shaul Mukamel
Eric Bittner
Prineha Narang*, ***
Jenny Clark*
Kenneth Knappenberger
Raphael Ribeiro**
Todd Kraus

Photophysics

Stephane Kena Cohen

Chris Giebink***
Vinod Menon
Carlos Silva**
Andrew Musser***
Emily Weiss*
Greg Scholes
Frank Spano
Claudia Climent*
Jana Zaumseil*

Plasmonics

Francisco Garcia Vidal
Javier Aizpurua
Jaime Gomez Rivas
Libai Huang*
Sarah King*, ***
Paivi Torma*