



Monday, March 25, 2019, 12:00 pm
Seaver Science Library, Room 150

SSC Auditorium next to the library

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Polariton chemistry: molecules in optical cavities

Organic molecules interact strongly with confined electromagnetic fields in plasmonic arrays or optical microcavities, owing to their bright transition dipole moments. This interaction gives rise to molecular polaritons, hybrid light-matter quasiparticles. Molecular polaritonics opens doors for new room-temperature opportunities for the nontrivial control of physico-chemical properties of molecular assemblies. In this talk I'll showcase some of the opportunities that we, together with our experimental collaborators, have been theoretically exploring over the past few years. I will briefly explore and discuss the relevant time and energy scales associated with molecular polaritons and strategies to exploit them to control photoexcited processes including singlet fission, triplet harvesting, remote and topologically-protected energy transfer, and anomalous nonlinear optical effects. I will conclude by explaining how vibrational polaritons can steer ground-state chemical reactions, even in the absence of optical pumping, or used to realize exotic processes such as remote control of chemical reactions.

Hosted by Professor Oleg Prezhdo

The scientific community is invited