

# **Donor-Acceptor Energy Transfer in Complex Environments Including Entangled Photons**

George C. Schatz

Northwestern University, Evanston IL 60208-3113

This talk will describe a combination of analytical theory and applications that describe donor-acceptor energy transfer that takes place in complex electromagnetic environments. This fully retarded theory includes energy transfer that is mediated by plasmonic nanoparticles, that includes for emitters and absorbers that are 2D or 3D materials, that includes energy transfer in optical cavities, and that includes for emitters and absorbers of entangled photons. The theory starts with full quantum electrodynamics, but in most cases the transition amplitude is reduced to a classical electrodynamics calculation. A number of applications are presented including studies that show long-range energy transfer and enhanced rates of energy transfer rates relative to conventional (Foerster theory) results.