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Abstract for an Invited Paper
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Theories of plasmon enhanced optical processes important in solar energy

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This talk will focus on the development of electronic structure methods that can be combined with electrodynamics calculations to describe enhancement in chemical reaction rates that arise from plasmon excitation of noble metal nanoparticles. Two types of enhancement are described: passive and active. In the passive case, the nanoparticle produces an enhanced electromagnetic field that acts externally to the nanoparticle to enhance a photochemical process, while in the active case, plasmon excitation leads to electron transfer to or from the noble metal nanoparticle. Examples and applications of each type will be described.