



Physics Seminar

Friday, 3:30 pm
Jan. 28, 2011

Plasmonics in Solar Photoconversion

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In this seminar, I will discuss the application of surface plasmons to control the interaction between light and matter in solar energy conversion systems. At the heart of these applications lies the observation that many nanostructured metals cause the localization of light energy to very high field intensities near their surfaces. Such high field intensities have long been used in analytical chemistry to significantly boost detection efficiencies in Raman scattering. It has recently become clear that these effects can also be used to increase the absorption efficiency of solar materials. The presentation will first introduce some key concepts and will discuss the different strategies that are employed to exploit surface plasmon effects in solar energy conversion. The second part will discuss the use of surface plasmons to alter the excited state dynamics of chromophore systems by the formation of hybrid exciton/plasmon states. An intriguing possibility to exploit this effect lies in promoting third generation photoconversion processes such as singlet fission and multiple-exciton generation leading to a large jump in solar conversion efficiency.

Location: Ross 0220 (Ground level of Ross Hall)

(Refreshments will be served at 3:30pm.)

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