**Ultrafast Studies of Single Plasmonic Nanostructures**

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The powerful combination of i) ultrafast lasers, ii) multiphoton photoemission, and iii) high numerical aperture in-vacuo objectives provides a remarkably flexible and sensitive experimental platform for exploring chemical physics of plasmonic materials on the nanoscale. This talk will provide an overview of recent progress in the group. 1) The first topic will be on exploiting novel high repetition rate (75 MHz) ultrafast OPO oscillators to probe plasmonic properties of isolated nanostructures via scanning photoemission imaging microscopy (SPIM). 2) Next, significant enhancement of these methods with velocity map imaging (VMI) of the ejected photoelectrons will be discussed, which provides detailed angle and energy resolved information on the optical, electronic, and Fermi level properties of single nanostructures. 3) Finally, we discuss recent extensions of these capabilities to fs time resolved pump-probe measurements, which now provide information on fast relaxation dynamics and hot electron energy distributions in single plasmonic nanostructures of importance in photocatalysis applications.