

## Broadband and ultrafast near-field spectroscopy and imaging

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### Abstract

Remarkable breakthroughs in science throughout history are inherently linked to advances in the study of light-matter interactions. The understanding of new physical concepts and the development of novel optical tools were the driving forces behind ground-breaking multi-disciplinary discoveries in a variety of research fields. For the past two decades we have witnessed major advances in *nano-optics* and *ultrafast physics*, allowing for the exploration of phenomena in higher spatial and temporal resolution than ever before. In my talk I will share with you our efforts and success in merging these extreme resolution capabilities in order to study ultrafast phenomena at nanoscale resolution. Such developments allows us to observe and in the future to control ultrafast phenomena in a spatio-temporal window of 20fs-15nm at various wavelength regimes from the visible to the mid-infrared. The mid-infrared wavelength regime is of particular importance to materials science, chemistry, biology and condensed matter physics, as it covers the fundamental vibrational absorption bands as well as of many molecules and solid state materials.

In particular, I will present our recent achievements in combining ultrabroadband sources with our scattering near field microscope allowing observation of the broad frequency response as well as the ultrafast transient dynamics of plasmonic systems and in multilayer WSe<sub>2</sub>.

Date & Location:

Tuesday, June 5, 2018, 11:00

Lecture room, Physics Building (ground floor)



YDSEEP WEEKLY SEMINAR

