Materials Theory Seminar

"Surface-Enhanced Raman Scattering with Single Molecule Sensitivity"

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Abstract:

As a spectroscopic phenomenon discovered over 30 years ago, surface-enhanced Raman scattering (SERS) has been an active topic of fundamental and applied research. For decades, the intrinsic nature of ensemble average in SERS was the main obstacle in the SERS community with regard to its application potential and fundamental origins. Recent milestone advances in SERS include the discovery of the nanogap effect, where the electromagnetic enhancement to Raman scattering within the gap region of two metal nanoparticles can be more than 10^{10}. Such huge enhancement factors allow single molecule detection via SERS, rather than relying on ensemble average. The recent advances also offer unprecedented opportunities for elucidating the fundamental mechanisms of SERS. This talk will give an overview of the latest developments in fundamental and applied studies of SERS following the discoveries of single molecule detection and the nanogap effect.

Hosts: Zhenyu Zhang (MSTD) and Baohua Gu (ESD)