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Surface Enhance Infrared Absorption in nanogap structures YAJING LI, PAVLO ZOLOTAVIN, DOUGLAS NATELSON, Rice University — Understanding the energy dissipation at the interface of molecules and metal nanostructures is of interest. We fabricate self-aligned gold nanostructures with nanometer-scale interelectrode spacing. Those gold nanostructures support highly hybridized plasmon modes with great enhanced local electric field. Previous studies have proven those structures to be suitable substrates for surface-enhanced Raman spectroscopy with single-molecule sensitivity, which enables the study of molecular vibrational and electronic physics. We propose those structures as possible probes of the energy dissipation at the nanometer gap. By measuring the absorption spectrum of molecules assembled in the junction, we can estimate the local filed intensity at the gap and discuss the plasmonic responses of these self-aligned structures under infrared excitation.

Yajing Li
Rice University

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