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Single Molecule Imaging Using Atomistic Near-Field Tip-Enhanced Raman Spectroscopy

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Abstract

Advances in tip-enhanced Raman spectroscopy (TERS) have demonstrated ultra-high spatial resolution so that the vibrational modes of individual molecules can be visualized. The spatial resolution of TERS is determined by the confinement of the plasmon-induced field in the junction; however, the conditions necessary for achieving the high spatial confinement required for imaging individual molecules are not fully understood. Here, we present our recent work on modeling TERS imaging of single molecules. We will discuss the breakdown of the traditional Raman selection rules in these experiments due to the highly confined near field.

Reference:

- [1] P. Liu, D. V. Chulhai, L. Jensen, "Single-Molecule Imaging Using Atomistic Near-Field Tip-Enhanced Raman Spectroscopy", *ACS Nano*, **11**, 5094-5102, (2017)