

Abstract Submitted
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Tip-Enhanced Raman Spectroscopy of Functionalized Nanoparticles ABDULRAHMAN ALAJLAN, Texas A&M University, DMITRI VORONINE, Texas A&M University and Baylor University, ALEXANDER SINYUKOV, Texas A&M University, ALEXEI SOKOLOV, Texas A&M University and Baylor University, MARLAN SCULLY, Texas A&M University, Baylor University and Princeton University — Raman spectroscopy has been widely used for analyzing a wide range of materials. Tip-enhanced Raman spectroscopy (TERS) is one of the advanced strategies used to provide high spatial resolution and enhanced Raman signals simultaneously. TERS enhances Raman signals significantly for molecules located in the gap between plasmonic metal nanoparticles. This enhancement is attributed to the increase of electromagnetic field strength in the gap. However, some studies also show remarkable enhancements of Raman signals from molecules outside of the gap. We investigate the underlying mechanisms of TERS using nanoantenna formed by functionalized nanoparticles and nano tips. The results may be applied to studying bio-molecular interactions, which are essential for understanding the biological processes in living cells.

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