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Biocompatible gold/silver nanostars for surface-enhanced Raman scattering ANDRE CHILDS, Author, EKATERINA VINOGRADOVA, FRANCISCO RUIZ-ZEPEDA, J. JESUS VELAZQUEZ-SALAZAR, Co-Author, MIGUEL JOSE-YACAMAN, Principal investigator — Surface-Enhanced Raman Spectroscopy (SERS) is a tool used to explore the vibrational properties of the molecules with many impending applications in the bioscience field. In this experiment SERS was used to study of the surface adsorption and detection of a dye Rhodamine 6G (R6G), a biomolecule Bovine Serum Albumin (BSA), and a human pathogen Chlamydia trachomatis (CPAF). The goal is to evaluate the Raman enhancing properties of star-shaped gold/silver nanostars (Au/Ag Nps). We choose this particular morphology because it has been experimentally observed that nanostars display stronger SERS activity than nanoparticles with different shapes due to their anisotropic distribution. The nanoparticles were synthesized through a solution-based growth method mediated by silver seeds that are used as the nucleating agent for anisotropic growth of gold colloids. The characterization of the Au/Ag NPs was done by Scanning Electron Microscopy (SEM), Energy Dispersive X-ray Spectroscopy (EDS) and UV-visible spectroscopy. Finally we will present the SERS spectra obtained for R6G, BSA, and CPAF in presence of Au/AgNPs. We will also discuss the potential of chitosan-coated SERS-active nanostars for biomedical imaging tools.

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