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# BIMENS-Bimetallic nanostars (Ag@Au) with high surface enhanced raman scattering (SERS) performance: Detection of β-amyloid and its marker thioflavin T

**Jose V Garcia-Ramos, A Garcia-Leis and S Sanchez-Cortes**
Instituto de Estructura de la Materia, Spain

Developing new synthesis methods to obtain metal nanoparticles (NPs) with three dimensional (3D) surface morphology is very important, due to their physical properties and versatility to diversify their applications. Anisotropic metal NPs with a large variety of sizes and shapes have been recently fabricated displaying good Surface-enhanced Raman Scattering (SERS) properties. In this context, star-shaped NPs or metal nanostars (NS) have shown extraordinary properties in the intensification of the Electro Magnetic field, with promising applications in bioimaging and detection. In this context, core@ shell nanoparticles display advantageous properties to be used as SERS substrates. This work was aimed at the fabrication of Ag@Au NS by using AgNS as seeds by simple methods with high effectiveness in SERS and without the use of strong surfactants. The NS synthesis was carried out by chemical reduction using neutral hydroxylamine and citrate to obtain the AgNS, described in a former article, as seeds for further coating with gold and finally obtain the bimetallic (Ag@Au) nanostars. Then, they were applied in the detection of β-amyloid and its marker thioflavin T (ThT) both in resonant and non-resonant conditions. TEM micrographies of the final morphology of Ag@AuNS using AgNS as seeds are shown. For ThT, Plasmon Resonance and SERS spectra excited at 532 and 785 nm, corresponding to resonant and non resonant conditions are obtained. Our SERS results suggest that at these conditions there is a mixture of two different species: the directly adsorbed ThT one ($\phi$=90˚) and another structure, ThT ($\phi$=37˚).

## Biography

Jose V Garcia-Ramos received his PhD Degree in Chemistry from the Universidad Complutense de Madrid and did his post-doctoral work at the University of Bologna (Italy). He is Research Professor of the Consejo Superior de Investigaciones Cientificas (CSIC) and has held several directorial positions in that Institution where he became Deputy Vice-president from 2008 till 2012. He has published more than 170 papers in reputed journals. Most of his work has dealt with different aspects of vibrational spectroscopy especially those related with Surface enhanced Raman and IR Spectroscopies (SERS and SEIR).

jvicente.g.ramos@csic.es