

Designing SERRS-tags for biosensing and bioimaging

Isabel Pastoriza-Santos^a and Jorge Pérez-Juste^a

^aDepartment of Physical Chemistry, University of Vigo, Vigo, Spain

In this communication the main properties for the synthesis of Surface Enhanced Raman Spectroscopy (SERS)-encoded nanoparticles are described. Briefly, the main requirements are; *i*) a metallic core acting as SERS enhancer, *ii*) a Raman-active reporter molecule adsorbed onto the metallic surface to provide a distinct spectral signature, and *iii*) a protective shell for stabilization of the SERS tags while providing a suitable surface for biofunctionalization (see Figure).[1]

The different strategies proposed for the synthesis of SERS-tags will be reviewed, and different examples of their potential applications in the biosensing and bioimaging fields briefly described.

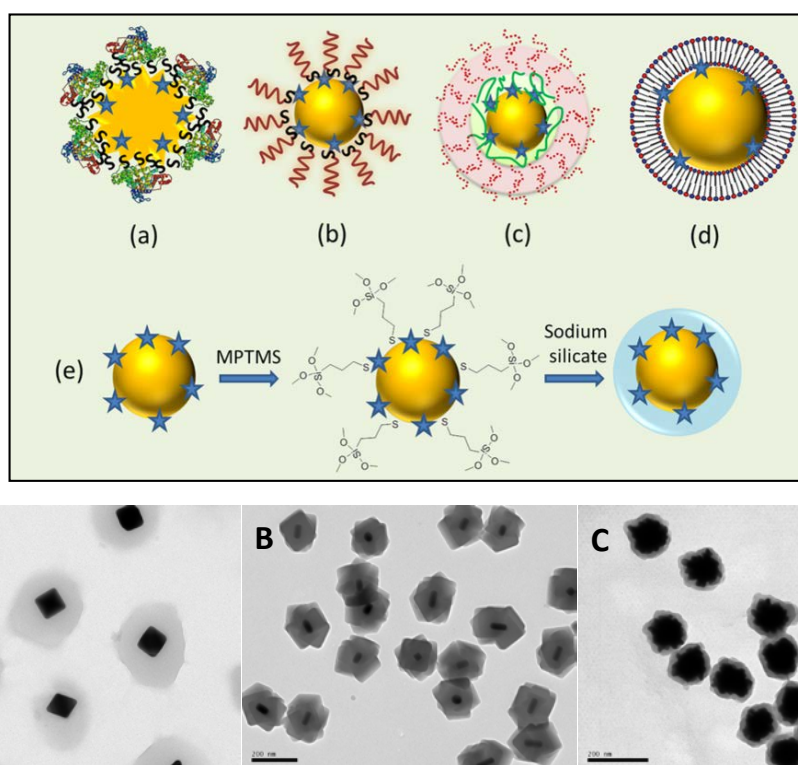


Figure 1. Top: Schematic representation of different type of SERS-encoded tags; (a) polyelectrolyte coated nanoparticles, (b) PEG-stabilized nanoparticles, (c) polymer-coated nanoparticles, (d) liposome-stabilized nanoparticles and (e) silica-coated nanoparticles. **Bottom:** Representative TEM of different SERS-encoded nanoparticles; (A) pNIPAM coated Au octahedra, (B) ZIF-8 coated Au@Ag nanorods and (C) silica coated Au nanostars.