Title:	Shape controlled synthesis of Ag-Au core-shell nanoparticles: Understanding their potential in SERS and Catalysis
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Abstract:	Over decades, plasmonic nanostructures have been used as potential candidate for applications like optoelectronics, catalysis, biosensing, surface enhanced raman spectroscopy (SERS) and many more due to their outstanding optical properties. SERS is a surface dependent technique used to enhance the raman signals up to few orders of magnitude even at single molecular level by taking the advantage of LSPR property of metal nanostructures, making it an excellent platform in chemical and biomedical applications. SERS enhancement mainly depends on anisotropic shape and size of nanostructures. Among plasmonic metals, particularly Ag and Au are used in preparation of SERS substrate owing to their better plasmonic enhancement and biocompatibility. Our main emphasis is to synthesize Ag@Au core-shell nanostructures having spiky shell and smooth shell on hollow Ag@Au and solid Au core. The SERS intensity for each of these morphologies was compared when the target molecule resides in middle of core and shell and on the tips of spiky shell. The intention was to achieve the single molecular sensitivity through these core-shell nanostructures. Moreover, palladium nanostructures have been used immensely in field of catalysis particularly for carbon-carbon bond formation reactions. Catalytic efficiency have shown the strong reliance on shape and size of nanostructures. So the goal is to synthesize Pd nanostructures of various shapes using capping agent and different reducing agents. The catalytic efficiency of these morphologies was inspected through Suzuki-Miyaura coupling reaction to decipher the relationship between shape and the catalytic activity.
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