BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA

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"Shape-controlled synthesis of metallic and bimetallic nanocrystals for their potential applications in plasmonics and biosensing"

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Well-defined noble metal nanomaterials are attractive for applications in electronic devices such as sensors and heterogeneous catalysts. However, the shape-controlled synthesis of high-performance metallic/bimetallic nanocatalysts (NCs) either alloys or core-shell NCs with high-degree of homogeneity remains a significant challenge. In this talk, we present two main synthetic approaches for controlled fabrication of metallic/bimetallic nanocrystals, detailed structural characterization and their potential applications in Plasmonics and biosensors. i) The general, environmental friendly strategy have been established for controlled anisotropic growth of Au and Au M (M= Pt, Pd, and Cu) nanostructures using Deep eutectic solvent (DES) as new type of ionic liquids (non-aqueous medium). ii) The solution-phase seed-mediated strategy for controlled synthesis of PdM (M= Pt, Au, and bimetallic AuCu) core-shell nanocrystals with few atomic layer (less then 1 nm) thickness shells. The growth mechanism and detailed structural characterization were performed using Scanning transmission electron microscopy (STEM). Finally, these nanostructures have applied for SERS and biosensors applications.

Auditorio-IFUAP
Viernes 17 de Agosto de 2018
13:00 Hrs.