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**Synthesis and Characterization of Au@Cu Core-Shell Nanoparticles** SUBARNA KHANAL, JESUS VELAZQUEZ-SALAZAR, MIGUEL JOSE YACAMAN, University of Texas at San Antonio — The synthesis of bimetallic nanoparticles has become so important in present times due to its diverse applications of nanotechnology. Particularly most of the bimetallic nanoparticles are focused to use in catalysis, plasmonic, magnetic, sensors, and many other applications. In Au/Cu case, the bulk Au and Cu are soluble at all compositions. But the structure of Au/Cu nanoparticles depends on the preparation methods. The structure might be the core shell, alloys or other morphology. Au- Cu core-shell nanocrystals were prepared using a two-step polyol reduction method. First, Au core seeds were prepared by reducing  $\text{HAuCl}_4 \cdot 4\text{H}_2\text{O}$  in ethylene glycol (EG) using oil-bath heating in the presence of polyvinylpyrrolidone (PVP) as a polymer surfactant. Then Cu shells were overgrown on Au core seeds by reducing  $\text{Cu}_2(\text{OAc})_4$  in EG with PVP again using oil-bath heating. The morphology is studied by STEM HITACHI S-5500. The resultant crystal structures were characterized using TEM, high-resolution (HR)-TEM and the STEM were using for the study of micro analysis.

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