

## Synthesis and Characterization of Pt@Co-CdSe@CdS Metal-Semiconductor Hybrid Nanomaterials with Different Morphologies

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Colloidal hybrid nanomaterials are of great interest due to their synergistic properties derived from different chemical compositions along with unique self-assembly or directed-assembly behavior. In this presentation, we report on the synthesis of metal-semiconductor hybrid nanomaterials, more specifically, the direct deposition of cobalt onto platinum tips of Pt-CdSe@CdS hybrid nanorods with different length, showing different assembly morphologies such as nano-dumbbells and nano-network structures. We found that polymer-coated cobalt nanoparticles were only grown on the platinum tips of hybrid nanorods with nano-dumbbell structure and with controlled polymeric ligands and cobalt precursors, the metal-semiconductor nano-network structure was also formed with controllable size due to dipolar magnetic interactions among cobalt nanoparticles. These hybrid constituents give us exciting opportunities for further applications in photocatalysis and thin-film transistors to name a few.