

75a Semiconductor-Metal Core-Shell Nanocomposites as Catalysts for Methanol Fuel Cells

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In the quest for unconventional source of energy, methanol offers an immense potential since it is a high energy density fuel, renewable and promising source of energy. Energy generation by oxidation of methanol in fuel cell has been demonstrated using Pt as a catalyst.

Core-shell nanoparticles offer the potential of designing catalysts wherein the electronic structure of the composite could be tailored to differ from those of the constituting materials. This ability to tune the energetics could offer immense potential to design catalyst for specific applications. In this presentation, we discuss our effort to design core-shell TiO₂-Pt composites by different techniques. The optical and surface characterization results of these particles are reported. Characterization of core-shell nanoparticles of TiO₂ Pt using chronoamperometry and cyclic voltammetry for Methanol oxidation is also presented.