

Electrocatalytic Properties of Pt Overlayer on Shape-Controlled Au Nano-crystals

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We have investigated electrocatalytic properties of platinum overlayer deposited on two different gold nano-crystals of octahedra and cubes to establish the role of surface crystalline structure and electronic effect between platinum and gold in electrocatalytic reactions. Different shapes of gold nanocrystals(GNC) have different surface crystalline structure. Cube GNC has (100) facet, octahedral GNC has (111) facet. First we removed surface capping agent of GNC using oxygen plasma, then deposited Pt overlayer using underpotential deposition(UPD) method. Using UPD method it was possible to deposit platinum from monolayer to multilayer. Electrocatalytic properties of Pt overlayer on GNC were characterized through hydroxide adsorption & desorption, CO oxidation and Formic acid oxidation.