

## Shape and Size Effect of Metal Nanoparticles for Electrocatalytic Reduction

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Catalytic activity, selectivity, and durability can be tuned by controlling the shape and size of metal nanoparticles because most chemical reactions occur via chemical adsorption of reactants on the catalyst surface. Here, we synthesized cubic, cuboctahedra, and dendrite Pt nanoparticles and investigated the effect of shape on selectivity for electrocatalytic hydrogenation. Pt dendrites have attracted interests for electrocatalytic application due to its considerable advantages. The various sizes of platinum dendrite were synthesized and tested for oxygen reduction reaction (ORR). The dendrites showed superior activity, selectivity, and durability compared to commercial catalyst for ORR. Also, the Ag nanoparticles with various sizes were synthesized by using a direct growth method and CO<sub>2</sub> electrocatalytic reduction reaction (CO<sub>2</sub>RR) was conducted in aqueous media. The activity and selectivity showed a dependence on the size of the Ag nanoparticles.