

## Design of Pt Dendritic Structures as Electrocatalysts in Low Temperature Fuel Cells

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Catalytic activity of Pt nanoparticles depends upon their nanostructured morphology. Among the various nanostructures possible, dendritic Pt has attracted significant interest for use as electrocatalyst in low temperature fuel cells. Previous studies on Pt dendrites have shown that the relatively large surface area and high-index facets intrinsic to the dendritic morphology are beneficial for enhancing the catalytic activity toward the reactions in fuel cells such as methanol oxidation and oxygen reduction reactions.

In this work, we synthesized Pt dendritic aggregates supported on tungsten oxide nanowires. The synthesized material showed promising electrocatalytic activity toward methanol oxidation and high CO tolerance.

Added to Pt dendritic aggregates on tungsten oxide nanowires, we also synthesized Pt-Pd bimetallic dendrites. We found that the synthesized Pt-Pd bimetallic dendrites exhibited high oxygen reduction reaction activity due to the relatively high surface area and preferential exposure of {111} facets.