

Sandia & Compass Metals

Platinum Nanostructures for Enhanced Catalysis

Background

Renewable energy sources are critical to the nation's future, and hydrogen-powered fuel cells offer an attractive alternative to current technologies. However, fuel cell catalysts must become more durable, efficient, and inexpensive before they are practical and cost-effective. Most fuel cells use platinum or platinum alloys as catalysts, but the limited supply of platinum is a potential barrier to widespread fuel cell use.

Innovative Edge

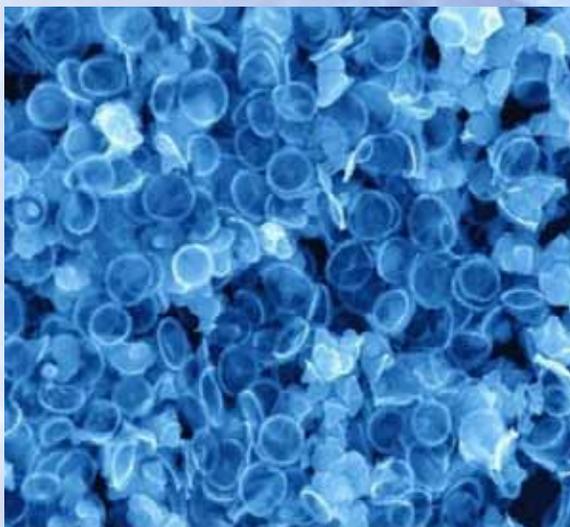
Sandia researchers have developed innovative methods of producing platinum catalysts that offer much greater control over the shape, size, porosity, composition, stability, and other functional properties of platinum nanostructures than those achieved by existing methods. Due to the high surface area and durability of the nanostructures, the process is expected to reduce platinum usage not only in fuel cells, but in other applications in the renewable energy sector as well.

Commercialization & Industry Impact

Sandia has licensed several patents to Compass Metals for the platinum catalysts. Under a multi-year cooperative research and development agreement, Sandia and Compass Metals are also collaborating to further improve the synthesis for platinum nanomaterials in large-scale preparations, as well as look into additional fields of use such as solar cells and organic field effect transistors. Compass Metals developed their first product called Platinum Nanocoral™ based on Sandia's patents and is exploring areas

of application beyond fuel cells. Compass is continuing to manufacture and provide one of the platinum nanomaterials (NanoCoral™) to fuel cell companies for evaluation. The group also won the 2009 Federal Laboratory Consortium Excellence in Technology Transfer Award.

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300-nm platinum nanodisks templated by surfactant bicellar disks.