

Replacing Platinum in Fuel Cell Technology

October 20 2009, by Miranda Marquit

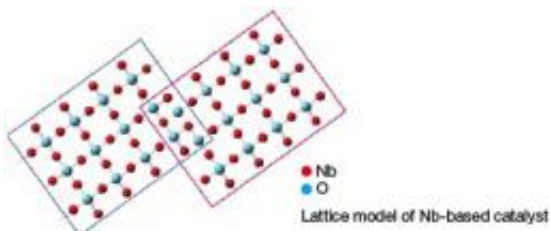


Image source: Nikkei Electronics Asia

(PhysOrg.com) -- One of the biggest hindrances to the development of fuel cell technology is its cost. In order to work properly, polymer electrolyte fuel cells require a catalyst. So far, though, the most efficient catalyst for use with these fuel cells is platinum. And, as you probably know, platinum is one of the most expensive materials out there. The high cost of platinum is stunting the further development of fuel cells for use on a broader basis. Help may be coming, however, in the form of niobium and titanium.

A Japanese company, Showa Denko, has developed a catalyst meant for polymer electrolyte fuel cells that use [niobium](#) and [titanium](#) as the main components, with the addition of carbon and [nitrogen](#). A catalyst made from the new blend could replace platinum catalysts in the fuel cells. These new catalysts also have the advantage of not oxidizing, as platinum does in the air electrode. And, of course, both niobium and titanium are less expensive than platinum.

Everything isn't set, however. Catalysts based on niobium or titanium have not shown the same level of performance in fuel cells as platinum. [Nikkei Electronics Asia](#) reports on the performance issues faced by Showa Denko:

"Platinum performance is still four or five times higher," says a source at Showa Denko. The firm joined the NEDO project in July 2008, and says there is still considerable room for improvement. For example, the catalyst particles are large at about 40nm, but they expect performance to rise with smaller particle sizes.

Even with some of the kinks to be worked out, though, this is still a step forward for [fuel cell](#) technology. Being able to reduce the cost of fuel cells would enable the technology to be more widely adopted going forward.

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