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ENVIRONMENT

## Discovery points to cheaper fuel cells

Only tiny amount of gold, platinum needed to create catalyst

By Greg Frost

REUTERS

BOSTON, July 3 — Fuel cell systems can be made to work using far less platinum or gold than previously thought, a discovery that could considerably cut the cost of the futuristic technology, researchers said Thursday. Touted as a replacement for the internal combustion engine and one of the most important power sources of the 21st century, fuel cells create electricity with little pollution by combining hydrogen and oxygen.

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PLATINUM METALS are used in the electrocatalyst layer of fuel cells and to produce and purify hydrogen to feed the fuel cell, contributing in part to the high current cost of the technology.

Platinum prices soared to 23-year highs earlier this year after President George W. Bush proposed investing \$1.2 billion for research on fuel cell-powered vehicles.

But researchers at Tufts University have found that only a tiny amount of gold or platinum in non-metallic form is needed to create an active catalyst to purify the hydrogen before it is used in fuel cells.

“A lot of the cost of fuel cell technology goes toward buying the platinum to prepare the catalyst,” said Maria Flytzani-Stephanopoulos, lead researcher of the project.

“Our finding will help researchers find a cost-effective way to produce clean energy from fuel cells in the near future,” she added.

The research was published in Thursday’s edition of Science Express, the online version of the journal Science.

The researchers’ work focused on the “water-gas shift” reaction used to make hydrogen from water and carbon monoxide over cerium oxide loaded with gold or platinum.

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Typically, platinum or gold account for up to 10 percent of the weight of the catalyst. But Flytzani-Stephanopoulos and her colleagues Howard Saltsburg and Qi Fu found that after stripping the precious metal with a cyanide solution, the catalyst was just as active with a slight amount of the precious metal remaining.

Flytzani-Stephanopoulos said the research challenged the notion that the supported metal on the oxide was the reactive component in the catalyst.

In this particular case, she said, the non-metallic underlying structure is the only important one.

Flytzani-Stephanopoulos and her colleagues, who have applied for a patent for their research, said it is worth examining whether the discovery holds true for other reactions.

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