

# Finding answers century-old questions about platinum's catalytic properties

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Researchers now understand more about why platinum is so efficient at producing power in hydrogen fuel cells.

"Understanding platinum's properties for speeding up chemical reactions will potentially enable scientists to create significantly cheaper synthetic or metal alloy alternatives for use in sustainable devices like fuel cells," says Gregory Jerkiewicz, a professor in the Department of Chemistry who led the groundbreaking study.

Dr. Jerkiewicz's research team has found that when platinum is used in reactions involving hydrogen it develops an embedded layer of hydrogen just one atom thick. This gives the platinum hydrophobic or water-repelling qualities, meaning that stray water molecules inside the fuel cell cannot bond strongly with the surface of the platinum.

The water-repelling nature of the modified platinum means that incoming [hydrogen molecules](#) can easily attach to the surface of the platinum and separate into smaller particles without requiring additional energy to displace any [water molecules](#) that are in the way.

The reduction in the energy required for hydrogen molecules to attach to the surface of the platinum means that the process is fast and efficient and the fuel cell can deliver a lot of power.

Provided by Queen's University

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