

New use found for tunneling microscope

April 23 2007

Dutch researchers have found a new use for scanning tunneling microscopes: visualizing individual catalysts at work at a solid-liquid interface.

Johannes Elemans and colleagues at Radboud University said their new method could eliminate the process of measuring the ensemble properties of a large number of molecules.

The researchers formed arrays of large flat organic molecules, known as porphyrins, on a gold surface. The metal atom at the center of each porphyrin can react with oxygen to form a catalytic site, which can be used to convert one type of organic compound (an alkene) into another (an epoxide).

Using a scanning tunneling microscope, the team "watched" individual porphyrins at each step of the process. That offered a unique insight into how such reactions work at the single-molecule level, revealing information about catalyst activity, stability and distribution across the surface.

The method is detailed in the current issue of the journal *Nature Nanotechnology*.

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Citation: New use found for tunneling microscope (2007, April 23) retrieved 11 July 2024 from <https://phys.org/news/2007-04-tunneling-microscope.html>

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