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【104】 Nanofabricated model systems combined with single particle spectro-microscopy to visualize catalysis

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We present novel model systems for catalysis that have been developed using state-of-the-art top-down nanofabrication techniques, such as extreme ultraviolet lithography and electron beam lithography, to achieve nanometer precision over particle size and its positioning. This is combined with X-ray photoemission electron microscope at the Swiss Light Source to study catalytic metal nanoparticles down to six nanometers and in-situ visualization of chemical action is done at the single nanoparticle level. Employing this strategy, a five decade old controversy around the phenomena of hydrogen spillover has been addressed. For the first time, distance dependence of hydrogen spillover has been experimentally visualized.

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