



Showcasing research from the group of Professor Jim Evans at Ames National Laboratory USDOE and Iowa State University, USA, in collaboration with Professor Charlie Campbell at the University of Washington, USA.

Size-dependent diffusion of supported metal nanoclusters: mean-field-type treatments and beyond for faceted clusters

Diffusion of faceted epitaxially-supported nanoclusters is not described by the standard mean-field picture of random independent hopping of surface atoms. Instead, a cooperative many-atom mechanism is operative involving disassembly and reassembly of outer layers of facets. The latter results in strong oscillations in diffusivity versus nanocluster size, minima corresponding to closed-shell sizes. The effective barrier for the cooperative process is far higher than the mean-field prediction.

As featured in:



See James W. Evans *et al.*,
Nanoscale Horiz., 2023, **8**, 1556.