

O 53: Topical Talk Parkinson

Time: Wednesday 9:30–10:15

Location: TRE/PHYS

Topical Talk

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Single-Atom Catalysis: Insights From Model Systems —
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Single-atom catalysis promises maximal atom efficiency, tunable active sites and improved selectivity, and is now a key concept in the design of sustainable catalysts. Yet many of the central claims about what single-atom catalysts are, how they operate, and whether they remain truly isolated under reaction conditions are still under debate.

In this overview talk I will use oxide-supported single atoms as case studies to examine what can really be established about structure, stability and mechanism, and where the evidence remains ambiguous. I will show how atomically well-defined model surfaces, probed by STM, noncontact AFM, XPS and vibrational spectroscopy, in tight integration with theory, can test key assumptions about single-atom catalysis. I will close with a perspective on outstanding challenges, from adsorbate induced restructuring and water to the transfer of insight from model systems to working catalysts.