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Design of catalysts and photo-catalysts for energy and environmental applications: fascinating strategies playing with structures at the nanoscale

Heterogeneous transition metal catalysts are generally based on nanoparticles, that nowadays can be synthesized with uniform size and shape. The extraordinary advances in material science support a new vision for nanoscale-inspired design and synthesis of industrially important catalysts. This precise structural and morphological control, coupled with the possibility to modulate the metal-support interactions, allowed us to have a step change increase in the activity, selectivity and stability of many industrially and environmentally important catalysts. In this context, renewable energy conversion, pollution prevention and control are the real challenge of the 21st century and the focus of the present talk.

References:

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