

Supported Metal Nanocluster Catalysts Assembled with “Unprotected” Metal Nanoclusters

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Great challenges remain in developing heterogeneous metal catalysts for various real applications including electrocatalysts for fuel cells and highly selective catalysts for the production of fine chemicals in an environment-friendly manner. The interactions between metal nanoparticles and their surrounding are applicable to the optimization of structures and catalytic properties of heterogeneous metal catalysts. “Unprotected” noble metal nanoclusters have been widely applied in the preparation of metal catalysts, which not only facilitated the understanding of metal-support interactions, but also provided a convenient method for the fabrication of metal supported catalysts with high metal loading and dispersion. In this talk, we will introduce our research on the iron oxide-supported metal nanoclusters (NCs) catalysts, which revealed a rule of universal significance, i.e., the affinity for CO of platinum group metals (PGMs) NCs supported on partially reduced iron oxides is extremely weak, which is helpful for understanding the catalytic properties over such catalysts. Moreover, strategies for the development of electrocatalysts for polymer electrolyte membrane fuel cells will be discussed.

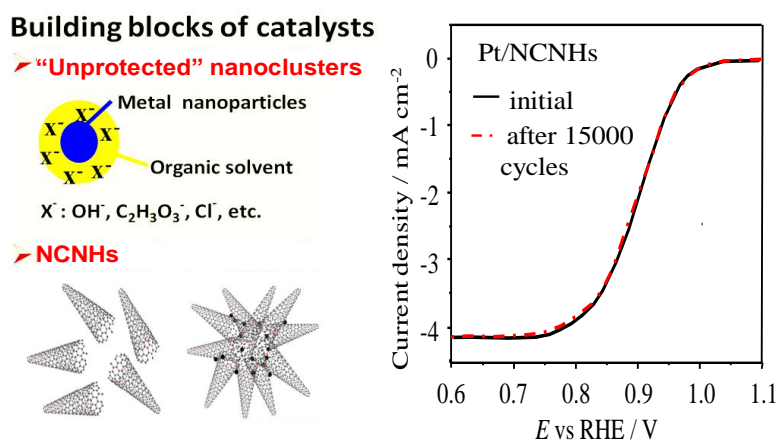


Figure 1. ORR polarization curves over Pt/NCNHs in an O₂-saturated HClO₄ solution.

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