# Unveiling Catalytic Trends of Atomically Dispersed Precious Metal Catalysts for Oxygen Reduction Reaction

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Atomically dispersed catalysts have emerged as a research frontier in catalysis, however a general strategy for atomically dispersed catalysts of wide range of compositions is still lacking, which has limited systematic studies unravelling the catalytic origins of atomically dispersed catalysts. In the work, we present a generalized synthetic strategy to atomically dispersed catalysts of precious metals, which consists of "trapping" of precious metal precursors and "immobilizing" them with SiO2 layers. Five atomically dispersed precious metals (Os, Ru, Rh, Ir, Pt) catalysts were prepared and served as model catalysts for revealing reactivity trends of atomically dispersed catalysts for oxygen reduction reaction (ORR). We found that higher H2O2 selectivity was shown in atomically dispersed catalysts compared to their nanoparticle counterparts, which originates from abnormally weakened oxygen binding energies and isolated geometric configurations of atomically dispersed sites. Furthermore, the relative binding energies of *OOH and *O species were identified as determinants that dictate the ORR selectivity of atomically dispersed catalysts.