

Single Atom Catalysts: From Fundamental Understanding into Industrial Application for Heterogeneous Hydroformylation of Olefins and Carbonylation of Methanol

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Single-atoms catalysts of precious metal often possess outstanding catalytic performance better than that of corresponding nanoparticle catalysts. However, supported single-atoms catalysts have even greater challenges that are prone to aggregate or sinter when increasing the metal loading, especially at the practical reaction conditions. Herein we show that an absolutely new methodology for immobilization of homogeneous catalysis has been developed in our research team (DNL0805, DICP), in which the single-atomically active sites for olefin hydroformylation form on the surface of bi-functional porous organic polymers (POPs) as supports and ligands, therefore, this kind of the immobilized catalysts show very high performance of hydroformylation of olefins with various carbon chains, the first commercial plant of heterogeneous hydroformylation of ethylene will be commissioned on October 2019 in Ningbo China.