Synthesis of Pt dopted NaY Zeolite Embedded in Metal-Organic Framework as a Hybrid Hydrogen Storage Material

임대운, 이희주, 최용남†, 조인화
한국원자력연구원
(dragon@kaeri.re.kr†)

Nano-porous materials have been attractive with considerable attention because their various potential applications such as hydrogen storage, carbon dioxide capture, gas separation, catalyst, and fabrication of metal nanoparticles. Among them zeolites, crystalline aluminosilicate, are widely used in industry as a catalysis, separation, ion exchange and sensing. Recently Metal-organic frameworks (MOFs) are emerging as a new type of nano porous materials constructed by inorganic metal cluster and organic linker. As nano porous materials they represent a high porosity, uniform pore/ cavity size and large internal surface area. Meanwhile, in terms of tunability by functionalization of ligand, MOFs have a difference from zeolite. This property allows MOFs to be designable depending on the purpose of use. Based on the properties of these crystalline porous materials, we try to synthesize a new hybrid porous composite (Zeolite@MOFs). In order to fabricate the composite, we utilized not only NaY zeolite but Pt dopted NaY to be embedded in Metal-Organic Frameworks. (NaY@MOF-5, Pt/NaY@MOF-5, Pt/NaY@MOF-177). These compounds are designed for the hybrid hydrogen storage (Physi- and Chemie sorption) materials and amphoteric catalyst.