Catalytic Function of Lewis Basic Sites in Pt nanoparticle doped NaY Zeolite

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

Zeolites are vigorously used in catalytic transformation of hydrocarbons and their derivatives due to their abundant acidic sites. Zeolites, in general, possess a lot of Brönsted acidic or protic sites, mostly hydroxyl ions, which can easily donate protons to the reactants. Extra-framework aluminum species (AlO, AlOH, Al(OH)2) formed as defect reinforce the acidic strength. To our best knowledge, there was no report on the basic functionality of zeolite. Sodium Y zeolite loaded with Pt nanoparticles in physical method (sputtering followed by vacuum annealing) turned out to form a basic site (hydridic site, -NaH) upon hydrogen treatment as well as the known protic sites (-OH) using neutron powder diffraction, FT-IR, NMR and XPS. The basic functionality of this composite, Ptx/NaY, was verified by a systematic experiment , Tishenko reaction with gas chromatography. Experimental details and discussion will be presented.