

**Preparation and characterization of CoPt bimetallic nanoparticle supported on granular alumina containing macropore and mesopore for catalysis**

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Granular alumina with macropore and micropore has been investigated as a catalyst support for CoPt bimetallic nanoparticle. The special granular alumina was impregnated with  $H_2PtCl_6$  and calcined at 673 K following the reduction at 673 K with hydrogen. Co metal was added to the Pt catalyst through the impregnation method and the resulting precursor was reduced at 673 K without calcination. The content of Co was controlled to 0, 0.5, 1.0 and 1.5 Co/Pt ratio, respectively. The result of the hydrogen chemisorption on the obtained CoPt bimetallic catalysts showed the progressive decrease of reversible and irreversible hydrogen chemisorptions, indicating the gradual coverage of Pt with Co. Then macro and mesopore characteristics of the alumina support were not affected before and after the catalyst loading. The number averaged particle size was increased from 0.8 nm to 1.8 nm gradually with the increase of the Co/Pt ratio, referring from the result of high resolution transmission electron microscopy. It was of interesting that the low temperature desorption peak in hydrogen temperature programmed desorption measurement was disappeared completely when the Co/Pt ration reached 1.