

## Effect of Dispersed MoO<sub>3</sub> Amount on Catalytic Activity of NiO-ZrO<sub>2</sub> Modified with MoO<sub>3</sub> for Acid Catalysis

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NiO supported on zirconia modified with MoO<sub>3</sub> for acid catalysis was prepared by drying powdered Ni(OH)<sub>2</sub>-Zr(OH)<sub>4</sub> with ammonium heptamolybdate aqueous solution, followed by calcining in air at high temperature. The characterization of prepared catalysts was performed using FTIR, Raman, XRD, and DSC. MoO<sub>3</sub> equal to or less than 15 wt% was dispersed on the surface of catalyst as two-dimensional polymolybdate or monomolybdate, while for MoO<sub>3</sub> above 15 wt%, crystalline orthorhombic phase of MoO<sub>3</sub> was formed, showing that the critical dispersion capacity of MoO<sub>3</sub> on the surface of catalyst is 0.18 g/g NiO-ZrO<sub>2</sub> on the basis of XRD analysis. Acidity and catalytic activities for acid catalysis increased with the amount of dispersed MoO<sub>3</sub>. The high acid strength and acidity was responsible for the Mo=O bond nature of the complex formed by the interaction between MoO<sub>3</sub> and ZrO<sub>2</sub>. The catalytic activity for acid catalysis was correlated with the acidity of the catalysts measured by the ammonia chemisorption method.