

Removal methyl-mercaptane from natural gas on novel adsorbents

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Desulfurization of natural gas is strongly needed for stationary application of fuel cell. Generally, mesoporous materials can be used as adsorbents to remove impurities from fuel gas.

The present study focused on the mesoporous silica materials with novel metal as methyl-mercaptane adsorbents.

Synthesis methods of new YSP and FeSP are different from other mesoporous silica materials in temperature of silica source and chemical treatment. They were characterized by scanning electron microscope, transmission electron microscope and X-ray diffraction and thermogravimetric analysis and gas chromatograph with flame ionization detector.

And adsorption experiment were conducted to characterize the breakthrough characteristics of methyl-mercaptane in a fixed bed under different operating condition including temperature and concentration of feed gas. In addition, desorption and re-adsorption breakthrough experiments were also performed.

The results showed that these materials could be used as valuable methyl-mercaptane adsorbents in natural gas.