

### Removal of tetrahydrothiophene in natural gas using porous adsorbents at low concentration and high pressure

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The removal of tetrahydrothiophene (THT) in natural gas has been studied by using porous adsorbents. Imported/municipal natural gas is widely used for H<sub>2</sub> production and sulfur odorants are contained to natural gas in parts per million (ppm) level for warning of a leak. However, they must be removed because even, in trace amount, they can severely poison the catalysts used in the H<sub>2</sub> production process. In this study, the breakthrough experiments for THT adsorption balanced with CH<sub>4</sub> were conducted with modified activated carbon and zeolite at low concentration (under 5ppm), high pressure (9bar) and two different temperature conditions (30°C and 60°C). Then, the adsorption capacity and breakthrough characteristics were evaluated. And, the adsorption characteristics of THT were interpreted by using physical properties of the adsorbents from N<sub>2</sub> isotherms at 77K and CO<sub>2</sub> isotherms at 273K.