

Adsorptive removal of acid gas from natural gas

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Carbon dioxide is one of the major contaminants in natural gas feeds. It becomes acidic and corrosive in the presence of water that has a potential to damage the pipeline and the equipment system. Liquefied Natural Gas (LNG) is considered to be an alternative option for transportation of the natural gas to a very far distance. In LNG processing plant, while cooling the natural gas to a very low temperature, the CO₂ can be frozen and block pipeline systems and cause transportation drawback. Hence, the presence of CO₂ in natural gas remains one of the challenging gas separation problems in process engineering for CO₂/CH₄ systems.

In the present work, metal-organic framework (MOF) materials are investigated as adsorbents for removal of CO₂ from natural gas. Different MOFs are synthesized and characterized by physico-chemical techniques. Equilibrium sorption capacities of both CO₂ and CH₄ gases for the MOFs are analyzed.