

Selective separation and gas storage properties of hydroquinone clathrate using organic hybrid framework materials

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Clathrates are crystalline inclusion compounds formed by the physically stable interaction between host and small guest molecules occupied in the cages of the host frameworks. The hydroquinone (HQ) clathrate is one of the most studied and well-defined clathrate compounds. The HQ clathrate is known to exist in three crystalline states designated as α -, β -, and γ -forms. This study, the CH_4 -loaded hydroquinone clathrates were synthesized by the gas-phase reaction between α -form HQ and others organic materials (resorcinol, catechol) with high pressure gases. We implemented XRD, Raman spectroscopy. In result, we founded that it could be possible to store gas in synthesized materials. In addition, selective separation of the synthesized materials were possible. These results demonstrate the strong effect on both guest-host interactions and the stability of the framework structure.