

Separation of N<sub>2</sub>O Molecules from N<sub>2</sub>O/N<sub>2</sub> Gas Mixtures using Hydroquinone Clathrates장지연<sup>1</sup>, 윤지호<sup>1,2,†</sup><sup>1</sup>한국해양대학교 해양과학기술전문대학원; <sup>2</sup>한국해양대학교 에너지자원공학과  
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HQ clathrate, is well known for organic materials, can include gas molecules at ambient temperature and various pressure. The organic clathrates also have a very high stability and can store large quantities of gases. Nitrous oxide, one of the greenhouse gases (GHGs) affecting climate change, can form HQ inclusion compounds. In this study, we have investigated the hydroquinone clathrates formed from N<sub>2</sub>O/N<sub>2</sub> gas mixtures a variety of compositions (100, 80, 60, 50, 40, 20 and 0 mol % N<sub>2</sub>O) at ambient temperature. Also, we obtained the crystal structural identification and cage occupancy of hydroquinone clathrate using a series of spectroscopic method. Spectroscopic measurements such as XRD, NMR and Raman spectroscopy can provide information on guest behaviors in solid clathrate compounds in addition to information on crystal structures. Gas storage capacity was also calculated on the basis of experimental results. The present study provides a useful data for developing a clathrate based separation process for GHGs.