## HYDRATE CLATHRATES FOR GAS STORAGE AND SEPARATION

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After oil, natural gas attracts much attention for energy generation. Methane gas has been known to exist almost double the amount of oil. Especially, recently huge amount of shale gas was found and extraction technology has been developed to make it useful. The remaining problem is how to transport these gases to the place of use. Since liquefaction is very expensive, we should develop some other method for transportation. We have been working to develop a new method of using hydrate clathrates as a carrier of gas. Methane gas hydrate exists and used by making so called pellets, which is a good example of economical gas transportation. To apply hydrate clathrates for other gases, there is a severe problem of extra ordinary long time and high pressure for formation. To reduce these conditions and realize fast and economical hydrate clathrate formation, we tried to apply shock waves. We also applied theoretical approach to analyse experimental observations, and try to design help gas to increase amount of gas and stabilize the system. Hydrate clathrates are also useful for gas separation.

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