

CO₂ Sequestration in deep-sea sediments of Natural Gas Hydrate Layer for Effective Recovery of CH₄

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On the continental margins and in permafrost regions, natural gas, which has been expected to replace petroleum energy, exists in solid hydrate form. Because of huge amounts of natural gas in the solid form of Natural Gas Hydrate, the effective recovery of natural gas from natural gas hydrate becomes the most important factor on evaluating the economic feasibility in the sense of commercialization. Here, we attempt to examine the real swapping phenomenon occurring in deep-sea sediments to approach the efficient recovery of methane gas from natural gas hydrate. To reproduce the real deep-sea sediments system, we used Na-Montmorillonite as clay sediments and prepared Intercalated Methane Hydrate (IMH). The recovery rate and yield of methane in this real-approached system were obtained by Nuclear Magnetic Resonance, Raman, X-ray Diffractometer, and Gas Chromatography.