

Investigation of the Catalytic Role of Surfactants on Carbon Dioxide Hydrate Formation in Sediments

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Abstract : Gas hydrate sediments are ice like permafrost in deep sea and oceans. Methane production in sequestration process and reducing atmospheric carbon dioxide, a main source of greenhouse gas, has been accentuated recently. One focus is capture, separation, and sequestration of industrial carbon dioxide. As a hydrate former, carbon dioxide forms hydrates at moderate temperatures and pressures. This phenomenon could be utilized to capture and separate carbon dioxide from flue gases, and also has the potential to sequester carbon dioxide in the deep seabeds. This research investigated the effect of synthetic surfactants on carbon dioxide hydrate formation, catalysis and consequently, methane production from hydrate permafrosts in sediments. It investigated the sequestration potential of carbon dioxide hydrates in ocean sediments. Also, the catalytic effect of biosurfactants in these processes was investigated.

Keywords : carbon dioxide, hydrate, sequestration, surfactant

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