Chloride enrichment during methane hydrate formation under deep ocean floor

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An electric circuit was designed for measuring the chloride concentration under the conditions of deep ocean floor with reliable accuracy. In a cylindrical high pressure bearing cell, three tubes with holes on their walls and few electrodes were installed around the clay mixture. The holes on the tube walls were incorporated in order to regulate the interface area between methane gas and clay mixture. Chloride enrichment was remarkably observed under the fast MH formation rate, but no noticeable concentration change was detected under a relatively low rate of MH formation. We also suggested that MH formation rate must be maintained at least in the order of ~10 $mol^2\ m^2\ yr^{-1}$ to efficiently enrich chlorides and keep the enriched chloride level. We finally recommended a reasonable scenario for highly enriched chlorinity observed in some region of deep sea floor.