

## SEM observations of gas hydrate distributions in porous artificial sample and Nankai trough gas hydrate sediments

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Gas hydrate appearances in sediments is one of important factors to consider strength of sediments, grain cementation and permeability. However, the nature of gas hydrate, that high P/low T is necessary to keep them stable, has blocked their observation, especially microscopic observation. Recently, it has been recognized that Scanning Electron Microscope(SEM) with cooling sample stage was useful to observe gas hydrate sediments. Artificial sample microstructure of gas (CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>) hydrate and natural sample in sediments such as Marik core were reported (e.g.;L.A.Stern et al., 2005, SEM imaging of gas hydrate formation processes and growth textures, and comparison to natural hydrates, 5th International Conference on Gas Hydrates).

We Methane hydrate laboratory/AIST have started observation of artificial sample and marine sediments in Nankai Trough; which are gas hydrate bearing sediments, using SEM with cooling sample stage.

Tentative results of analysis, we distinguished gas hydrate and pore water (ice) detecting C, O and Si element by EDX, which method is available when low vacuum observing system is in SEM. Morphology of pore water (ice) are slightly different between artificial hydrate sample and natural sediments, it may be related with fine size grain particles and/or growth situations of hydrate. We will report microscopic features of artificial hydrate sample and Nankai trough sediments with EDX element mappings result at session.