

Some ion concentration profiles in pore water samples from gas hydrate-bearing sediments offshore Sakhalin

Hirotsugu Minami[1]; Hirotohi Sakagami[2]; Akihiro Hachikubo[3]; Kinji Hyakutake[3]; Kiyoshi Abe[3]; Takaya Konno[2]; Leonid Mazurenko[4]; Tatiana Matveeva[4]; Nobuo Takahashi[2]; Anatoly Obzhirov[5]; Valery Soloviev[4]; Hitoshi Shoji[3]

[1] Instrumental Analysis Center, Kitami Institute of Technology; [2] Department of Materials Science, Kitami Institute of Technology; [3] New Energy Resources Research Center, Kitami Institute of Technology; [4] VNIIOkeangeologia; [5] POI, FEB RAS

The CHAOS (Hydro-Carbon Hydrate Accumulations in the Okhotsk Sea) cooperative project organized by Kitami Institute of Technology (KIT, Japan), All-Russia Research Institute for Geology and Mineral Resources of the World Ocean (Russia), V. I. Il'ichev Pacific Oceanological Institute FEB RAS (Russia), Korea Polar Research Institute (Korea), IFM-GEOMAR (Germany), Limnological Institute SB RAS (Russia) and Renard Centre of Marine Geology (Belgium) with the aim of the natural gas hydrate study at the Okhotsk Sea was conducted in 2003. The core sampling areas were located offshore Sakhalin Island. The gas hydrate-bearing and gas hydrate-free marine sediments were retrieved from the bottom of the Okhotsk Sea at water depths between 830 and 960 m by using gravity- and hydro- corers.

The pore water samples were obtained by a squeezer designed and constructed at KIT. Concentrations of some ions in the pore water were determined by ion chromatography and inductively coupled plasma atomic emission spectrometry. It was found that the sulfate concentration decreased rapidly with depth to the half of the sea water value at about 0.5 mbsf for the gas hydrate-bearing sediments whereas the depth was about 2 mbsf for the sediments without gas hydrate. Since sulfate concentration decreases due to chemical reactions with upwelling methane, sulfate content profile below sea floor can provide information about upwelling methane flux and methane hydrates formation activity. Concentration profiles of depth for the other ions such as chloride, calcium in the pore water samples will be shown and discussed in this presentation.