

GEOCHEMISTRY OF THE HYDROCARBON GASES DISSOLVED IN THE GROUND WATER IN THE POHANG AREA

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The chemical components of ground water, chemical and isotopic compositions of extractable gases, were analyzed to characterize the properties of the natural gases which were dissolved in ground water in the Pohang area, south eastern part of the Korean peninsular. The amount of the total extracted gases ranged from 27 ml/l to 50.1 ml/l. The hydrocarbon gases consisted of methane (27~376,420 ppm) and ethane (19~127 ppm). The total amount of hydrocarbon gases was related to the lithology and geological factors around the reservoir. The quantity of the hydrocarbon gases tended to increase in the Tertiary reservoirs and in the reservoirs where the Tertiary formations were distributed thickly. The relationship between the hydrocarbon gases and the total solids in the ground water suggested that the hydrocarbon gases were dissolved in the Tertiary formation water. Based on the methane content (99.9%) and isotopic composition ($\delta^{13}\text{C}$; -73.1‰ ~ -43.22‰), we interpreted the gases to be composed of predominantly biogenic origins which were generated by the methanogenic bacterial processes under low temperatures and anoxic conditions.