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Variation on microstructure of sandstone caused by CO_2 injection test

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Geological storage of carbon dioxide is one of the most effective and economical method to isolate carbon dioxide from atmosphere. In Republic of Korea, small-scale CO_2 injection demonstration project is being performed in offshore Pohang Basin. The basin is composed of sandstone reservoir and mudstone caprock. In this study the sandstone specimens which were drilled at target layer were used as test materials. The specimens were made as cylindrical shape with 15.1 mm diameter. Supercritical CO_2 was injected in sandstone specimens simulating the condition of the reservoir. The variation on microstructure were observed and analyzed using X-ray computed tomography (CT). Because X-ray CT is non-destructive method and has high resolution, it is suitable for consistent observation of the same specimen. Porosity, pore size distribution, crack orientation, local thickness and permeability of the specimens were analyzed using three dimensional X-ray CT images. The data from this research can be used as input data of CCS site. This work was supported by the Energy Efficiency & Resources of the Korea Insitute of Energy Technology Evaluation and Planning(KETEP) grant funded by the Korea government Ministry of Knowledge Economy(No. 20132010201760).