X-ray CT visualization of CO2 microbubbles migration in Berea sandstone

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¹Graduate School of Engineering, Kyoto University, ²Research Institute of Innovative Technology for the Earth, ³Tokyo Gas Laboratory core flooding experiment was run to investigate supercritical CO₂ migration in brine saturated sandstone. The sample was cylindrical Berea sandstone measuring 35mm in diameter and 70mm in length. A grooved disc and a special porous filter were set to the sample ends. Supercritical CO₂ was injected into the sample under same pressure and temperature conditions. X-CT system was used to visualize migrations of CO₂ injected from different filters. When injecting CO₂ from the special porous filter the CO₂ was microbubble and through the grooved disc the CO₂ was normal bubble. CO₂ saturation estimated from CT values and the CO₂ distribution clearly showed advantages of microbubble CO₂ injection and the experimental results suggest the usefulness of microbubble CO₂ injection in both saline aquifer storage and enhanced oil recovery.

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