

## 超臨界 CO<sub>2</sub> マイクロバブルを圧入した際の地層水の音響特性 Acoustic characteristics of formation water when injecting scCO<sub>2</sub> microbubbles

片所 優宇美<sup>1\*</sup>, 木山 保<sup>2</sup>, 辻 真也<sup>1</sup>, 薛 自求<sup>2</sup>, 松岡 俊文<sup>1</sup>

Yumi Katasho<sup>1\*</sup>, Tamotsu Kiyama<sup>2</sup>, Shinya Tsuji<sup>1</sup>, Ziqiu Xue<sup>2</sup>, Toshifumi matsuo<sup>1</sup>

<sup>1</sup> 京都大学大学院工学研究科, <sup>2</sup> 公益財団法人地球環境産業技術研究機構

<sup>1</sup>Kyoto University Graduated School of Engineering Department, <sup>2</sup>Research Institute of Innovative Technology for the Earth

The effectiveness of CO<sub>2</sub> microbubble method for geological sequestration was investigated. For the comparison of the conventional method and CO<sub>2</sub> microbubble method, the CO<sub>2</sub> behavior in Berea sandstone saturated by the KCl solution was monitored by measuring ultrasonic compressional velocity (Vp) in both method.

However, in the injection of CO<sub>2</sub>, there were two factors of the change of Vp. One is CO<sub>2</sub> dissolution into pore water and another is replacement of CO<sub>2</sub> and pore water. To separate the factor of the change of Vp, Vp of saline water was measured when injecting CO<sub>2</sub> microbubbles into saline water. The change of Vp effected by CO<sub>2</sub> dissolution was less than 1 %. Therefore, in first experiment. the change of Vp in the injection of CO<sub>2</sub> was effected by the CO<sub>2</sub> replacement of pore water more than the CO<sub>2</sub> dissolution. And the change of Vp in Berea sandstone showed the slow CO<sub>2</sub> migration in CO<sub>2</sub> microbubble method. This is because dissolution of amount of CO<sub>2</sub> microbubbles increased.

This result shows microbubble method could increase the reservoir potential for CO<sub>2</sub>, which also showed by X-ray CT scan results.

キーワード: マイクロバブル, 二酸化炭素地中貯留, P 波速度

Keywords: microbubble, carbon capture and storage, P-wave velocity