

## Injection of Carbon dioxide included micro-nano bubble water into late Pleistocene sediments and its chemical reaction

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The distributed CO<sub>2</sub> storage, which is neutralizing CO<sub>2</sub> and sediment in the shallow aquifer, is small-scale storage and is located around emission areas. Carbon dioxide (CO<sub>2</sub>) included micro-nano bubbles is one approach in neutralizing CO<sub>2</sub> and sediments by increasing CO<sub>2</sub> volume per unit volume of water and accelerating the chemical reaction. However, the thorough investigation on the behavior of micro-nano bubble water in sediments has yet not been ventured. In order to design underground treatment for CO<sub>2</sub> gas in the subsurface, it is required to elucidate the behavior of CO<sub>2</sub> included micro-nano bubbles such as trapping, advection and so on. In this study, the in-situ test was carried out by injecting CO<sub>2</sub> included micro-nano bubble water into the injection well while simultaneously sampling and analyzing the underground water quality from the viewpoint of the neutralizing CO<sub>2</sub> and sediments. Additionally, the electrical resistivity tomography test was tried to monitor the moving micro-nano bubble water between wells.

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