Supplementary Information

Microbially Induced Calcium Carbonate Precipitation Driven by Ureolysis to Enhance Oil Recovery

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There are 6 pages in Supplementary Information including 4 figures.
The preparation of growth medium:

The growth medium was first prepared with 3 g of Difco Nutrient Broth and 10 g of ammonium chloride dissolved in deionized water, and then sterilized for 20 min at 121°C. To avoid the decomposition of urea at high temperature, 20 g of urea was filtrated with a 0.22 μm filter, to be sterilized after cooling of the medium. Similarly, 11.1 g of calcium chloride was sterilized with a 0.22 μm filter. A calcium-free growth medium was prepared in the same way as the growth medium except for the addition of calcium chloride. As necessary, the pH of the medium was adjusted to between 6.0 and 6.3 before the addition of calcium chloride to prevent abiotic precipitation.
Fig. S1 Scanning electron microscopy of precipitate attached on the surface of sand and Energy-dispersive X-ray spectroscopy analyses of the inlet of coarse column 1, Scale bar=50μm.
Fig. S2 Scanning electron microscopy of precipitate attached on the surface of sand at different locations in coarse column 1, (A) Located at 3 cm (B) Located at 5 cm away from inlet of column, Scale bar=50μm.
Fig. S3 X-Ray Powder Diffraction analyses of samples at different locations in the coarse column. (A) and (B) in coarse column 1, (C) and (D) in coarse column 2.
Fig. S4 Scanning electron microscopy of precipitate attached on the surface of sand and Energy-dispersive X-ray spectroscopy analyses of the inlet of coarse column 2. Scale bar=50μm.
Fig. S5 Scanning electron microscopy of precipitate attached on the surface of sand at different locations in coarse column 2. (A) Located at 3 cm (B) located at 5 cm away from the inlet of the column. Scale bar=50μm.
Fig. S6 The change of permeability during the study.