

Supplementary information

Design and characterization of microbial self-healing gel for enhanced oil recovery

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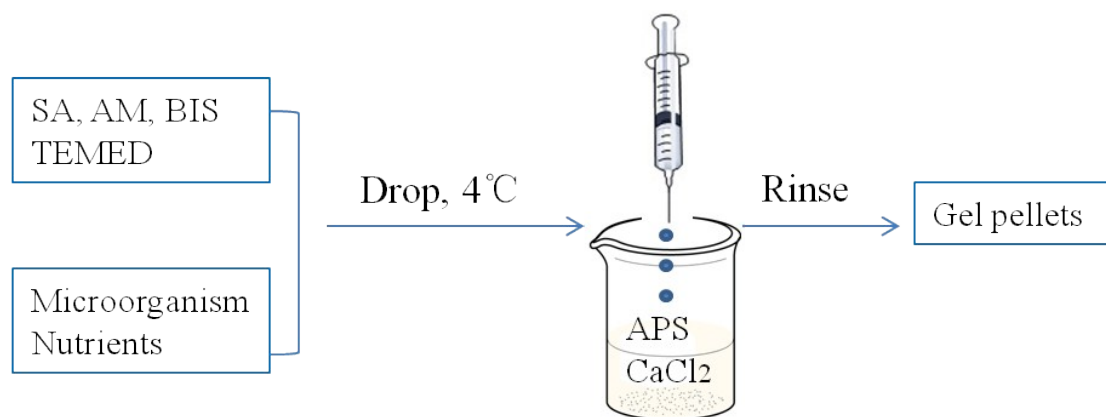
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There are 7 pages in supporting information, including 4 figures

20 The preparation of growth medium:

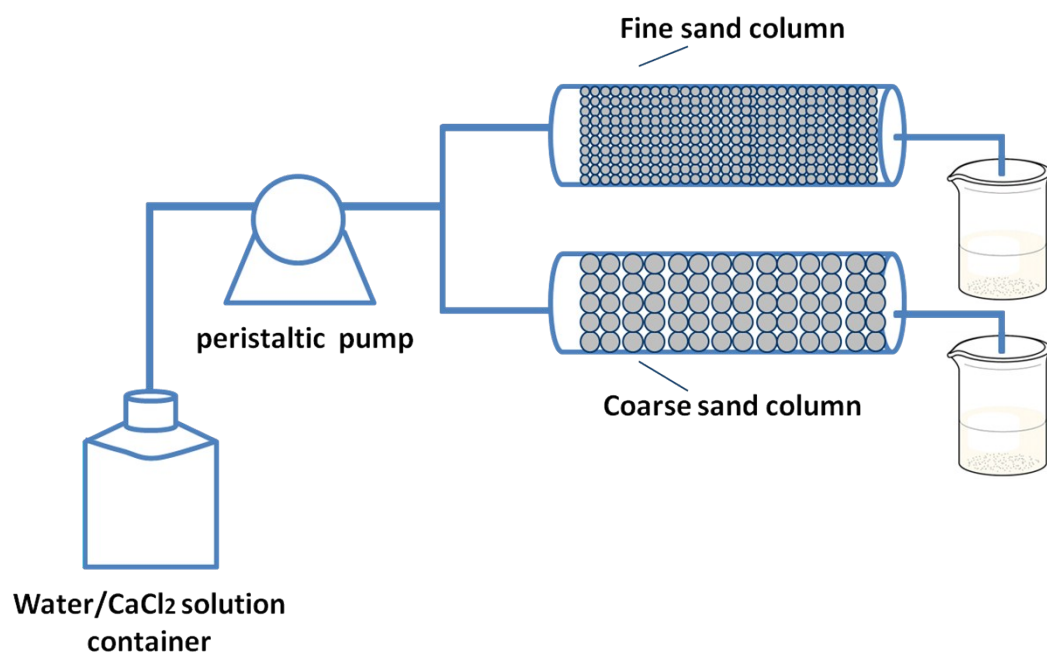
21 The growth medium was first prepared with 3 g of Difco Nutrient Broth and 10 g
22 of ammonium chloride dissolved in deionized water, and then sterilized for 20 min at
23 121°C. To avoid the decomposition of urea at high temperature, 20 g of urea was
24 filtrated with a 0.22 µm filter, to be sterilized after cooling of the medium. Similarly,
25 11.1 g of calcium chloride was sterilized with a 0.22 µm filter.



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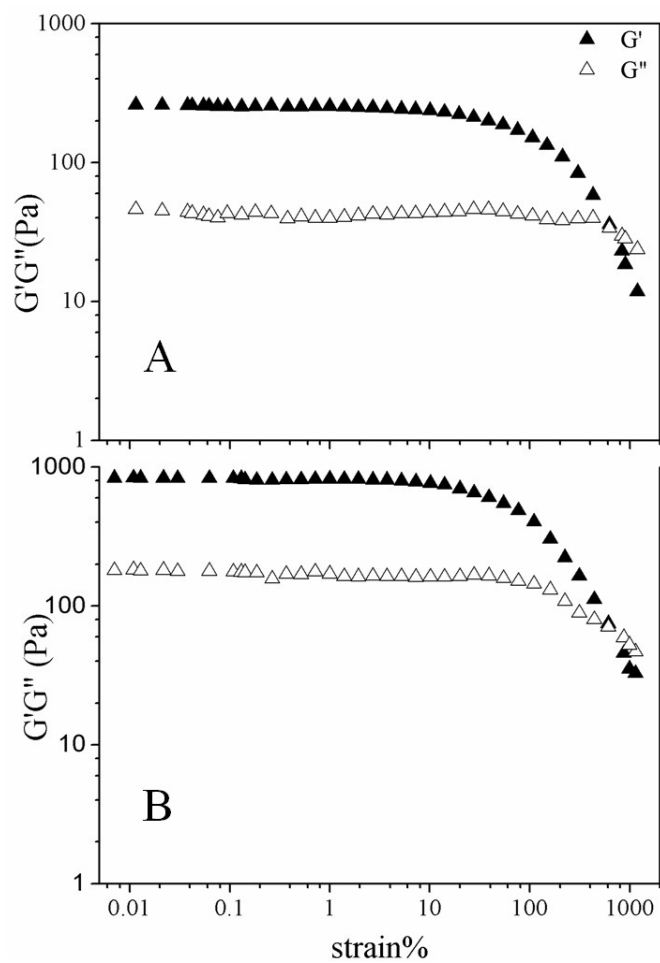
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Fig. S1 Procedure of preparing the microbial immobilization system

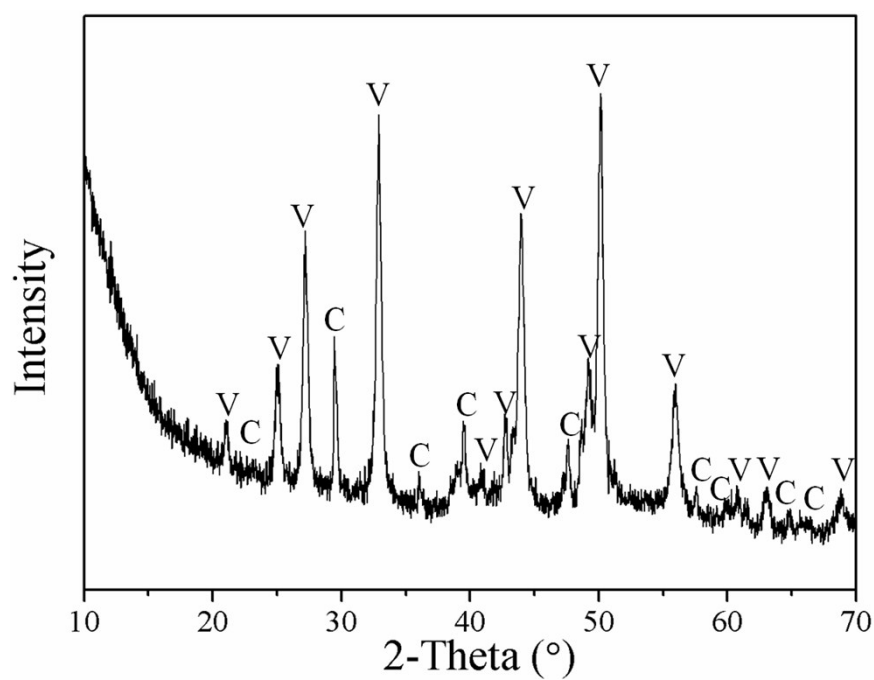


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Fig. S2 Setup of sand-packed columns set



29 **Fig. S3** Same formula except for the difference amount of sodium alginate was
 30 selected to test the hardness with the rheometer. (A) Set 1 (B) Set 5



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32 **Fig. S4** Powder X-ray diffraction patterns of calcium carbonate induced by the
 33 microorganisms. V: vaterite; C: calcite.

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Table S1. Basic column parameters of sand-packed columns set

Parameters	Coarse	Fine
The sand particle size (mm)	~8	~1
Column volume (L)	1	1
Porosity (%)^a	38.66	37.27
Flow rate (mL/min)	2.5	2.5

35 a: The porosity was obtained using saturated water weighing method.