Supplementary Materials

Precipitation of low-temperature disordered dolomite induced by extracellular polymeric substances of methanogenic Archaea *Methanosarcina barkeri*: Implications for sedimentary dolomite formation

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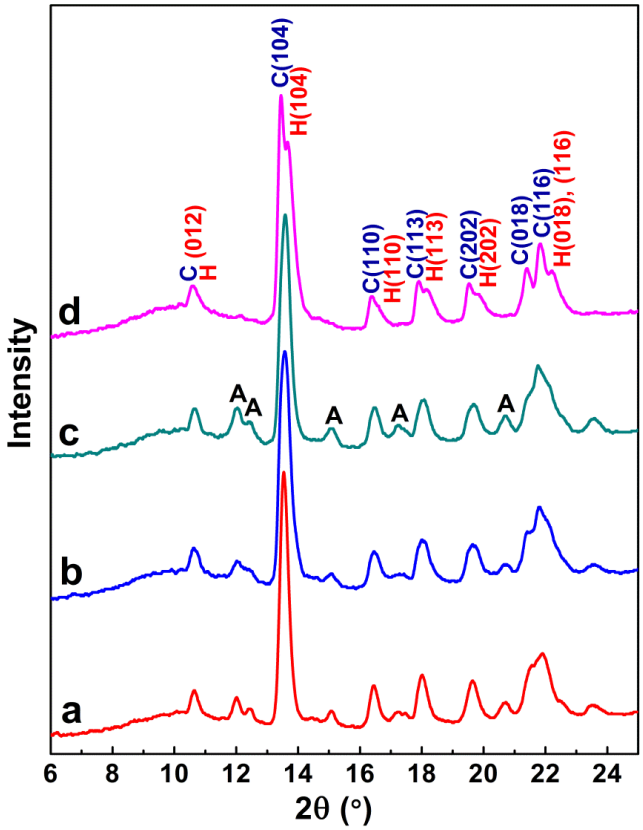

Fig. S1 Typical XRD patterns of synthetic HMC from control experiments. The initial Mg:Ca ratio in solutions where carbonate precipitated was 3:1 (a), 4:1 (b), 5:1 (c), and 8:1 (d), respectively. Peaks correspond to: A: aragonite; C: calcite seeds; H: HMC.

(a): HMC (d_{104} = 3.0128 Å, 8.4 mol% $MgCO_3$) and a small amount of aragonite.

(b): HMC (d_{104} = 3.0078 Å, 9.5 mol% $MgCO_3$) and a small amount of aragonite.

(c): HMC (d_{104} = 3.0027 Å, 11.5 mol% $MgCO_3$) and a small amount of aragonite.

(d): HMC (d_{104} = 2.9831 Å, 18.5 mol% $MgCO_3$) and a small amount of aragonite.

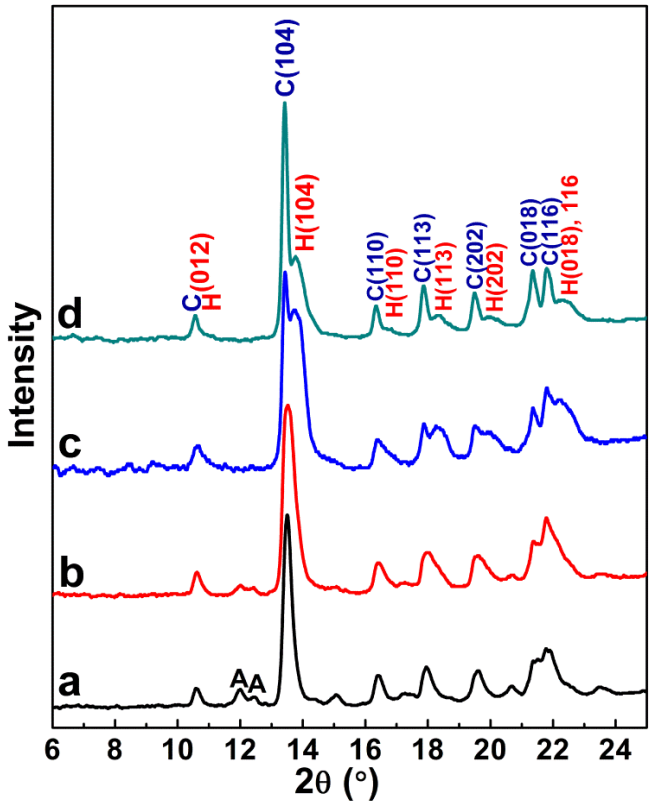

Fig. S2 Typical XRD patterns of synthetic Ca-Mg carbonates induced by non-metabolizing biomass of *M. barkeri* (65 mg L^{-1}). The initial Mg:Ca ratio in experimental solutions where carbonate precipitated was 3:1 (a), 4:1 (b), 5:1 (c), and 8:1 (d), respectively. Peaks correspond to: A: aragonite; C: calcite seeds; H: HMC.

(a): HMC (d_{104} = 3.0215 Å, 4.7 mol% of $MgCO_3$) and a small amount of aragonite.

(b): HMC (d_{104} = 3.0004 Å, 12.5 mol% of $MgCO_3$) and a small amount of aragonite.

(c): HMC (d_{104} = 2.9590 Å, 28.6 mol% of $MgCO_3$).

(d): HMC (d_{104} = 2.9568 Å, 30.0 mol% of $MgCO_3$).

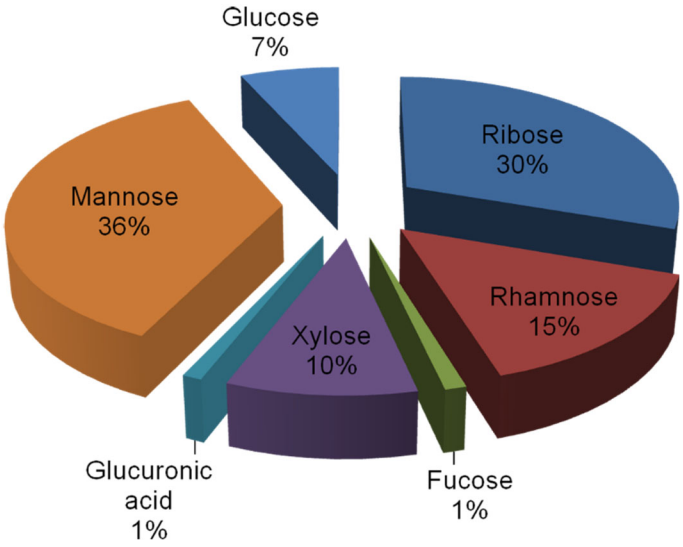

Fig. S3. The monosaccharide composition of the polysaccharides in EPS as analyzed by GC/MS.