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Supplementary Materials

Heterogeneous Nucleation and Growth of $CaCO_3$ on Calcite (104) and Aragonite (110) Surfaces: Implications for the Formation of Abiogenic Carbonate Cements in the Ocean

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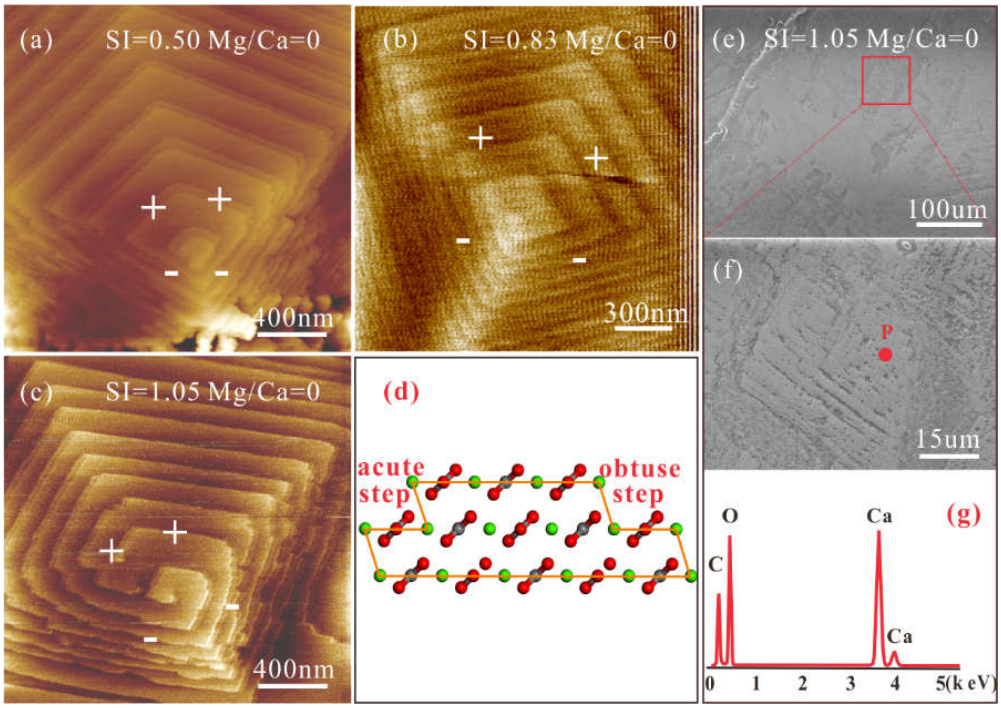

Figure S1. AFM height images of the calcite (104) cleavage surfaces in solutions at Mg^{2+}/Ca^{2+} = 0 and pH = 8.0 ± 0.1 with **(a)** $SI_{calcite}$ = 0.50; **(b)** $SI_{calcite}$ = 0.83; **(c)** $SI_{calcite}$ = 1.05. **(d)** Sketch of the atomic arrangements in calcite (104) surface. The cross-section illustrates the angular relationship of the acute and obtuse step edges with terraces. And SEM image with **(e)** $SI_{calcite}$ = 1.05; and **(f)** represents the image of the red box marked zone in (e); and **(g)** denotes the EDS analysis of P labeled in (f).

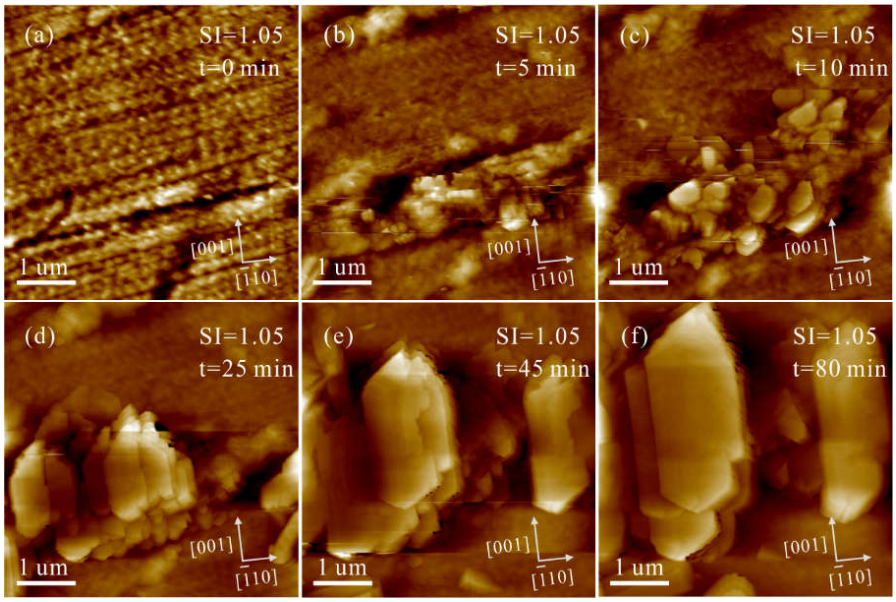

Figure S2. AFM height images of the polished aragonite (110) surface in solution ($Mg^{2+}/Ca^{2+} = 0$, $SI_{calcite} = 1.05$) under flowing conditions at pH = 8.0 ± 0.1 for **(a)** 0, **(b)** 5, **(c)** 10, **(d)** 25, **(e)** 45 and **(f)** 80 min.

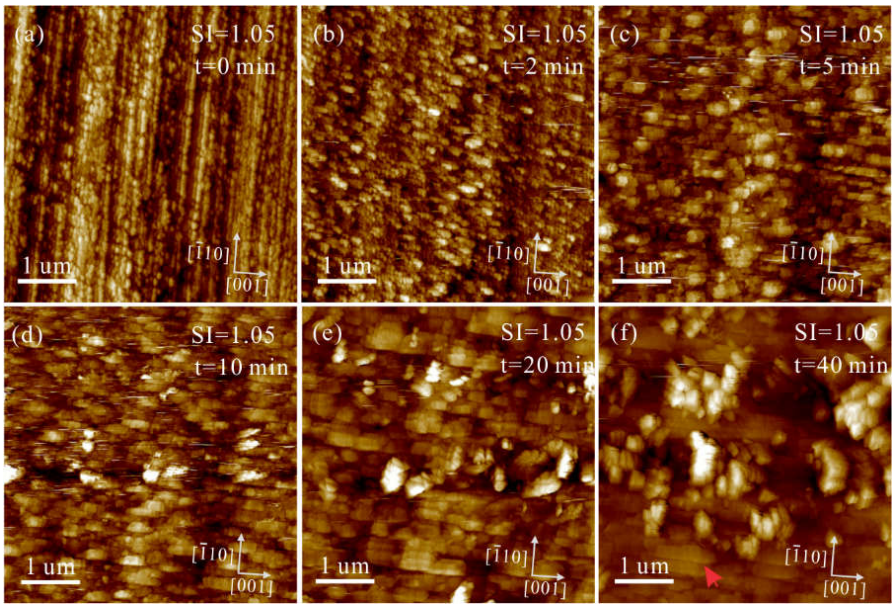

Figure S3. AFM height images of the polished aragonite (110) surface in solution ($Mg^{2+}/Ca^{2+} = 3$, $SI_{calcite} = 1.05$) under flowing conditions at pH = 8.0 ± 0.1 for **(a)** 0, **(b)** 2, **(c)** 5, **(d)** 10, **(e)** 20 and **(f)** 40 min.