

Abstract Submitted  
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**Morphology changes caused by seawater ions in templated calcite crystals.**<sup>1</sup> BENJAMIN STRIPE, AHMET UYSAL, PULAK DUTTA, Northwestern University — It has been shown that the presence of Mg in ratios approximately equal to those found in seawater, during the organic-monolayer-templated nucleation of  $\text{CaCO}_3$ , significantly changes the morphology of the nucleating crystals. Crystals nucleated from supersaturated subphases of  $\text{CaCO}_3$  under floating arachidic sulfate monolayers grow as (001) oriented tetragonal pyramids [1]. We have found that crystals nucleating under arachidic sulfate from supersaturated solutions of  $\text{CaCO}_3$  containing approximately 5:1 Mg: $\text{CaCO}_3$  grow as (001) hexagonal prisms, which express (100) or (110) faces. The crystal-water surface energy of these faces is almost twice that of the (104) face expressed on the tetragonal pyramids [2]. The growth of two morphologies displaying different surfaces but the same (001) orientation suggests that epitaxy, when present, plays a larger role than surface energetics alone. Our studies of Mg-concentration-dependent changes in morphology will also be presented.

[1] Kewalramani, S. et. al.”, Langmuir, 24, 10579, 2008

[2] Duffy, D.and Harding, J, Langmuir, 20, 7630, 2004

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