

Confined growth of calcite

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We nucleate calcite crystals in a microfluidic system where the fluid supersaturation and the mechanical load may be accurately controlled (see Figure 1). We study the growth modes and rates of the calcite crystals for both the free surfaces and the load bearing confined surface. We find a supersaturation threshold for growth and the growth rates depend on supersaturation, load and nucleation phenomena on the growing surface. The rates are partially explained by a diffusion limited confined growth model, but several complexities of the confined growth may only be explained qualitatively.

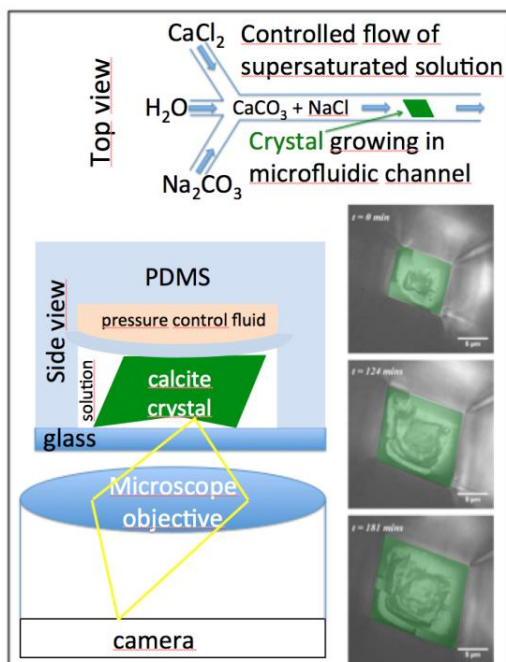


Figure 1 Microfluidic system for control of fluid supersaturation, mechanical load and imaging. Reflection interference contrast allows measuring local growth rates at the lower crystal surface that is con-

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fined by the glass. The load bearing part of the surface is separated
from the glass by a liquid film thinner than 100 nanometers.