

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Sidebranch development in free dendritic crystal growth ANDREW DOUGHERTY, Lafayette College — We report measurements of the free dendritic crystal growth of NH_4Cl from supersaturated aqueous solution at small supersaturations, with a goal of understanding the origin and development of the sidebranching structure. The origin of sidebranches is not fully understood. The functional form and scaling of the sidebranches seem reasonably consistent with a noise-driven model, but the amplitude of the branches in this system appears larger than would be expected from simple thermal noise. An underlying dynamic oscillation can not be ruled out. We do sometimes observe short regions with highly regular branches, but such regularity is usually quite short-lived. In the context of directional solidification, Pocheau, Bodea, and Georgelin [Phys. Rev. E 80, 031601 (2009)] found randomly-distributed bursts of sidebranches that had strong coherence within each burst, but that were not well-correlated between bursts. In this talk, I will explore applying that idea to free dendritic growth.

Andrew Dougherty
Lafayette College

Date submitted: 15 Nov 2013

Electronic form version 1.4