

Abstract Submitted
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Polymorphism in Monodisperse Foams OLIVIA L. HALT, RANDALL D. KAMIEN, University of Pennsylvania — The aging of dry foams combines the local requirements of Plateau's rules and surface to volume relations with the global requirement of volume conservation. In a wet foam, the size of each spherical bubble is directly related to its radius of curvature, R . For dry foams, however, we must instead consider the mean curvature, H , which controls gas diffusion but is not directly related to the bubble size. Using a mean-field approach, our model connects distributions of mean curvature to distributions of cell size. This conversion makes use of mean field bubbles [1,2]. By considering the positive and negative curvature distributions separately, such that the cells have equal surface area, we obtain an average number of faces close to previously measured values. Also, distributions of cell sizes are obtained that are seen in real foam.

[1] Glicksman M., Phil. Mag., 85 (2005) 3.

[2] Hilgenfeldt S., Kraynik A., Reinelt D., and Sullivan J. Europhys. Lett. 67 (2004) 484.

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