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How does interfacial rheology govern soap bubble cluster dynamics? SYLVIE COHEN-ADDAD, Universite Paris-Est, ANNE-LAURE BIANCE, Universite Lyon 1, REINHARD HOHLER, Universite Paris-Est — Aqueous foams are concentrated dispersions of gas bubbles in a soapy solution. These complex fluids exhibit solid-like or liquid-like mechanical behaviors, depending on the applied shear. When it is increased beyond a yield strain, neighbor switching bubble rearrangements called T1 events are triggered and plastic flow sets in. We study experimentally the dynamics of such strain induced T1s in 3D bubble clusters that we consider as model systems of 3D foams. To determine the hydrodynamics and physico-chemistry that set the duration of T1s, we use foaming solutions of a wide range of well characterized bulk and interfacial rheological properties. At low shear rates, the T1 duration is set by a balance between surface tension and surface viscous forces in qualitative agreement with previous studies of T1s in 2D foams [1] and we present a simple physical model that explains our 3D findings. Moreover, above a characteristic shear rate, rearrangement dynamics are driven by the applied strain. By combining all our results, we link the transition from intermittent to continous flow dynamics in foams to the rheology of the gas-liquid interfaces.

[1] M. Durand, H. A. Stone, *Phys. Rev. Lett.* **97**, 2226101 (2006).

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