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Arresting relaxation in Pickering Emulsions TIM ATHERTON, CHRIS BURKE, Tufts University — Pickering emulsions consist of droplets of one fluid dispersed in a host fluid and stabilized by colloidal particles absorbed at the fluid-fluid interface. Everyday materials such as crude oil and food products like salad dressing are examples of these materials. Particles can stabilize non spherical droplet shapes in these emulsions through the following sequence: first, an isolated droplet is deformed, e.g. by an electric field, increasing the surface area above the equilibrium value; additional particles are then adsorbed to the interface reducing the surface tension. The droplet is then allowed to relax toward a sphere. If more particles were adsorbed than can be accommodated by the surface area of the spherical ground state, relaxation of the droplet is arrested at some non-spherical shape. Because the energetic cost of removing adsorbed colloids exceeds the interfacial driving force, these configurations can remain stable over long timescales. In this presentation, we present a computational study of the ordering present in anisotropic droplets produced through the mechanism of arrested relaxation and discuss the interplay between the geometry of the droplet, the dynamical process that produced it, and the structure of the defects observed.

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