Abstract for VPF8

# From yielding to shear jamming in a cohesive frictional suspension

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Concentrated suspensions of rigid spheres can exhibit a yield stress when attractive interactions are sufficiently strong. These suspensions, when flowing, can also "jam" with increasing stress, forming a solid-like phase that will fluidize upon reversal of shear. The latter phenomenon is not yielding; there is a distinct difference between the solids below the yield stress and in the shear-jammed state, as the two occur at widely separated stress levels, with an intermediate region of stress in which the material is flowable. We develop a constitutive model that combines yielding to a shear-thinning Herschel-Bulkley material with a power-law exponent of 0.5 at low stress with frictional shear-thickening at high stress, in good agreement with particle-level simulation results.

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We wish to have a regular oral presentation