

Droplet aggregates as model systems for connecting granular systems to continuum mechanics: how few is too few?

Kari Dalnoki-Veress

Department of Physics & Astronomy, McMaster University, Hamilton, ON, Canada
Gulliver Laboratory, ESPCI ParisTech, PSL Research University, Paris, France.

In recent years we have developed a method to produce microscopic monodisperse oil droplets in an aqueous environment. With an attractive interaction between the droplets, monodisperse droplets form perfect crystalline aggregates, while a blend of small and large droplets allows us to prepare a disordered glass. By carefully tuning the adhesion forces between the droplets, the aggregates provide model systems for studying various physical phenomena that are not accessible by investigating molecular systems. Here I will provide a brief overview of experiments we have carried out to address how a system transitions from a crystal to a glass; and secondly, how a system transition from a few particles, to many particles, where continuum models are valid.

