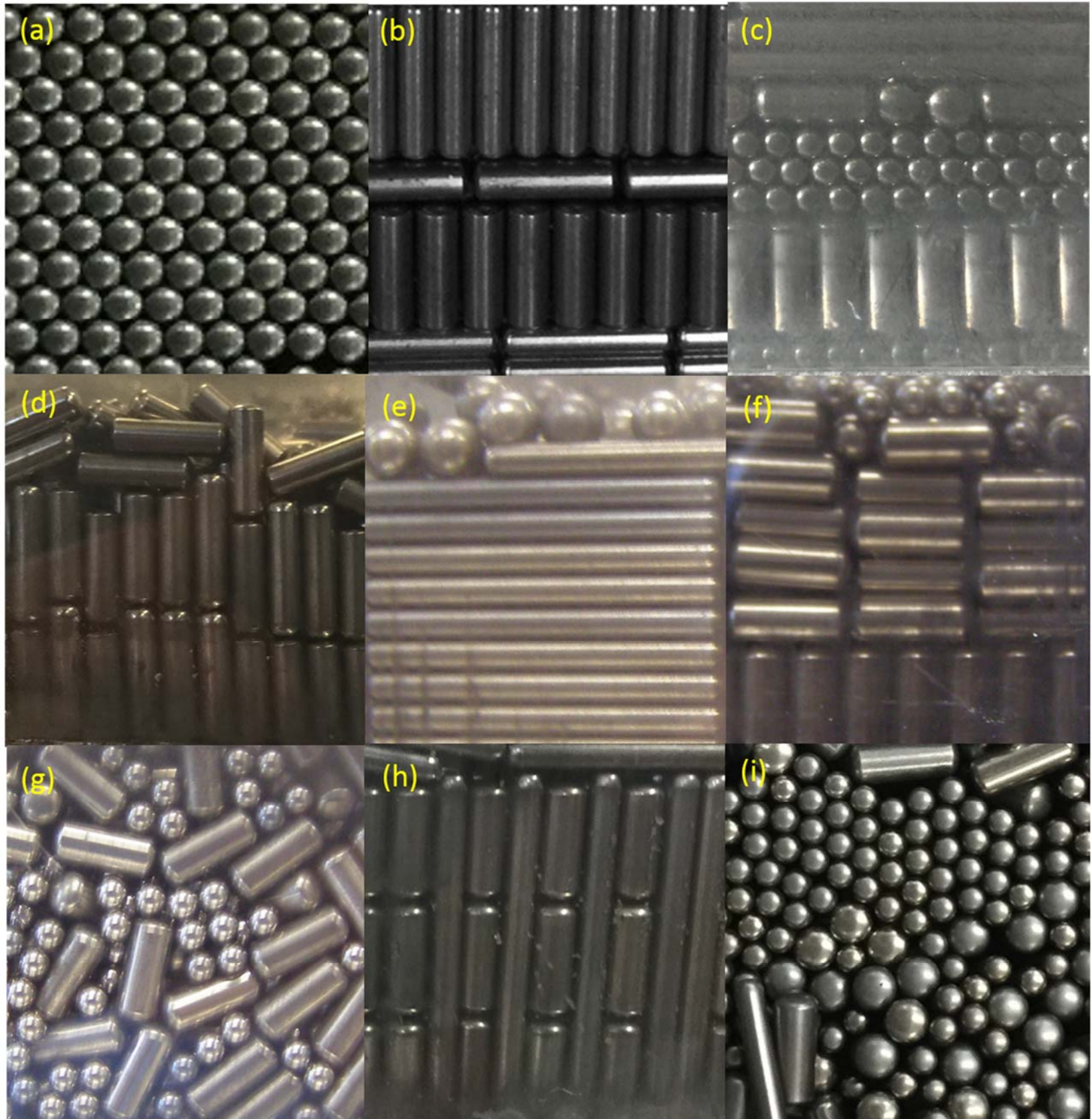


## Controlling Convection and Segregation in Vibrofluidised Granular Systems

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The convective motion and segregative behaviours of granular media are of great relevance to a variety of natural phenomena and industrial processes. As such, our ability to predict and control these behaviours is paramount in a number of fields. In spite of this, granular convection and segregation remain at best only partially understood, in part due to the complexity of the systems themselves, and in part due to a lack of fundamental research.

In this talk, we explore some of the lesser-studied aspects of convective and/or segregative granular systems. We give insight into the currently little-known effects of segregation due to differences in particles' material properties and their specific geometries, in the latter case uncovering a striking similarity between geometrically-induced granular segregation and the phase separation of classical liquid crystals. We also present new findings regarding the convective behaviours of granular systems, demonstrating a range of manners in which this convective motion may be deliberately induced, suppressed, strengthened, weakened and reoriented.