

Abstract Submitted
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Clustering Dynamics of Ultra-fine Particulate Systems¹ MEENAKSHI DUTT, JAMES ELLIOTT, University of Cambridge — Length scales of particles and their surrounding medium strongly determines the nature of their interactions with one another and their responses to external fields. We are interested in systems of ultrafine particles (0.1 - 1.0 micron) such as volcanic ash, solid aerosols, or fine powders for pharmaceutical inhalation applications. We develop a numerical model for these systems using the Derjaguin-Muller-Toporov (DMT) adhesion theory along with the van der Waals attraction between the particles and their contact mechanical interactions. We study the dynamics of these systems in the absence and presence of gravity by controlling the particle size, and thereby, the surface properties of the particles. The high surface energies of these particles causes them to agglomerate as they gravitationally settle. We explore their internal structure as a function of their particle size.

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