

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**Networks of Liquid Bridges and Clusters in Wet Granular Systems** MARIO SCHEEL, STEPHAN HERMINGHAUS, RALF SEEMANN, MPI for Dynamics and Self-Organization, Bunsenstr. 10, D-37073 Göttingen, Germany — The macroscopic mechanical properties of a dry granulate change dramatically when small amounts of liquid are added. This is due to capillary bridges forming between mutually adjacent grains in the pile, which exert an attractive force by virtue of the surface tension of the liquid. If much more liquid is added, the liquid clusters, and the stability of the pile is reduced. Although the tensile strength of wet granulates can be roughly estimated from the capillary forces, a quantitative theory of the mechanical properties of granulate requires a detailed understanding of the topology of the complex network of capillary bridges and clusters. We have determined the macroscopic properties in model granulates with a vertical fluidization experiment, as well as the microscopic geometry of the distribution of liquid within the pile via x-ray microtomography. The transition from capillary bridges to clusters or the percolation can be clearly observed in both the fluidization experiments and the tomographic imaging.

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Date submitted: 05 Dec 2005

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