

Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

Friction and the Dynamic Angle of Repose of a Granular Material¹ BENJAMIN L. SEVERSON, RANDALL Q. SNURR, JULIO M. OTTINO, RICHARD M. LUEPTOW, Northwestern University — The angle of repose is one most common measures of the flow-ability of granular materials. Particle properties influencing the dynamic angle of repose of a granular material rotated in a cylinder are studied using particle dynamics simulations. The influence of each parameter in the force models of this commonly used simulation technique are evaluated through the use of a factorial set of designed simulation experiments. The friction coefficient is the most important parameter affecting the angle of repose. Bidisperse mixtures of particles with different friction coefficients are also studied. The angle of repose of the mixture depends on the concentration of the mixture, consistent with recent experiments, and also on how the friction coefficient for contacts between dissimilar particles is defined.

¹Supported by NSF

Richard M. Lueptow

Date submitted: 05 Aug 2005

Electronic form version 1.4