Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Effects of Elasticity and Inter-particle Friction in a Sheared Packing of Soft Particles JC TSAI, Institute of Physics, Academia Sinica, JR HUANG, Physics Departiment, National Taiwan Normal University — We build a rheometer to investigate experimentally centimeter-sized particles packed in 3D under either cyclic or steady shearing. Previously we have combined the cessation of shearing and internal imaging , to demonstrate the relaxation and residues of stress and the timescale of grain movements in the case of hydrogel particles. Here we extend our investigations to compare results using particles of different elastic moduli, and to identify how the inter-particle frictions changes the response. Mixture of slippery and frictional particles allows us to observe the transition from a fully lubricated packing, to its counterpart that reproduces the stick-slip behaviors as seen in sand flows dominated by frictions.

JC Tsai
Institute of Physics, Academia Sinica

Date submitted: 11 Nov 2016 Electronic form version 1.4