Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

Pattern Formation in a Rotating Suspension of Non-Brownian Buoyant Particles BRUCE ACKERSON, MAKRAND KALYANKAR, Oklahoma State University, W.R. MATSON, DePaul University, PENGER TONG[1], Hong Kong University of Science and Technology — This study examines concentration and velocity patterns observed in a horizontal rotating cylinder completely filled with a monodisperse suspension of non-Brownian buoyant particles. The unique patterns or phases are mapped by varying both the rotation rate and the solvent viscosity. Individual phases are identified using both frontal (θ-z plane) and axial (r-θ plane) views. Phase boundaries are compared to those obtained recently for suspensions of non- buoyant particles. Expressing the boundaries in terms of dimensionless parameters unifies the data for several samples at low rotation rates. When centrifugal force dominates, the behavior becomes quite different from previous studies.

[1]Work supported in part by the Research Grants Council of Hong Kong SAR.

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Date submitted: 15 Jul 2008 Electronic form version 1.4