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Abstract for an Invited Paper
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Phonons and Rearrangements in Disordered Colloidal Glasses[1]

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I will describe experiments which explore the behaviors of disordered particle suspensions at high packing fraction (e.g, see references [1-5]). Recent systems studied include two-dimensional glasses composed of temperature-sensitive microgel particles, and colloidal glasses in binary fluid which permit interaction potential to be switched from attractive to repulsive. Displacement correlation matrix techniques are employed to derive phonon modes and phonon density of states, and video microscopy is employed to study particle rearrangements. Connections between phonons and stress-induced rearrangements will be described, and detailed observations of the properties of cooperative rearrangement events in attractive versus repulsive glasses will be presented.

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[3] Chen, K., Ellenbroek, W.G., Zhang, Z.X., Chen, D.T.N., Yunker, P.J., Henkes, S., Brito, C., Dauchot, O., van Saarloos, W., Liu, A.J., and Yodh, A.G., *Phys Rev Lett* 105, 025501 (2010).
[4] Yunker, P., Zhang, Z.X., and Yodh, A.G., *Phys Rev Lett* 104, 015701 (2010).
[5] Yunker, P., Zhang, Z.X., Aptowicz, K.B., and Yodh, A.G., *Phys Rev Lett* 103, 11, 115701 (2009).

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