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### **Melting and Frustration in Temperature-Sensitive Colloids<sup>1</sup>**

ARJUN YODH, University of Pennsylvania

I will review experiments from my laboratory that employ temperature-sensitive microgel particles to induce novel phase behavior in suspension. This phenomenon offers a fantastic new variable for control of lyotropic suspensions. Recent experiments, for example, have enabled us to learn how three-dimensional crystals first begin to melt [1], to directly observe melting in 2-D wherein intermediate hexatic phases form [2], and to create geometrically frustrated colloidal “anti-ferromagnets” [3].

References:

- [1] Alsayed, A.M., Islam, M.F., Zhang, J., Collings, P.J., Yodh, A.G., *Science* 309, 1207-1210, (2005).
- [2] Han Y, Ha NY, Alsayed AM and Yodh AG, *Phys. Rev. E*, Vol. 77 (2008).
- [3] Y. Han, Y. Shokef, A. M. Alsayed, P. Yunker, T. C. Lubensky, and A. G. Yodh, “Geometric frustration in buckled colloidal monolayers,” to be published in *Nature* (2008).

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