Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Chiral Structures of Thermoresponsive Soft Spheres in Hollow Cylinders[1] MATTHEW A. LOHR, University of Pennsylvania, AHMED ALSAYED, CNRS/University of Pennsylvania, ZEXIN ZHANG, ARJUN G. YODH, University of Pennsylvania — We experimentally observe the formation of closely packed crystalline structures in hollow cylinders. The structures have varying degrees of chiral order. The systems are created from aqueous suspensions of thermoresponsive N-isopropylacrylamide (NIPA) microgel particles packed in micron-diameter glass capillaries. We categorize these structures according to classifications used by Erickson for tubular packings of hard spheres [1]. By varying the temperature-tunable diameter of these particles, the system's volume fraction is changed, permitting observations of the resilience of these structures and their melting transitions. Melting of these thermal crystalline structures is observed. [1] R. O. Erickson, Science 181 (1973) 705-716.

[1]This work is supported by MRSEC grant DMR-0520020 and NSF grant DMR-080488.

Matthew A. Lohr
University of Pennsylvania

Date submitted: 20 Nov 2008 Electronic form version 1.4