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Orientational Order of Chain Forming Ferroelectric Nano Particles in Heptane .[1] RAMSEY MAJZOUB, LOREN HOUGH, CHEOL PARK, JOE MACLENNAN, NOEL CLARK, Physics Department, University of Colorado at Boulder, ANATOLIY GLUSHCHENKO, Physics Department, University of Colorado at Colorado Springs — Previous computational work [1] has shown that under the appropriate conditions, dipolar spheres aggregate and form chains. In this report, we study nano-sized ferroelectric $BaTiO_3$particles dispersed in heptane. We demonstrate dependence of the particles organization in the colloid *vs.* particles size and concentration. When the particles are large (>40 nm) they sediment to the bottom of the solution; smaller particles (∼10-15 nm) form gels or networks that do not sediment. Probing particle organization by means of freeze fracture electron microscopy reveals that at small sizes ferroelectric particles form a network of chains of particles that have local nematic like order. We compare our observations with the described in literature predictions. [1] J. Weis, D. Levesque Phys. Rev. Lett. 71, 2729 (1993).

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