Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Nucleation and Growth of Discotic Liquid Crystals ZHENGDONG CHENG, XUEZHEN WANG, LECHENG ZHANG, ABHIJEET SHINDE, Artie McFerrin Department of Chemical Engineering, TAMU, LIQUID CRYSTALS OF NANOPLATES IN MICROGRAVITY TEAM — We investigate the nucleation and growth of liquid crystals of plate-shaped charged zirconium phosphate (ZrP) monolayers with various sizes, temperature and salt concentrations. The smaller the platelets size, or the higher the temperature, or the higher the salt concentration (from 0 to 0.6M), the faster the Isotropic-Nematic (I-N) separation took place. We established the I-N transition phase diagram of charged platelets in the temperature verse volume fraction plane, and discovered that N phase can be melted by increasing temperature, and coexistent samples are more sensitive to polydispersity at higher temperature and higher concentrations. We also found that salt concentration in the ZrP suspensions contributed to the formation of an apparently twisted phase. This work is supported by NSF (DMR-1006870) and NASA (NASA-NNX13AQ60G). X.Z. Wang acknowledges support from the Mary Kay O'Connor Process Safety Center (MKOPSC) at Texas A&M University.

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Date submitted: 14 Nov 2014 Electronic form version 1.4