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Colloidal crystallization in cylindrical geometry: Effect of particle wettability on banding TEJASWI SOORI, YING SUN, Drexel University — A colloidal drop constrained within a capillary tube subjected to evaporation results in crystallization and particle banding. Past studies have shown the width and spacing of bands to increase with concentration for cylindrical geometries. The radius of curvature R and capillary length ℓ_c for drops over planar substrates are usually of the same order of magnitude, while for capillary tubes the radius of curvature R is equal to the capillary radius r which can be much smaller than the capillary length ℓ_c. Taking advantage of this fact, we use colloidal drops containing particles with different wetting properties in capillary tubes of radii $r = 400$ and 750 μm at initial concentrations $\phi = 0.1$ and 0.5 % wt. We perform all evaporation experiments at isothermal, controlled humidity conditions and use an in-house MATLAB code to analyze the images captured via a CCD camera to measure the transient quantities like contact angle and contact line position. In this talk, we report the results quantifying the effect of particle wettability on deposition dynamics, contact line motion, and banding.

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