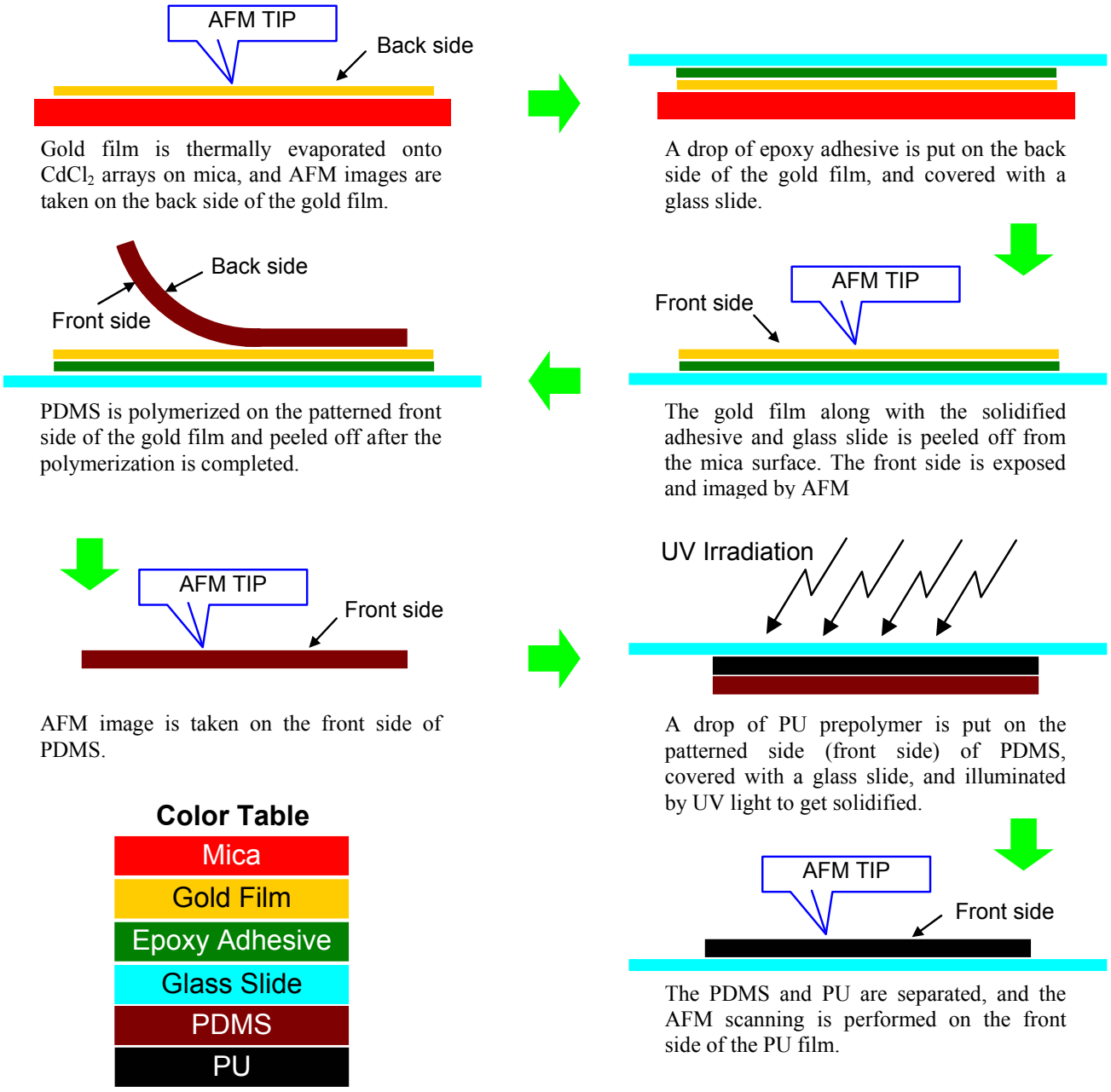
2D Hexagonally Oriented $CdCl_2 \cdot H_2O$ Nanorod Assembly: Formation and Replication

Zhaoxiang Deng and Chengde Mao*

Department of Chemistry, Purdue University, West Lafayette, IN 47907



Scheme S1. Cartoon showing the replication process for the 2D oriented pattern.

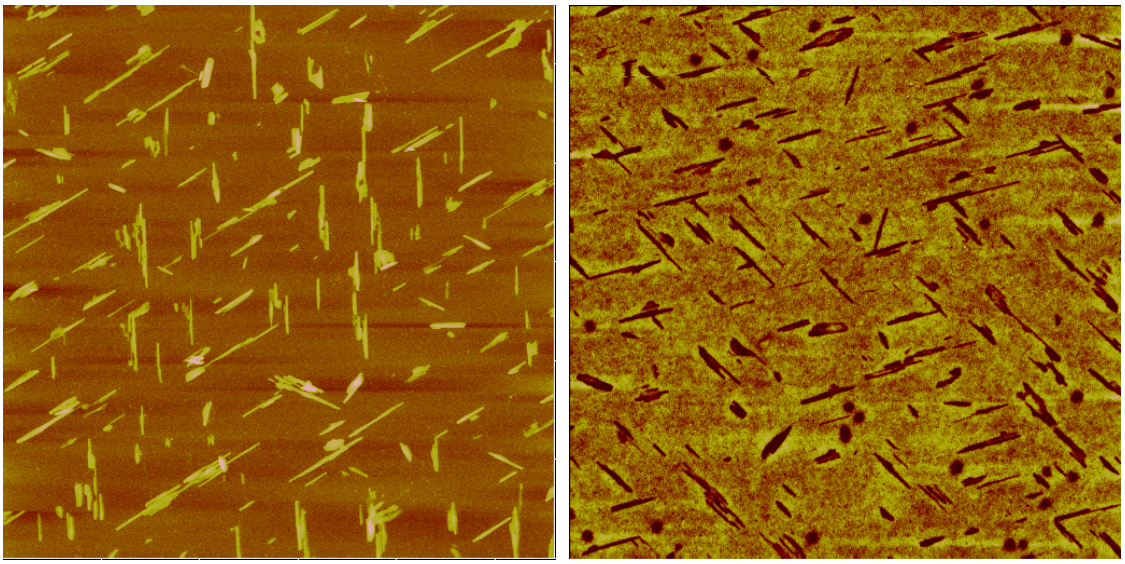


Figure S1. AFM images showing the oriented $CdCl_2$ array (imaged on the back side of the gold film after evaporation, see scheme 1) and its final replica into PU (polyurethane). Scan area: 14×14 μm^2; height scale: 50 nm (left), 20 nm (right).

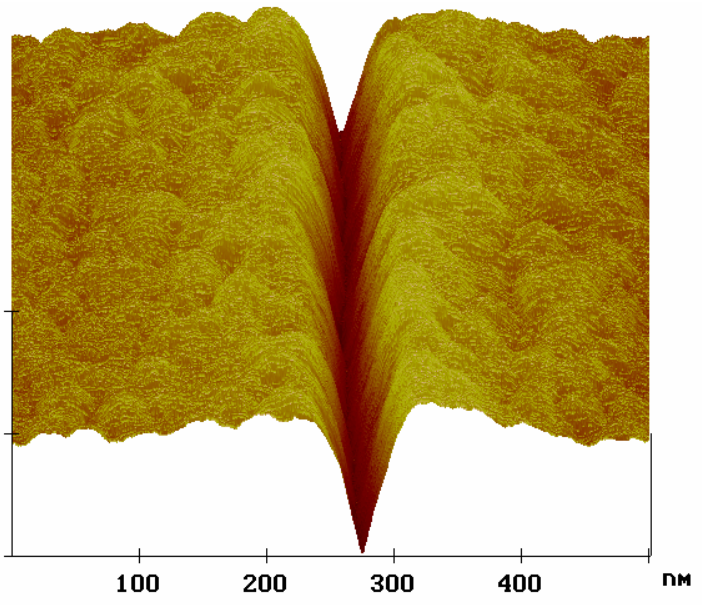


Figure S2. Surface plot of an AFM image showing a nanogap on the negative gold replica. Height scale: 5 nm/div

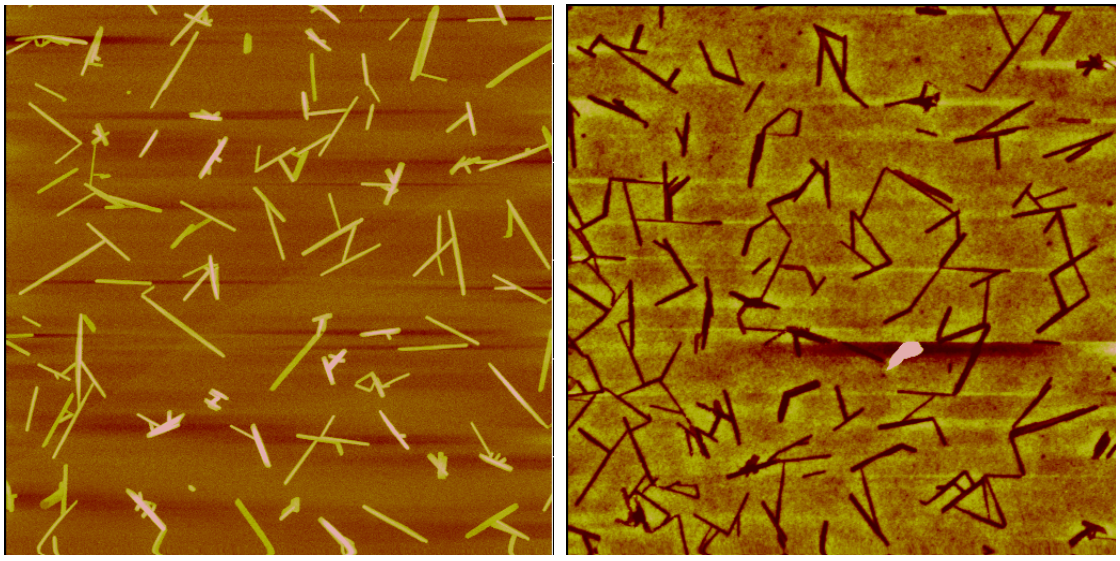


Figure S3. AFM images showing the random $CdCl_2$ array (imaged on the back side of the gold film after evaporation, see scheme 1) and its final replica into PU (polyurethane). Scan area: 14×14 μm^2; height scale: 50 nm (left), 30 nm (right).

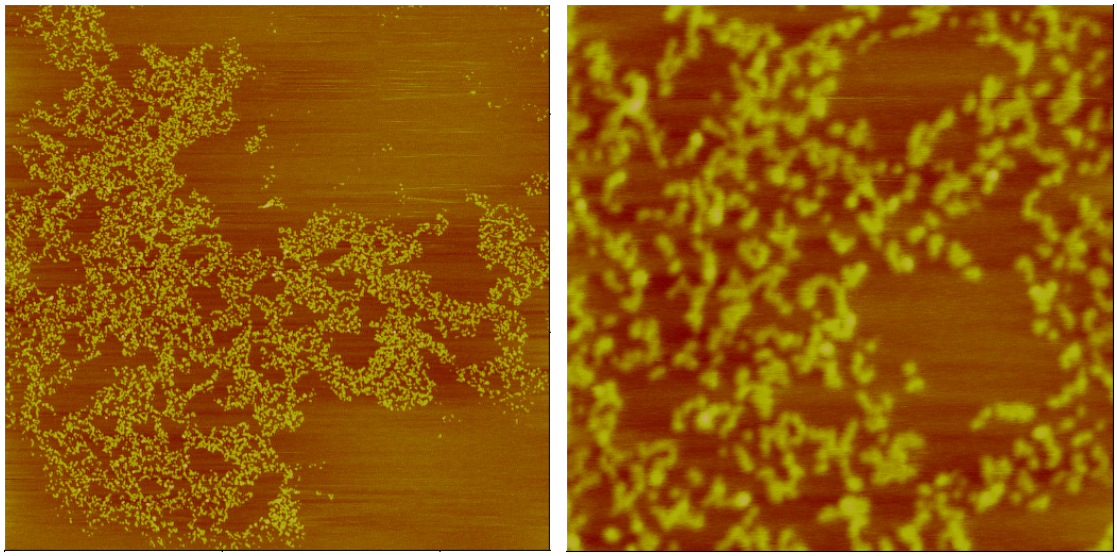


Figure S4. AFM images showing the typical sample morphology while 0.1 M $CdCl_2$ aqueous solution was used for crystallization by blowing away the $CdCl_2$ solution drop from a mica surface pre-rinsed by hexane. Scan area: 2.5×2.5 μm^2 (left), 0.5×0.5 μm^2 (right); height scale: 5 nm.

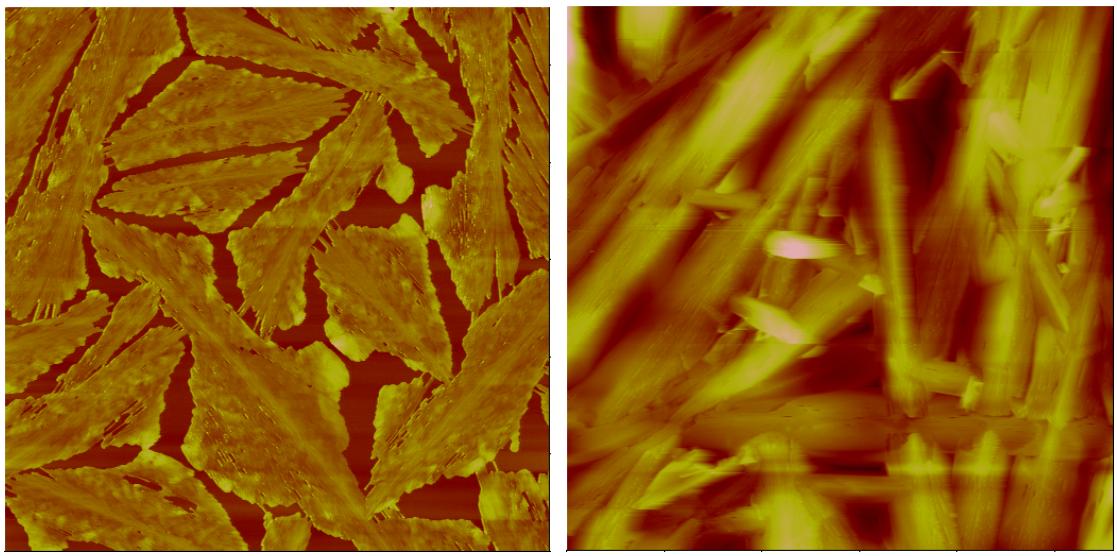


Figure S5. AFM images showing typical morphologies of the samples prepared by naturally evaporating a 5 μL drop of 0.01 M (left) or 2 M (right) $CdCl_2$ aqueous solution on a fresh mica surface. Scan area: 14×14 μm^2; height scale: 50 nm (left), 500 nm (right). These two samples (left and right images) were subject to XRD checks and gave corresponding diffraction profiles as in figure 1b and 1c. Note that the right image exhibits needle-like textures.

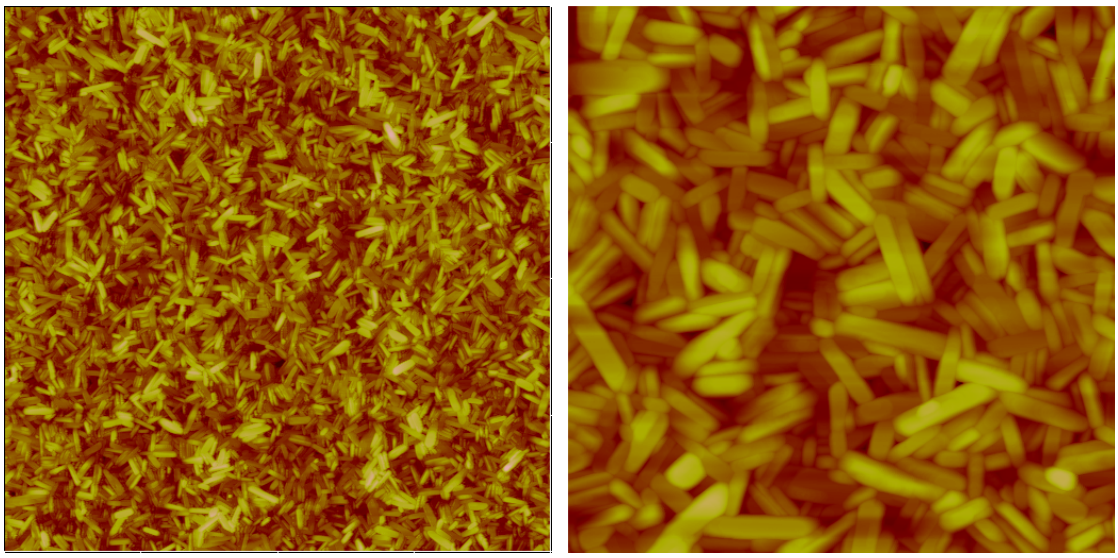


Figure S6. AFM images showing the typical sample morphologies while 2 M $CdCl_2$ aqueous solution was used for crystallization on mica surface by quickly blowing away the $CdCl_2$ solution. The mica surface was rinsed by ddH_2O first. Scan areas: 10×10 μm^2 (left), 2.5×2.5 μm^2 (right); height scales: 80nm. Note that the samples showed rod-like morphology, and no any orientation was observed.

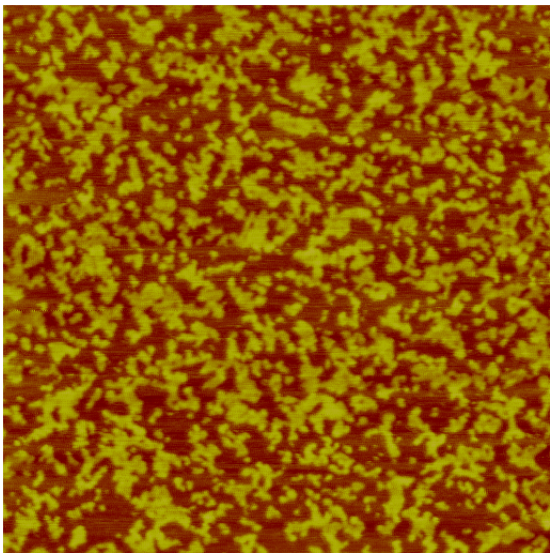


Figure S7. AFM images showing the typical sample morphology while 0.01 M $CdCl_2$ aqueous solution was used for crystallization on mica surface by quickly blowing away the $CdCl_2$ solution. The mica surface was rinsed by ddH_2O first. Note that the sample was composed of very small interconnected particles without any orientation. Scan area: 1×1 μm^2; height scale: 3 nm.