Electronic Supplementary Material (ESI) for Soft Matter

Supporting Information for:

Self-assembled Hydrophobic Surface induced from a Helical Nanofilament (B4) Liquid Crystal Phase

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Figure S1.

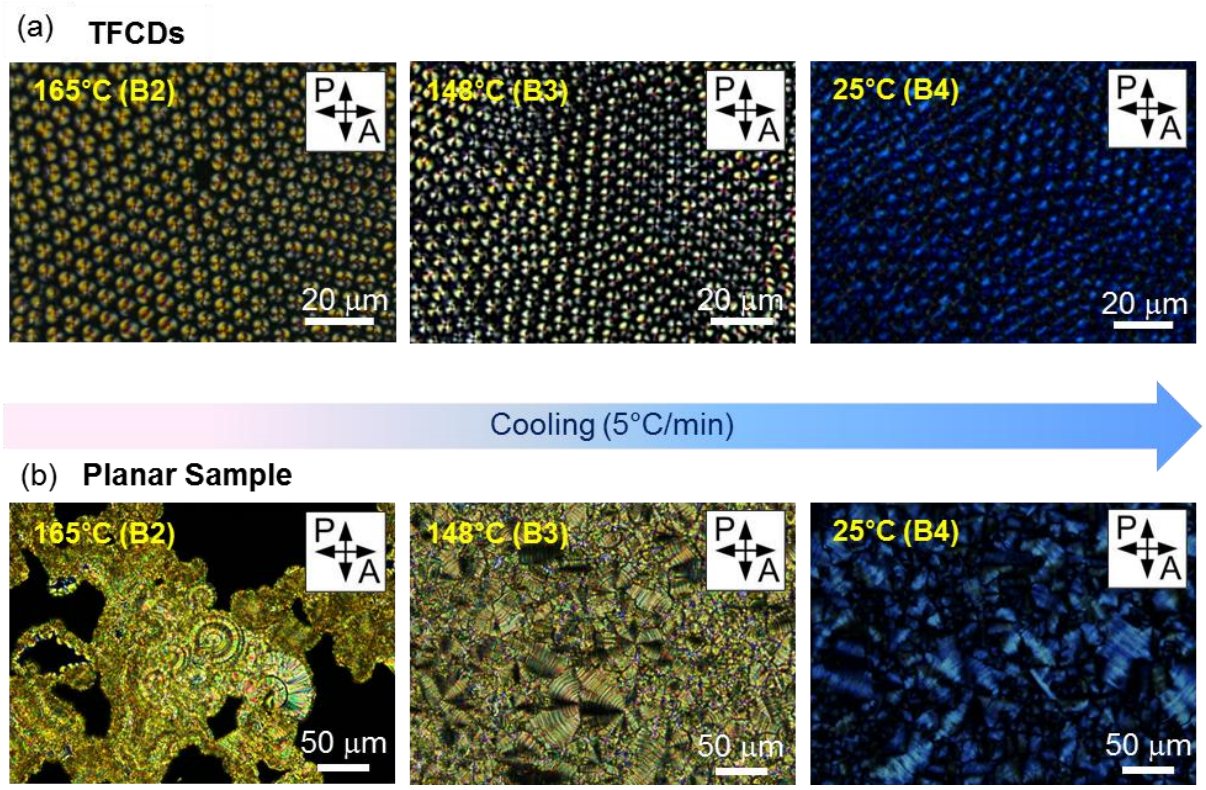

Fig S1. DTLM analysis investigating over the whole phase transitions of HNF-formations under two different interfacial conditions to the molecules. (a) When NOBOW molecules exist onto the glass substrate opened to the air the other side, the bending smectic layers are generated forming well-established defect structure, TFCD at B2 phase. After gradual cooling, TFCDs maintain their own macroscopic morphology until to reach B4 helical nanofilament phase but intermediate B3 phase (distorted layer phase) is not clearly observed due to the bending distortion of internal layers. (b) In the case of the molecules confined in between two glass substrates, the B2 layer directions are mostly determined perpendicular to the surface, so further layer distortion steps (B3 and B4 formation) can be distinctively observed which is corresponding to the B2 layer direction.

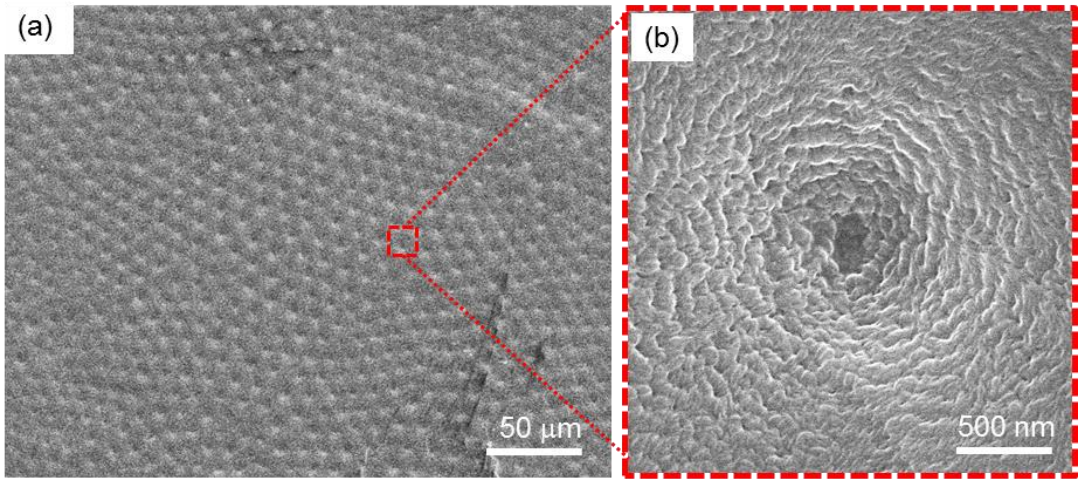

Fig S2. SEM images showing the self-ordered micro- and nano-hybrid structures consisting of TFCDs and HNFs. The dual-size hierarchical superstructures are spontaneously generated having highly- and hexagonally ordered TFCDs with very uniform periodicity (~10 μm), and HNFs formed along the layer direction of TFCDs. The direction of HNFs follows with the previously formed B2 layer direction by the interfacial conditions of the molecules to the surface. These hierachical super structures are spontaneously stabilized over large area up to several millimeter-scale.