

Supporting Information

Poly(3-hexylthiophene)-*b*-poly(3-cyclohexylthiophene): Synthesis, Microphase Separation, Thin Film Transistors, and Photovoltaic Applications

Pei-Tzu Wu,¹ Guoqiang Ren,¹ Felix S. Kim,¹ Chaoxu Li,² Raffaele Mezzenga,^{*,2,3} Samson A. Jenekhe^{*,1}

¹ Department of Chemical Engineering and Department of Chemistry, University of Washington, Seattle, Washington 98195-1750

² Department of Physics and Fribourg Center for Nanomaterials, Fribourg University, Fribourg, Switzerland

³ Nestlé Research Center, Vers-Chez-Les-Blanc, 1000 Lausanne 26, Switzerland

* Authors for all correspondence: jenekhe@u.washington.edu; raffaele.mezzenga@unifr.ch

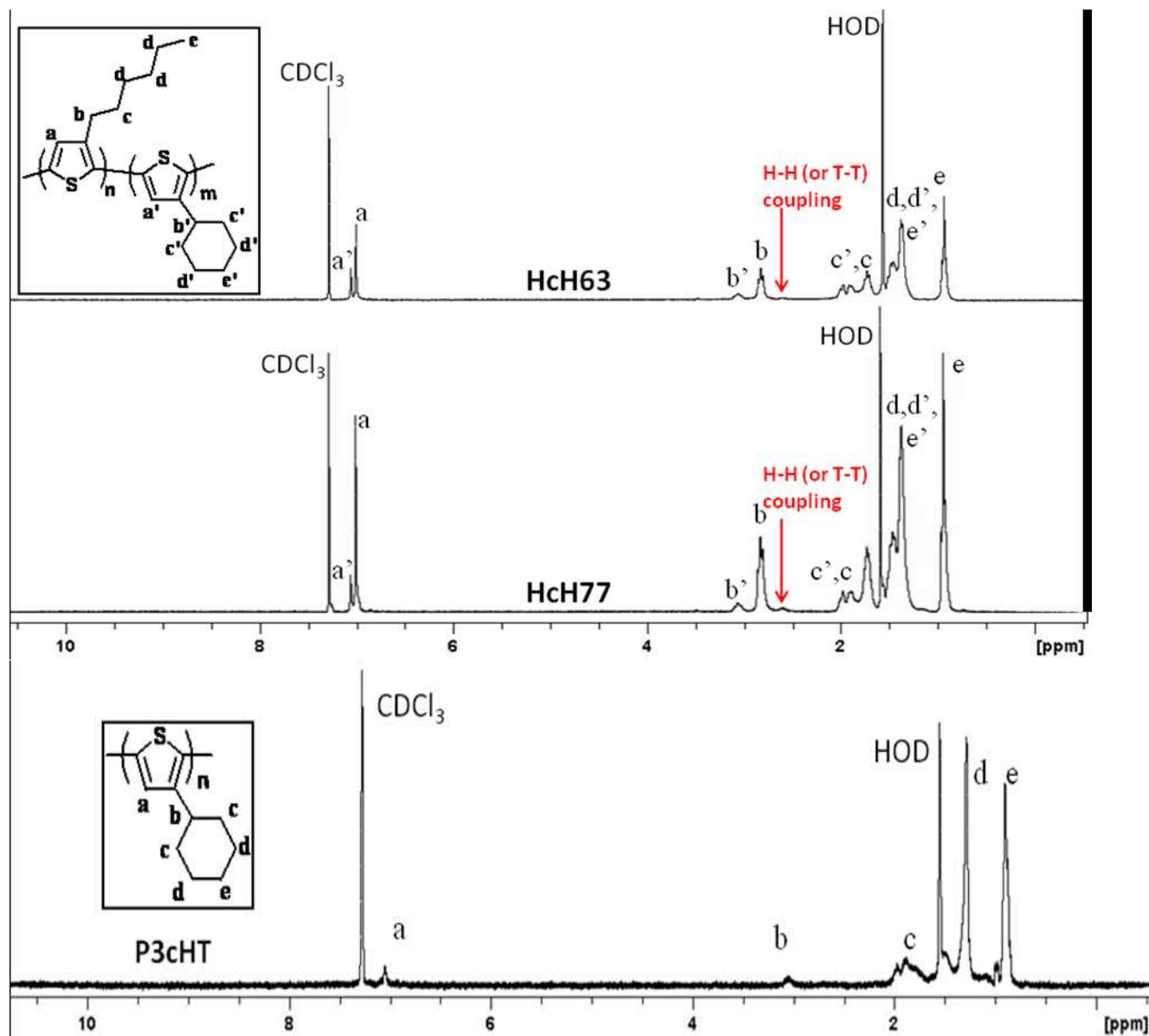


Figure S1. ^1H NMR spectra of HcH63, HcH77, and P3cHT.

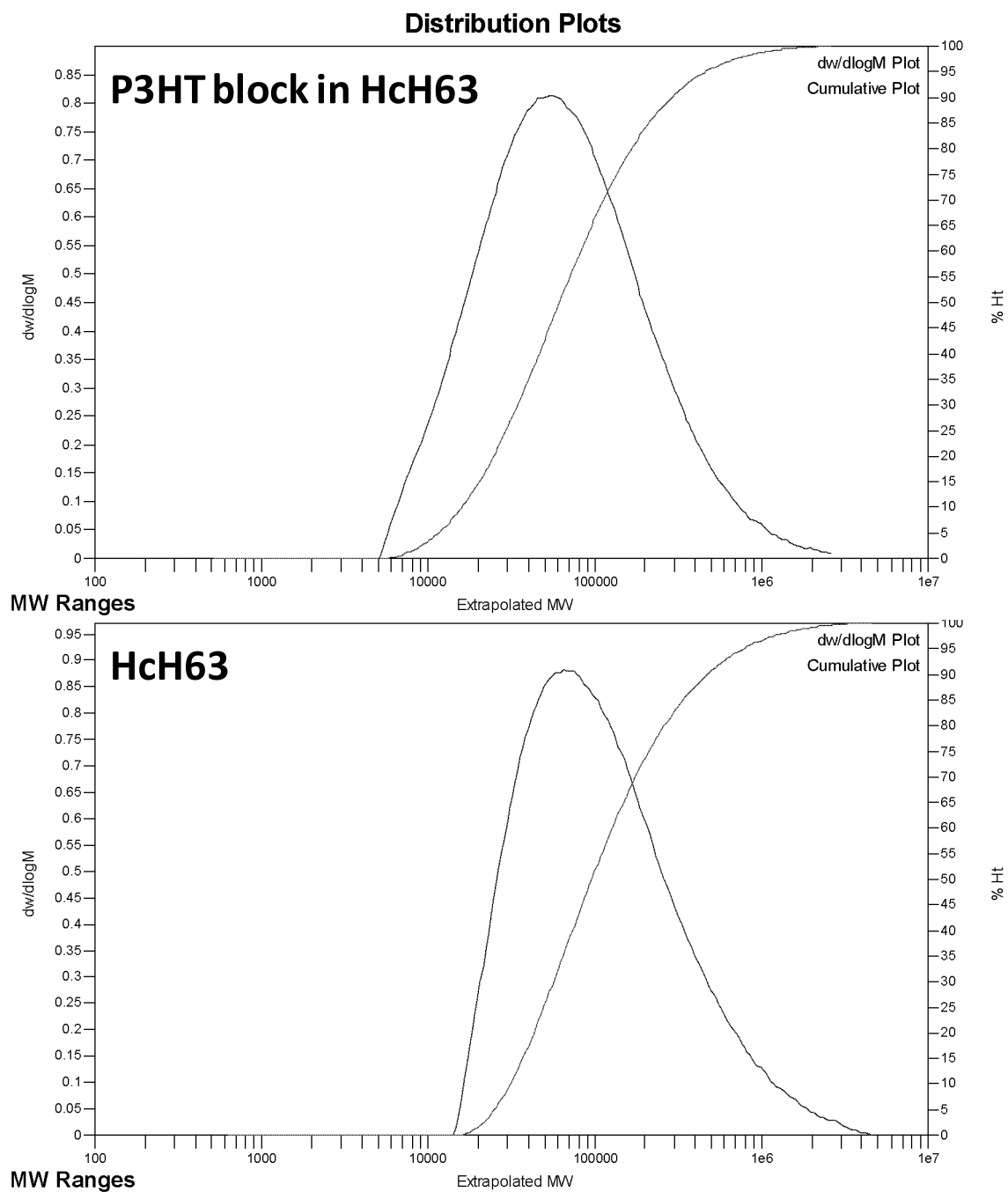


Figure S2. Molecular weight distribution plots of first synthesized P3HT block in HcH63 and HcH63.

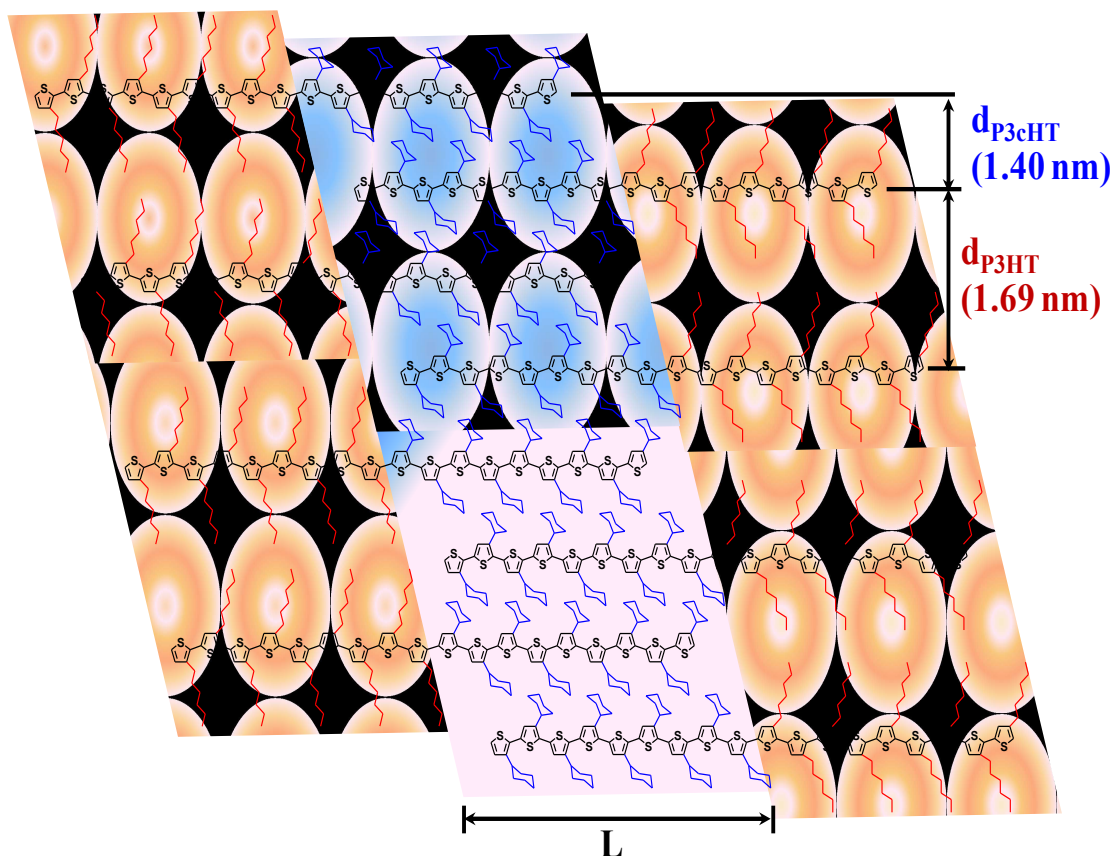


Figure S3. A highly schematized model of microphase-separated structure with P3HT and P3cHT-rich domains in P3HT-*b*-P3cHT block copolymers, consistent with the two interlayer spacings (d_{P3HT} and d_{P3cHT}) observed in WAXS.

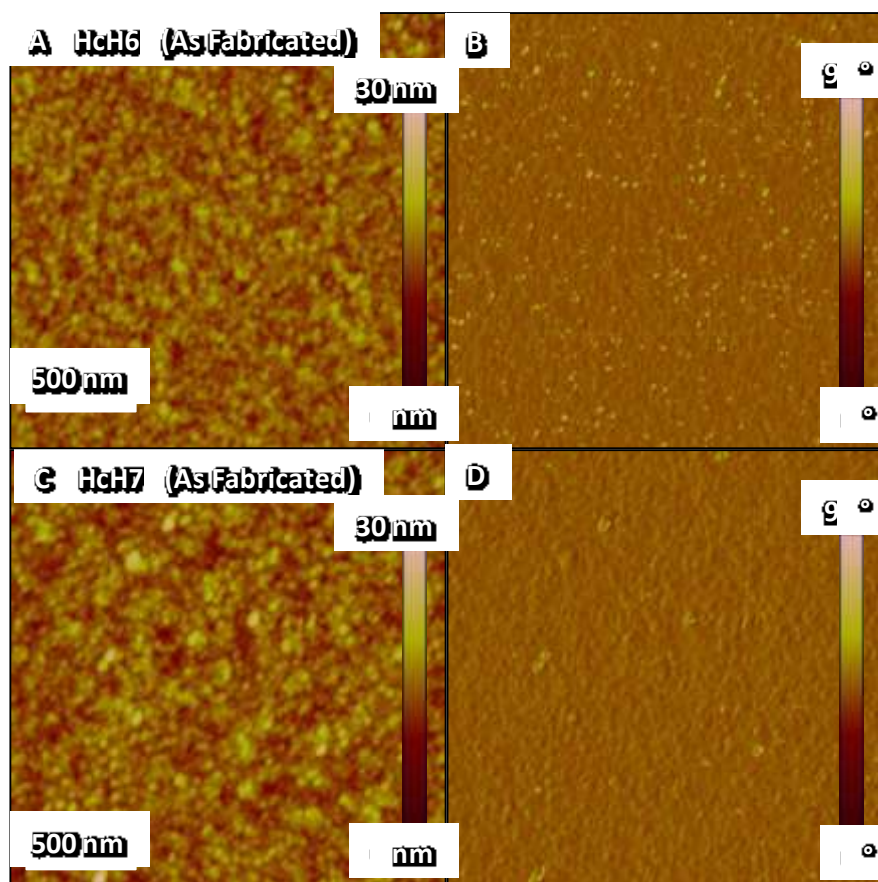


Figure S4. Tapping mode AFM topography and phase images of thin films of HcH63 (A, B) and HcH77 (C, D) before thermal annealing.

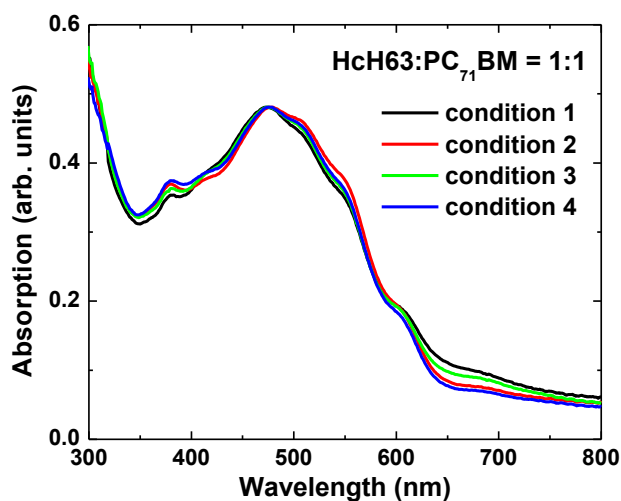


Figure S5. UV-visible absorption spectra of HcH63:PC₇₁BM (1:1) blend films at different post-treatment conditions. (Condition 1: open dried in glovebox; condition 2: film aging in a Petri dish until color changes and vacuum dried at 60 °C; condition 3: film aging in a Petri dish until color changes and thermally annealed at 110 °C for 5 min. condition 4: film aging in a Petri dish for 30 min and thermally annealed at 110 °C for 30 min.)

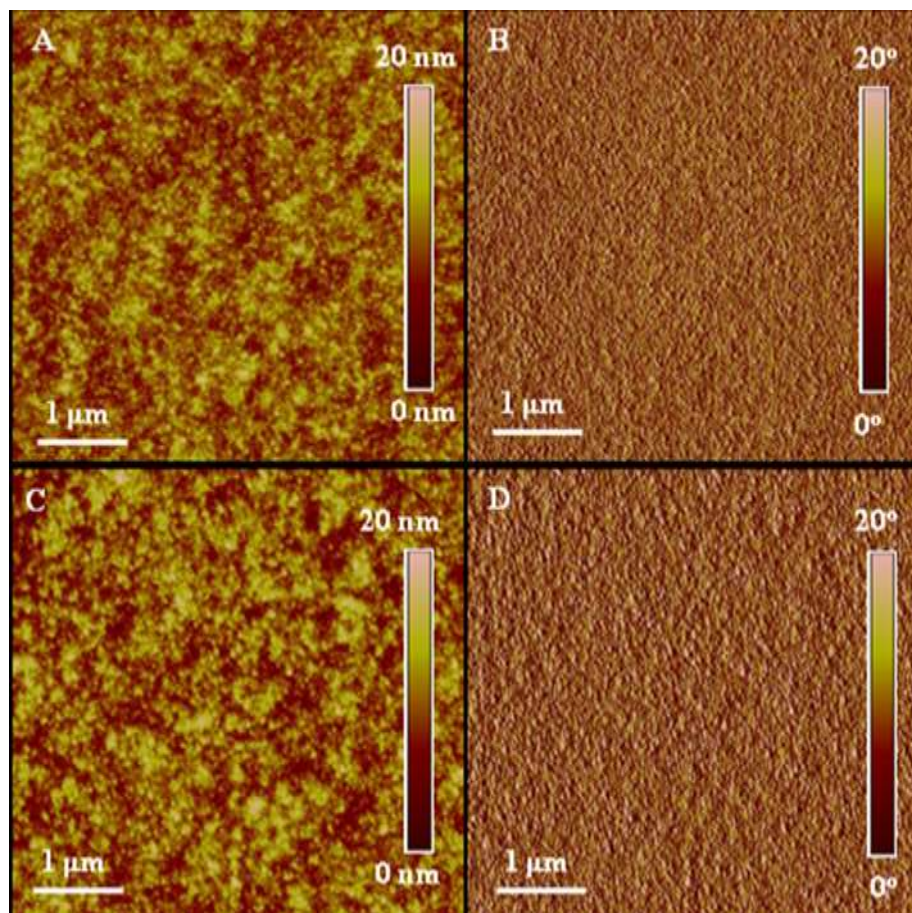


Figure S6. AFM images of HcH63:PC₇₁BM (1:1) blend films under condition 1 (A, B) and condition 2 (C, D).

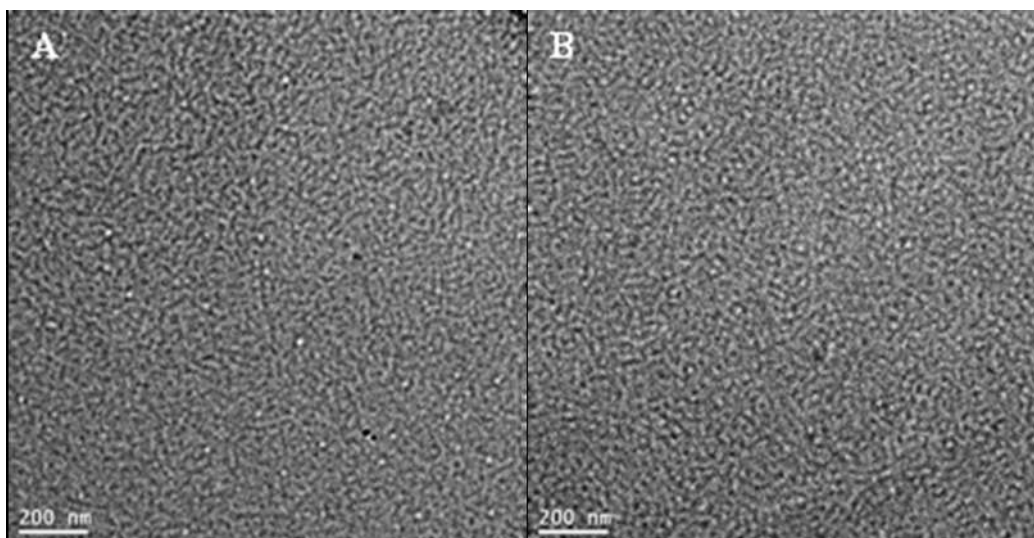


Figure S7. TEM images of thin films of HcH63:PC₇₁BM (1:1) blends under different conditions, (A) Condition 1 (open dried) and (B) Condition 2 (film aging and vacuum dried).

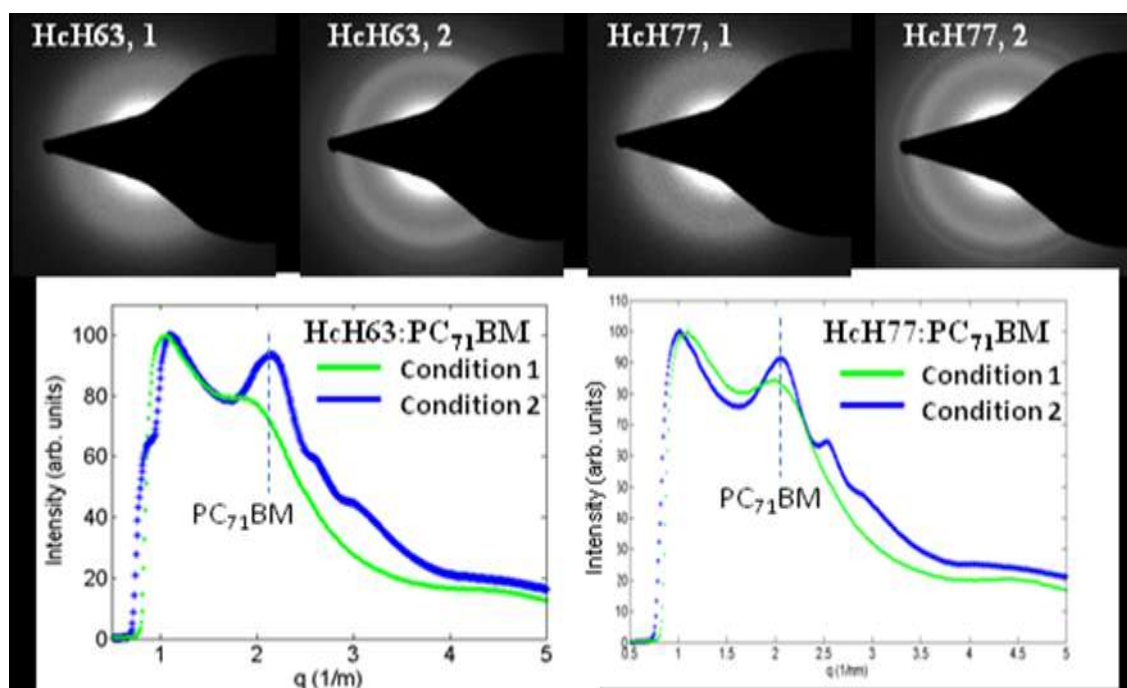


Figure S8. 1-D plots of SAED patterns: HcH63:PC₇₁BM and HcH77:PC₇₁BM under Condition 1 (open dried) and Condition 2 (vacuum dried).