Supporting Information for

Supramolecular Engineering of Hierarchically Self-assembled, Bioinspired, Cholesteric Nanocomposites formed by Cellulose Nanocrystals and Polymers

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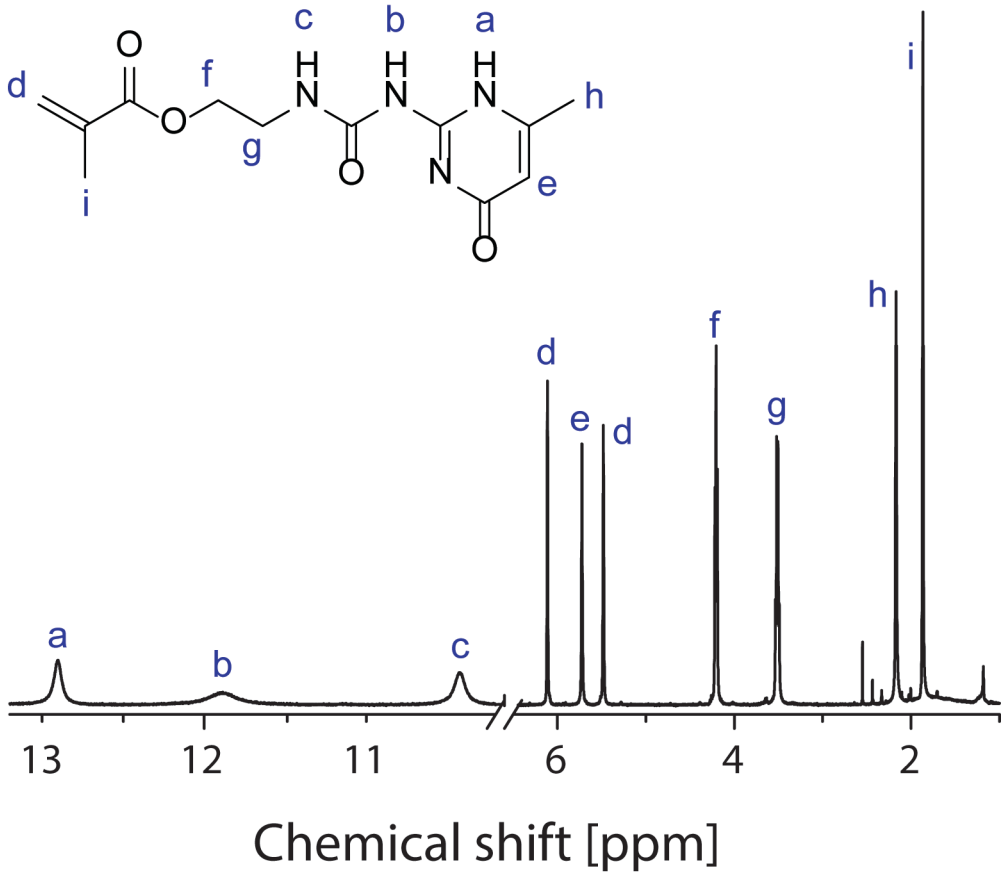

Figure S1. ^{1}H NMR spectra of UPy-MA. 1.89 (s, 3H, CH3), 2.14 (s, 3H, ArCH3), 3.50 (m, 2H, NHCH2), 4.19 (t, 2H, OCH2), 5.50 (m, 1H, C=CH2), 5.74 (s, 1H, aromatic ring), 6.10 (s, 1H, C=CH2), 10.42 (s, 1H, NH), 11.90 (s, 1H, NH), 12.90 (s, 1H, NH).

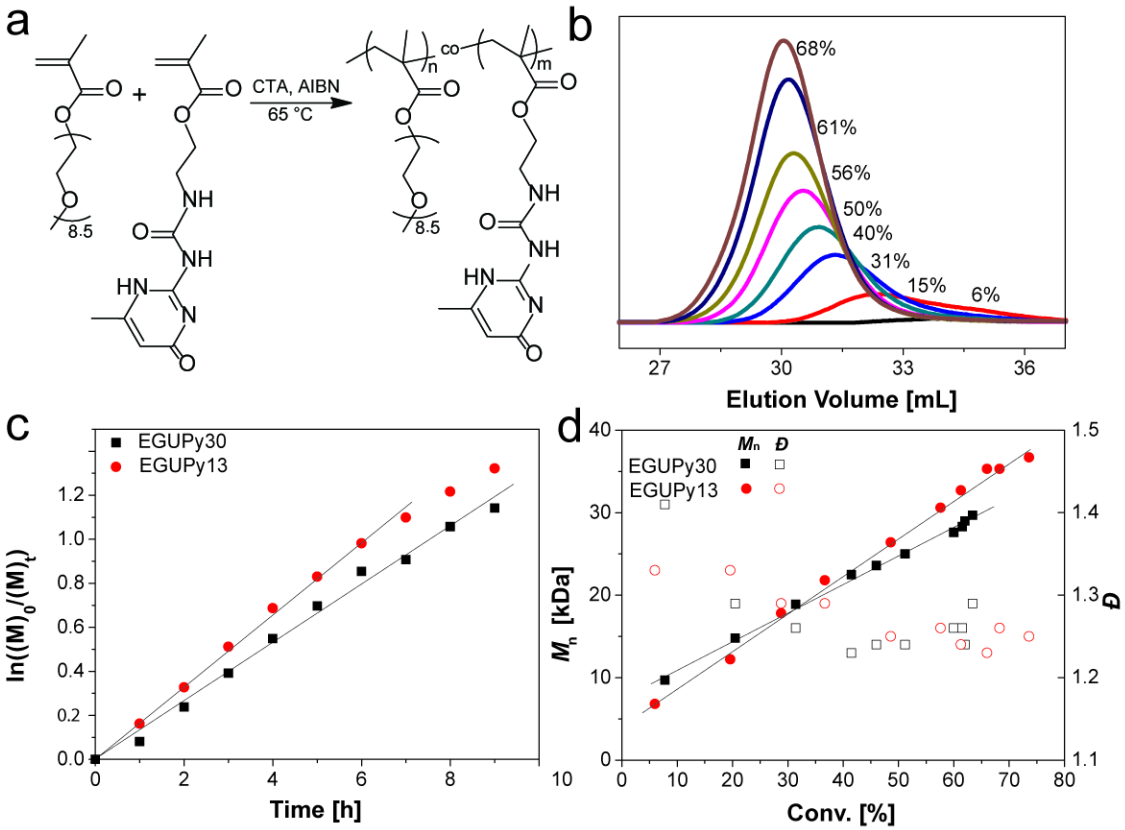

Figure S2. RAFT polymerization kinetics of selected EGUPyX copolymerizations. Representative RAFT polymerization kinetics for conditions: **[**Monomer] : [CTA] : [Initiator] = [200] : [1] : [0.2], whereby "monomer" is composed of OEGMA and UPy-MA in the respective molar fractions (13 and 30 mol% of UPy-MA). Note that higher molecular weights are accessible by changing the ratio of [monomer]/[CTA]. (a) Schematic RAFT polymerization. (b) GPC traces with conversion from RAFT copolymerization of 13 mol% of UPy-MA and 87 mol% of OEGMA, where a consistent shift of the elution traces towards lower elution volume can be observed with progressing polymerization time/conversion. (c) The figure depicts linear first order kinetic plots, which are indicative of a constant radical concentration and a controlled radical polymerization taking place. (d) Evolution of molecular weights and polydispersities. The number average molecular weights, M_n, increase linearly with conversion, while the polydispersities remain low (typically below 1.3).

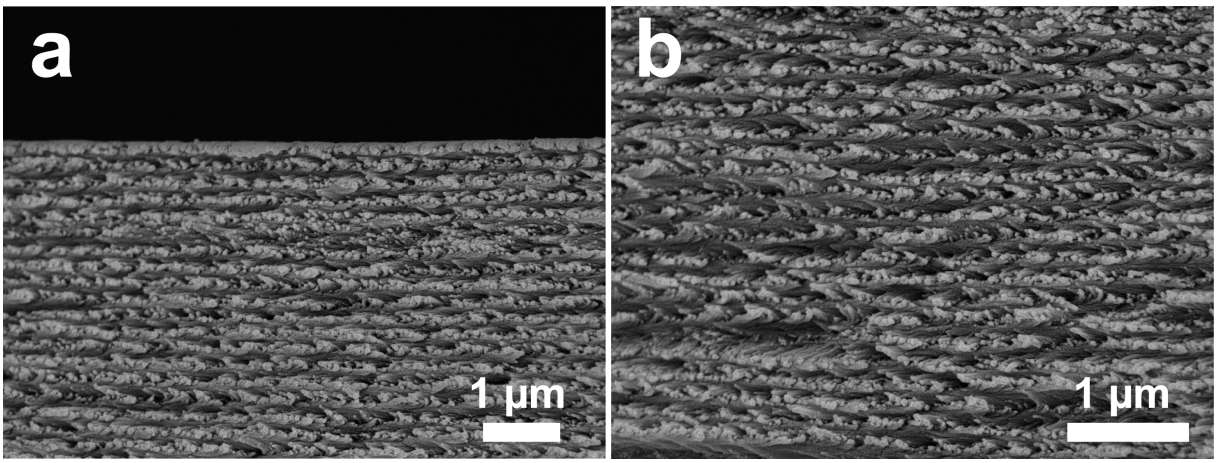

Figure S3. Further SEM images of the cross sections of the photonic films with different polymer content showing the long range cholesteric order. a) EGUPy13/CNC = 40/60, b) EGUPy13/CNC = 30/70.