

## Supplemental Information

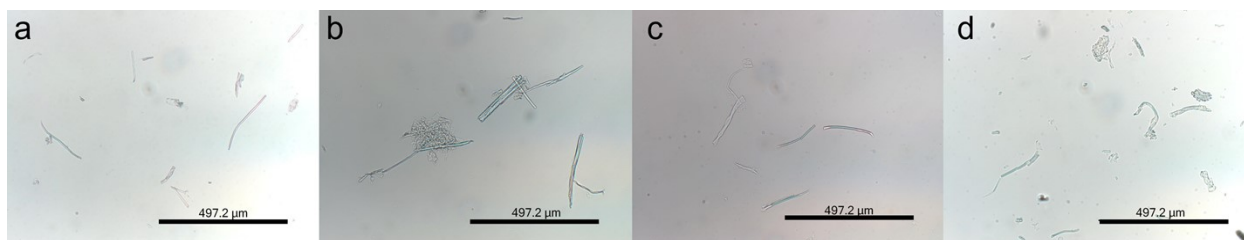
### One-pot Synthesis of 2-Bromopropionyl Esterified Cellulose Nanofibrils as Hydrophobic Coating and Film

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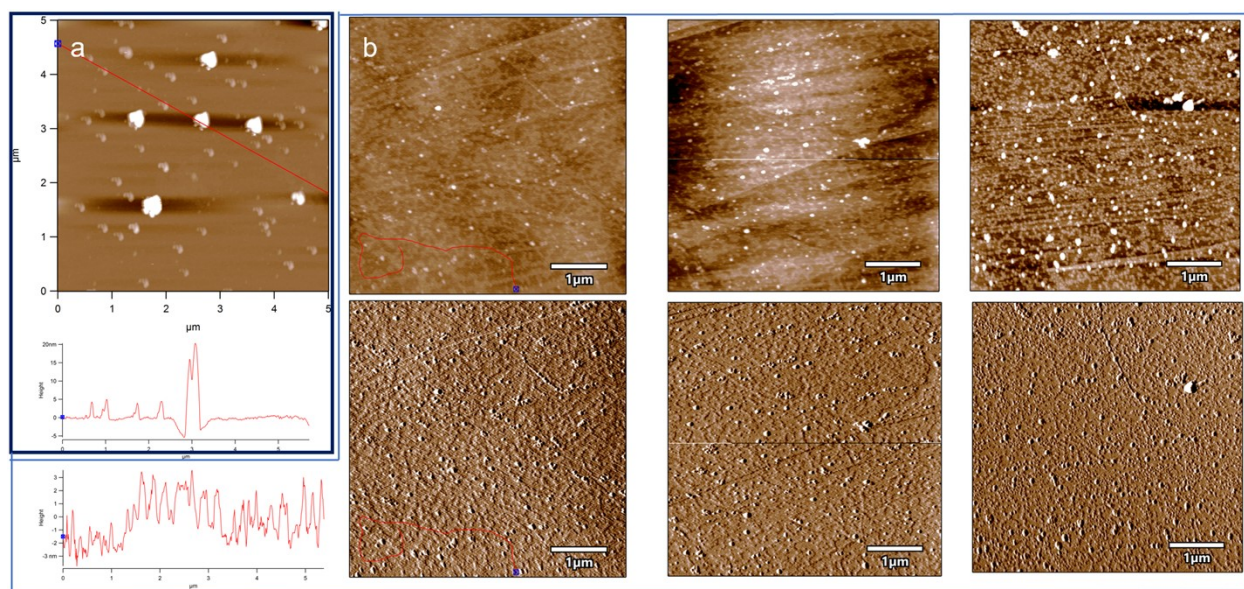
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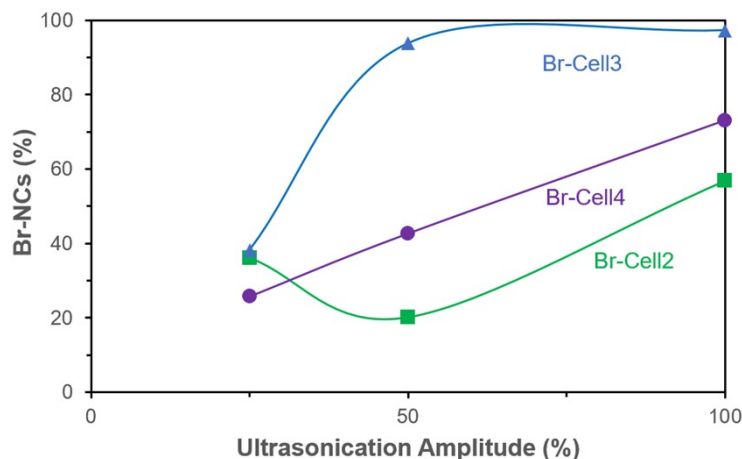
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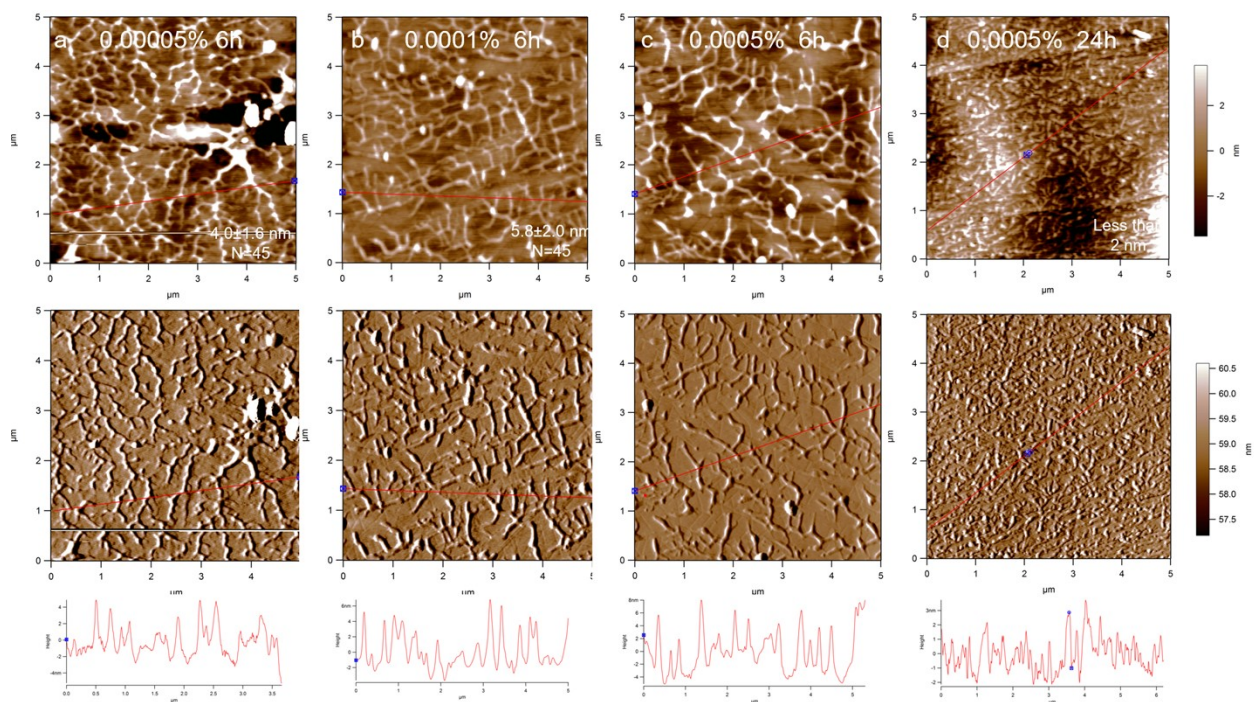
**Fig. S1** Optical images of (a) cellulose, (b) Br-Cell1, (c) Br-Cell3 and (d) Br-Cell4 at 0.1 w/v% in DMF.



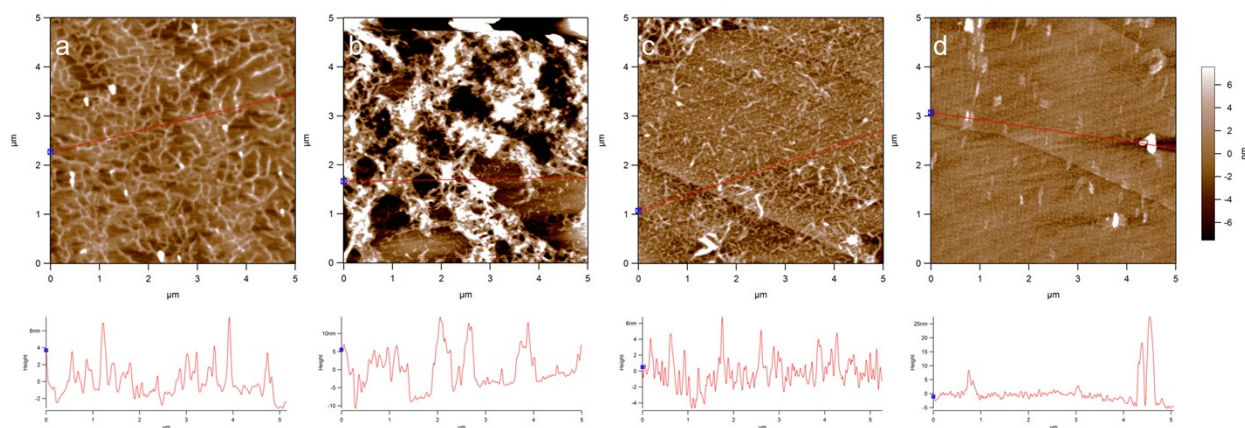
**Fig. S2** AFM images with height profiles of NCs at (0.001 w/v % in DMF) from unmodified cellulose supernatant after ultrasonication (50% amplitude, 30 min) and centrifugation (5k rpm, 10 min) on: (a) mica; (b) graphite.



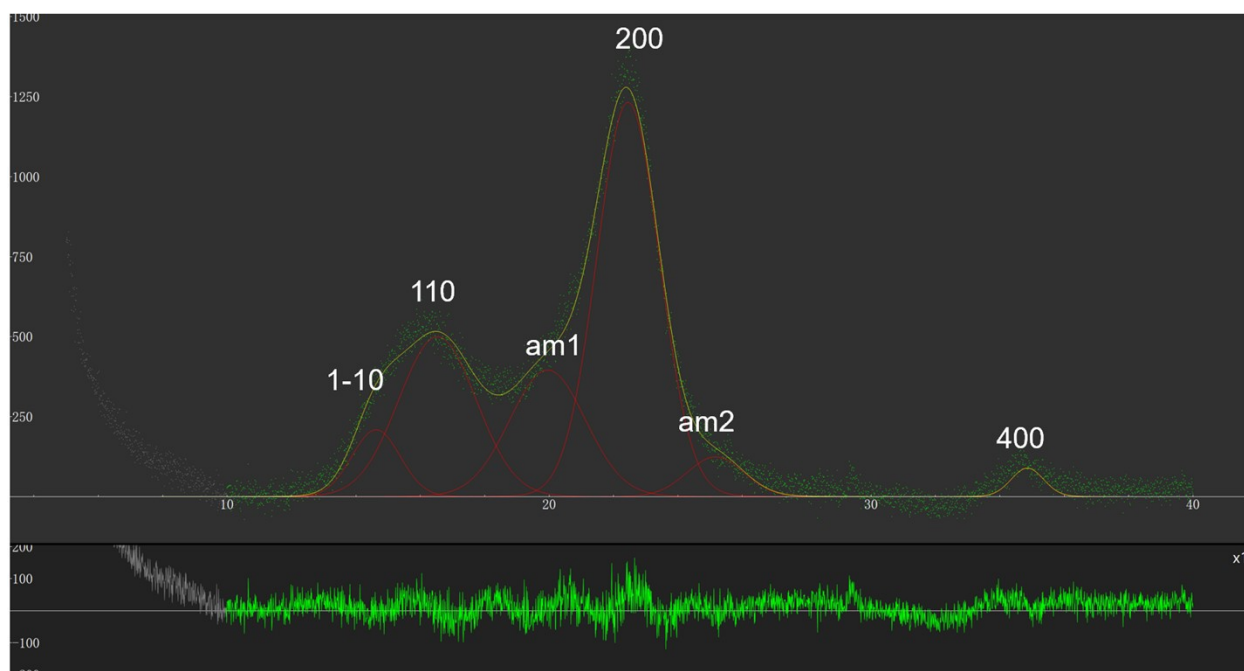
**Fig.S3** Effect of ultrasonication amplitude (60 min) on Br-NCs in the supernatant (centrifugation 5000 rpm, 10 min) from Br-Cell2 (3.4 mmol/g), Br-Cell3 (5.7 mmol/g), and Br-Cell4 (8.7 mmol/g).



**Fig. S4** AFM images and height profiles of Br-CNF3 (on graphite) from varied concentrations and time: (a) 0.00005%, 6h; (b) 0.0001%, 6h; (c) 0.0005%, 6h; (d) 0.0005%, 24h.

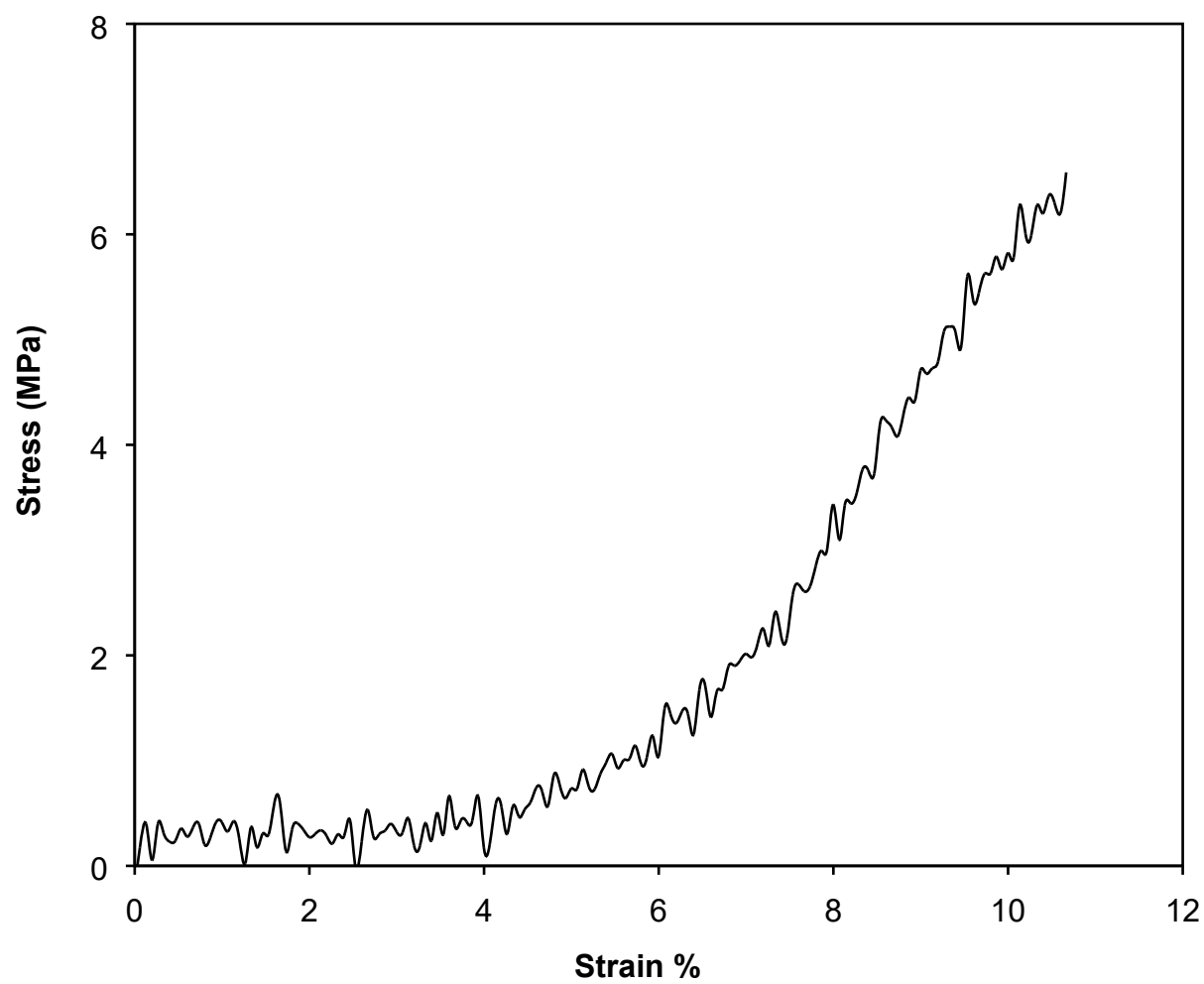


**Fig. S5** AFM images and corresponding height profiles of Br-CNF3 (10  $\mu$ L, 0.0005 w/v%) on graphite: (a) single droplet (air-dried, 3 h); (b-d) two sequential depositions (air-dried, 3 h for each), showing center of droplet in b, area between center and edge in c, and near edge of droplet in c.



**Fig. S6** Deconvolution (VoigtA fitting method) of cellulose XRD spectra with (1-10), (110) and (200) planes at corresponding  $2\theta$  of 14.6, 16.5 and 22.5°.





**Fig. S7** Engineering stress-strain curves for blade coating CNF films.