

## Supporting Information

# Additive Printing of Recyclable Anti-Counterfeiting Patterns with Sol–Gel Cellulose Nanocrystal Inks

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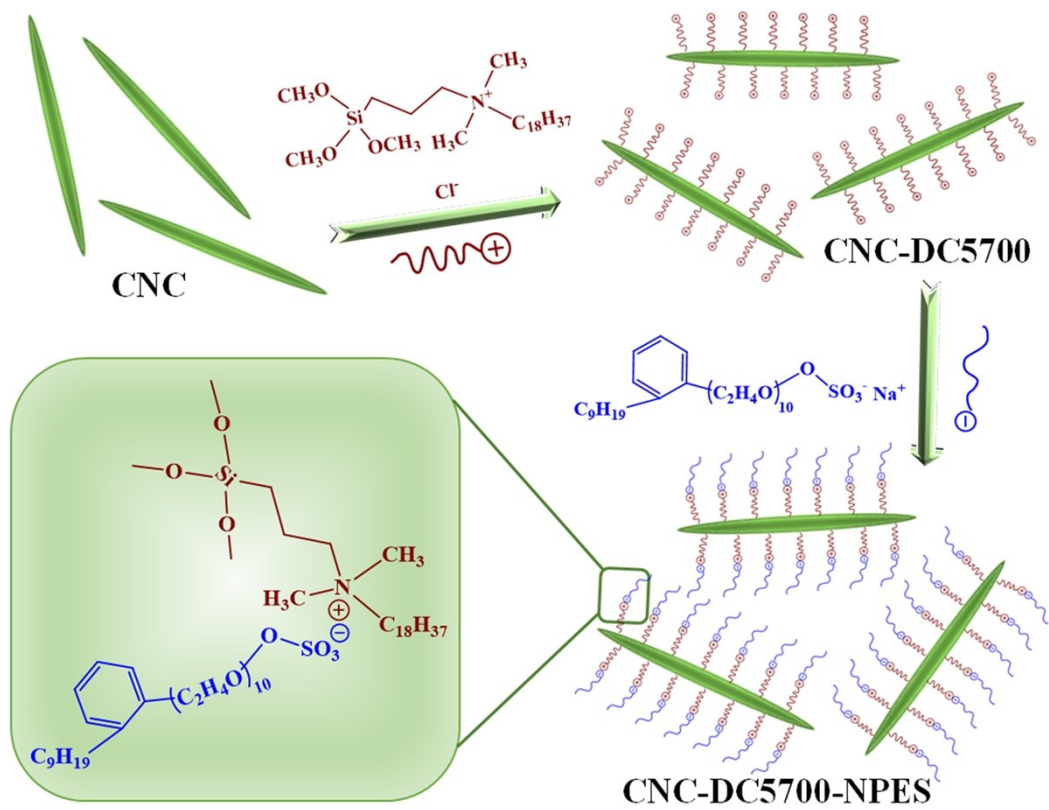
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**Figure S1.** Schematic illustration for the preparation of surface functionalized CNCs.

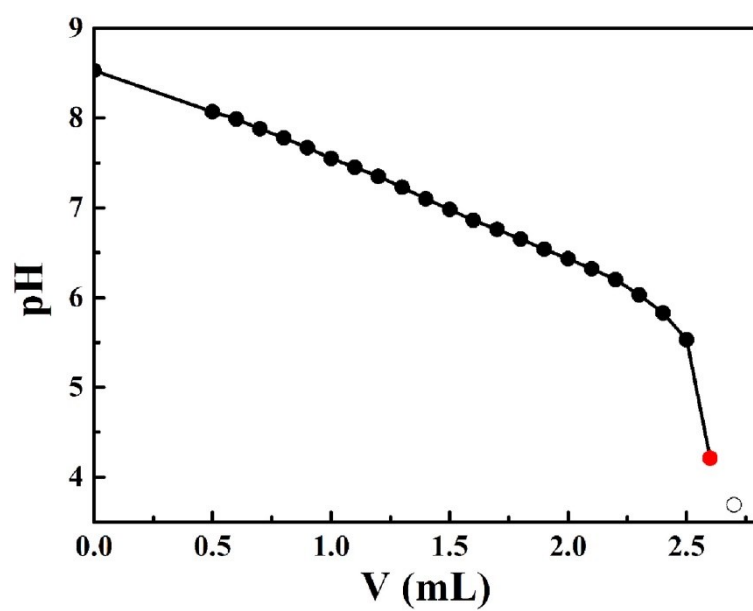
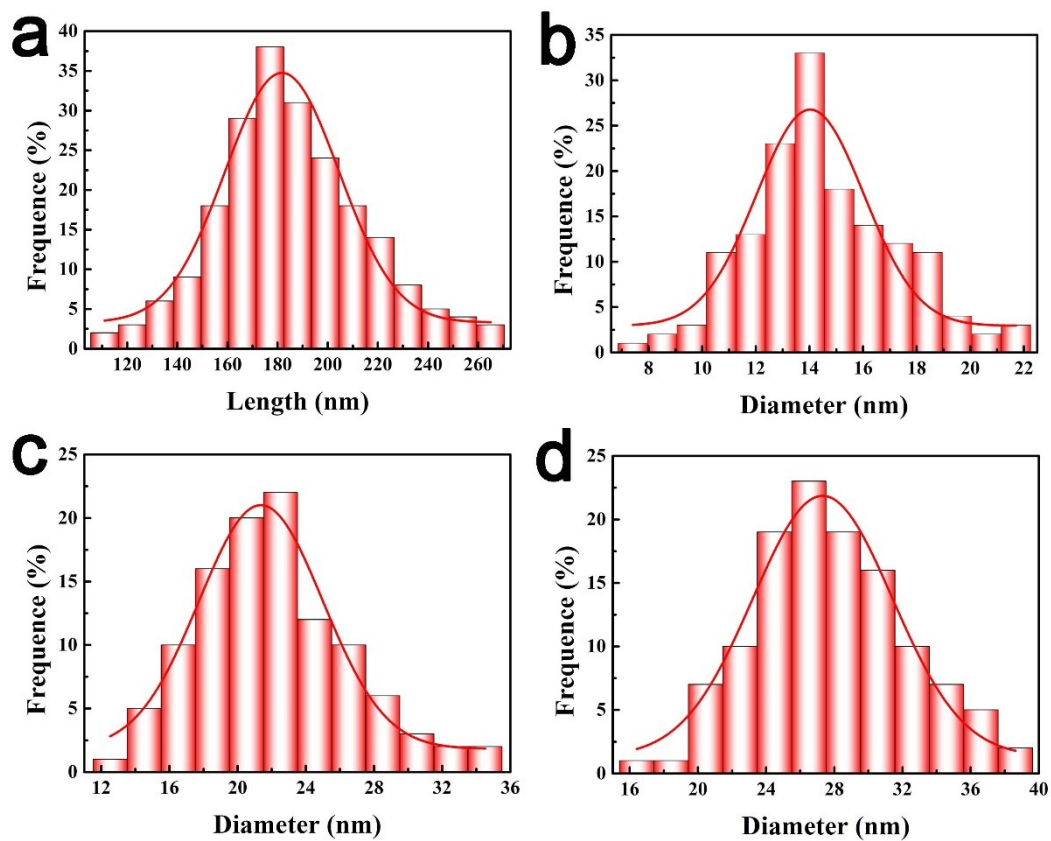
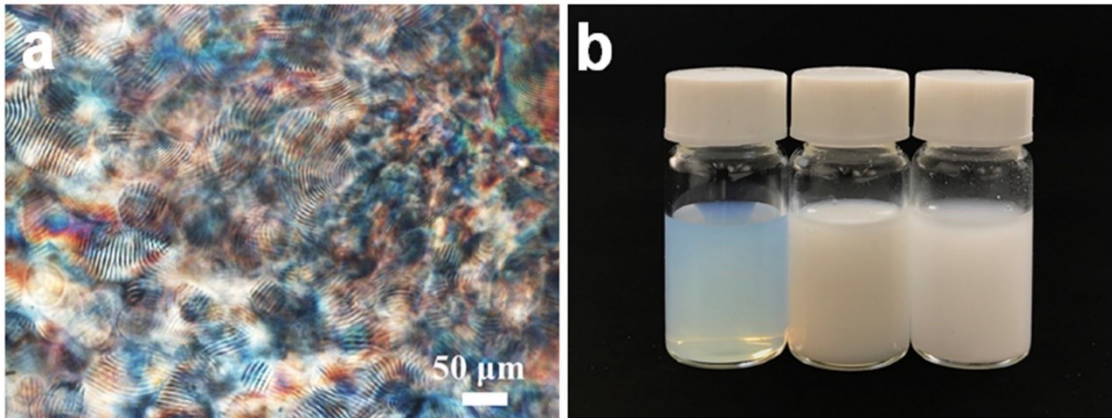


Figure S2. pH titration curves of CNC-DC5700-NPES.



**Figure S3.** The length distribution of CNC (a) and the diameter distribution of CNC (b), CNC-DC5700 (c) and CNC-DC5700-NPES (d).



**Figure S4.** POM images of CNC suspension (a) and photographs of suspensions (1 wt.%), from left to right: CNC, CNC-DC5700, and CNC-DC5700-NPES (b).

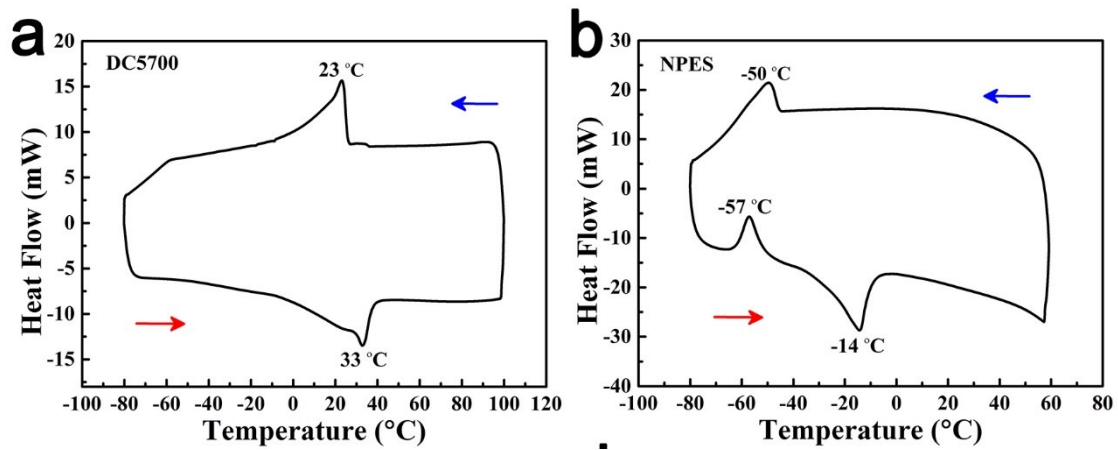
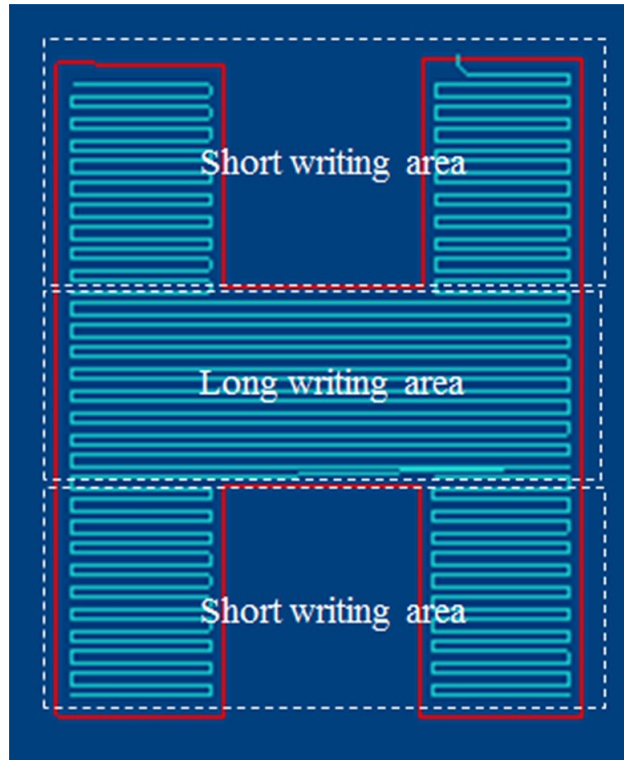
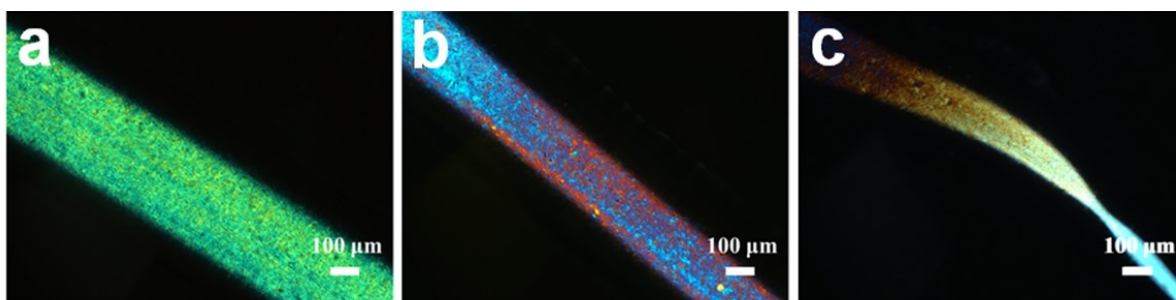


Figure S5. DSC traces of DC5700 (a) and NPES (b).

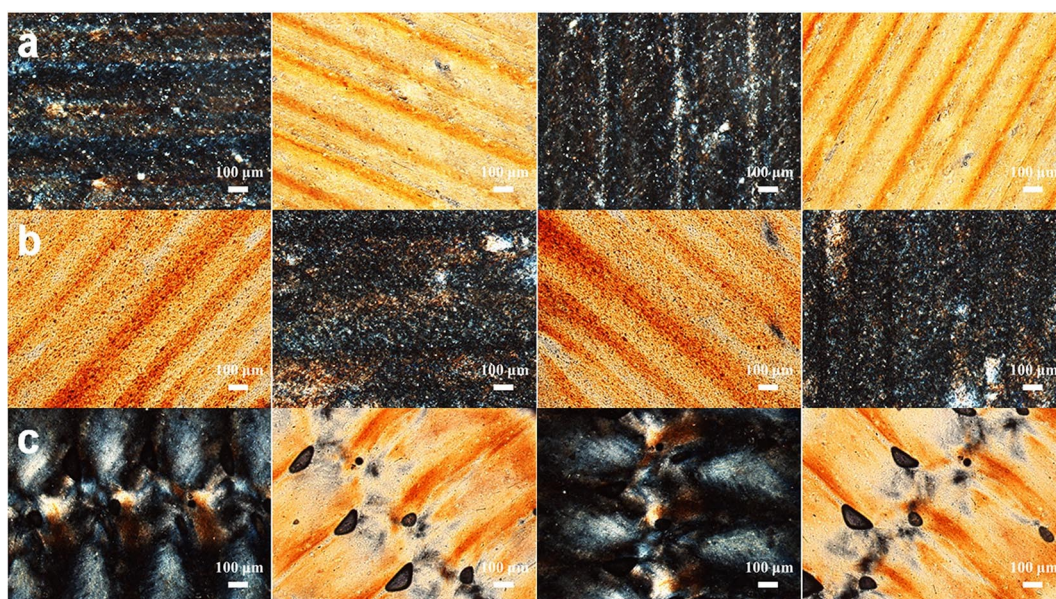


**Figure S6.** The illustration of long writing area and short writing area in the pattern.



**Figure S7.** POM images of printed filaments under stretching (a) 0%, (b) 50%, and (c) 100%.





**Figure S8.** POM images of enlarged “H” printed with different writing angles: 0° (a), 45° (b) and 90° (c) observed under 0°, 45°, 90° and 135° in turn, from left to right.



**Figure S9.** Photographs of “WHU” patterns printed with the recycled inks using a nozzle with a diameter of 0.6 mm under polarized light. Printing conditions: (a) grid fill width was 0.6 mm and writing angle was 90°. (b) grid fill width was 0.3 mm and writing angle was 45°. The length of all patterns in Y direction was 2 cm.