Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

'Reactive' Nano-complex Coated Medical Cotton: A Facile Avenue for Tailored Release of Small Molecules

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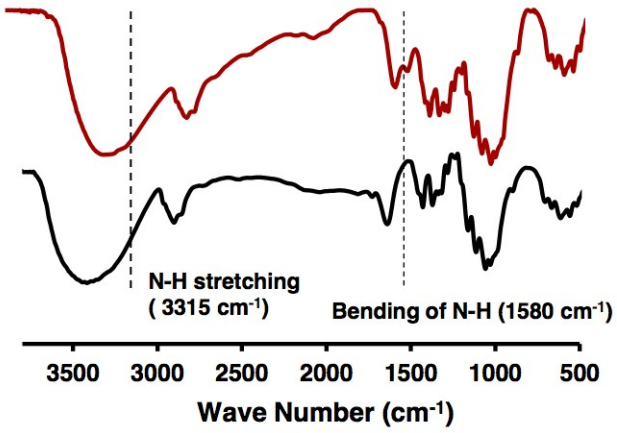

Figure S1. FTIR spectra of uncoated cotton (Black) and BPEI treated cotton (Red). The peak at 3315 cm^{-1} and 1580 cm^{-1} are characteristic signature of N-H stretching and N-H bending respectively appeared due to successful modification of cotton with BPEI polymer.

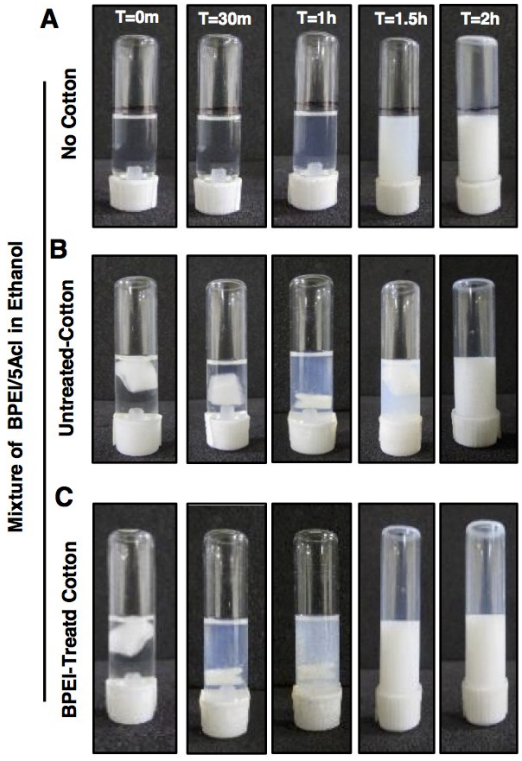

Figure S2. A-C) Digital images depicting change in opacity in mixture of BPEI/5Acl due to formation of RNC in absence of cotton (A) and in presence of both the untreated (B) and BPEI treated cotton (C). The appearance of turbidity is faster in BPEI/5Acl mixture in presence of BPEI treated cotton.

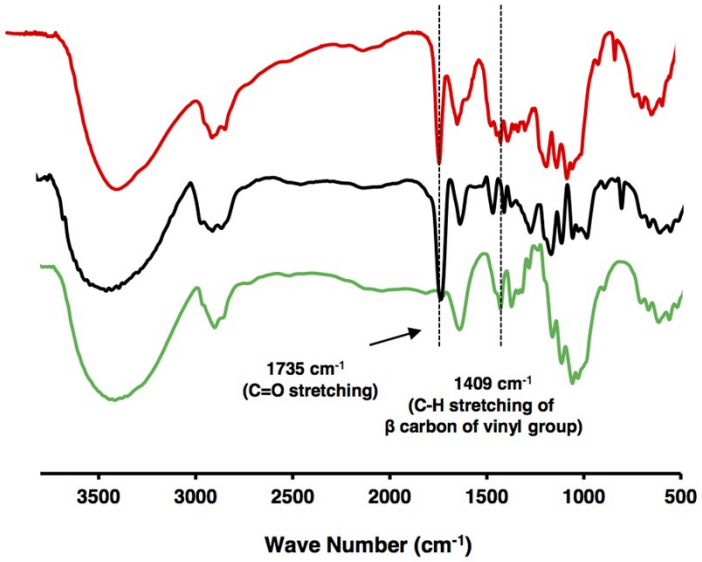

Figure S3. FTIR spectra of uncoated cotton (Green), RNC coated cotton (Black) and decylamine treated (RNC) coated cotton (Red), which shows that the peak corresponding to acrylate moiety (1409cm^{-1}) is significantly depleted after decylamine treatment. Appearance of characteristic peak at 1409 cm^{-1} which is in RNC coated cotton revealed presence of residual acrylate groups and further depletion of the peak at 1409 cm^{-1} after decylamine treatment unambiguously reveals the chemical modification of the coated cotton.

Table 2. Effect of Different Solvents Treatment on the Anti-Wetting Property

Solvents	Dielectric constant (ε)	Advanced Contact Angle (^{0})	Contact Angle Hysteresis (^{0})
Chloroform	4.81	156.7±0.4	8.5
THF	7.58	156.8±0.8	8.4
Dichloromethane	8.93	156.1±0.2	8.3
Acetone	20.7	157.7±0.6	8.1
Ethanol	24.5	156.2±0.4	8.2

Figure S4. Table showing advancing water contact angle and contact angle hysteresis of superhyrophobic cotton after treating the materials with various volatile organic solvents (having wide range of dielectric constants). The anti-wetting property is characterized after removal of volatile solvents.

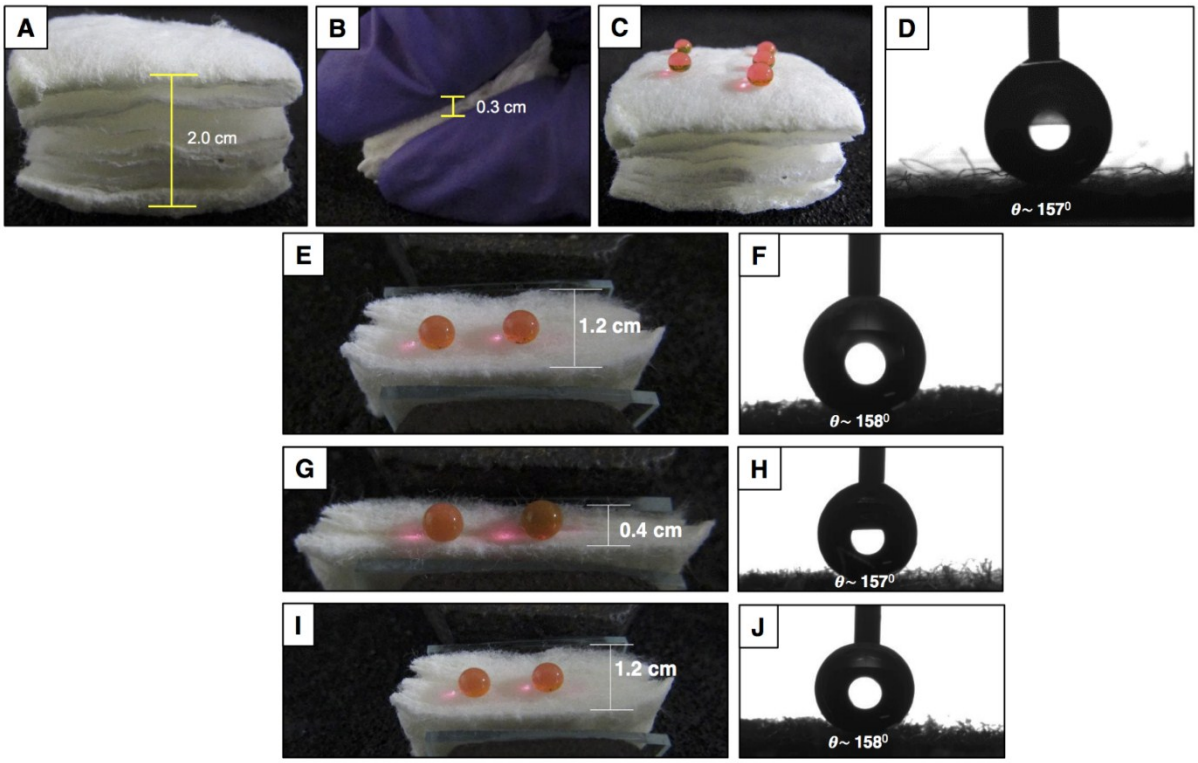

Figure S5. A-B) Digital images of superhydrophobic cotton before (A), and after (B) application of manual compressive strain. C-D) Digital image (C) and contact angle image (D) on the chemically-modified and RNC coated medical cotton after exposing to successive (100 times) manual compression. E-J) Digital images (E, G, I) and contact angle images (F, H, J) of beaded water droplet on superhydrophobic medical cotton before (E-F), during (G-H) and after (I-J) application of manual compressive strain.

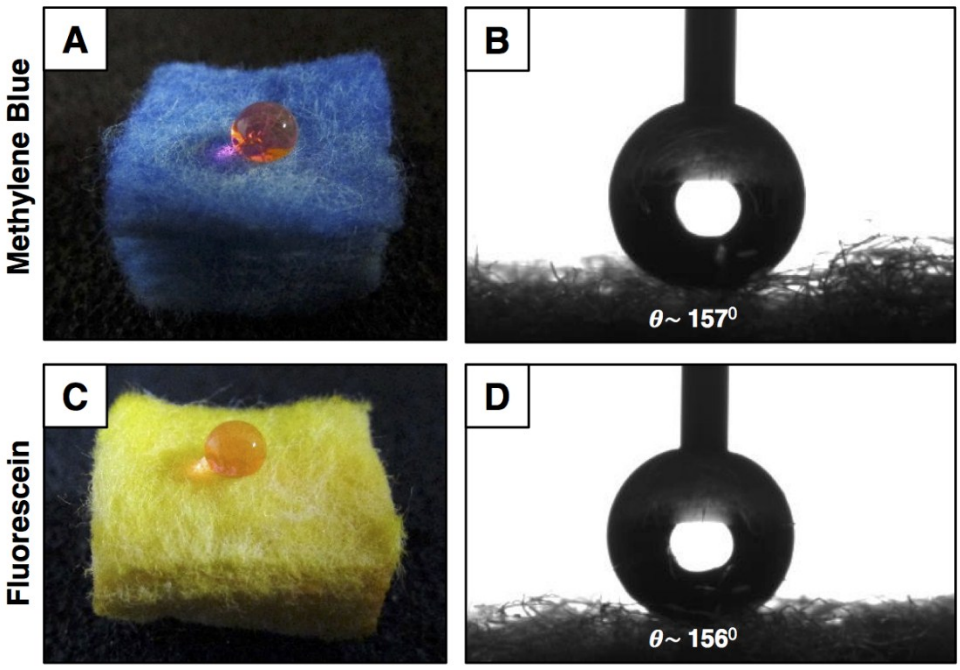

Figure S6. A-D) Digital images (A, C) and contact angle images (B, D) of beaded water droplets on methylene (A-B) and fluorescein (C-D) loaded superhydrophobic medical cotton.