Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Quantification of Residual Liquid on Repellent Cotton Fabrics after Liquid Roll Off

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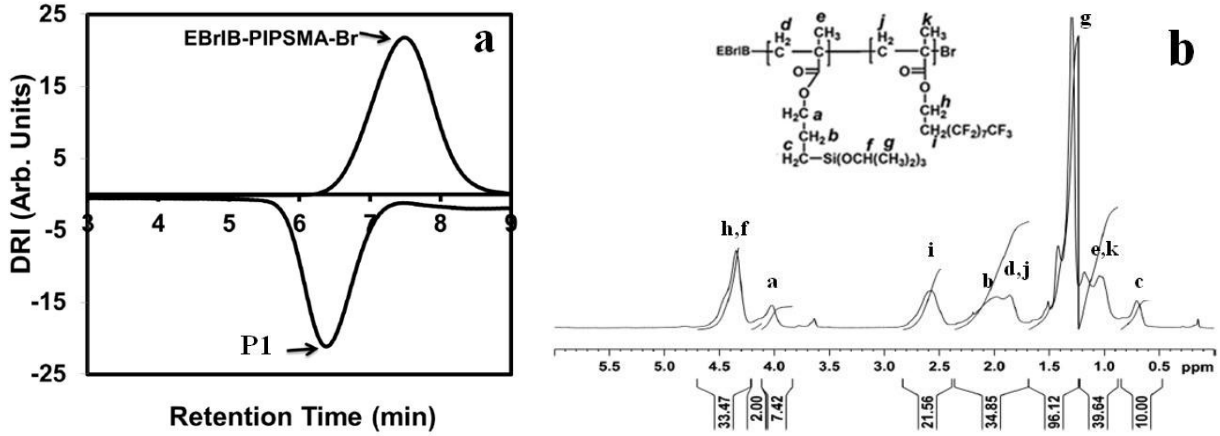

Figure S1. PIPSMA$_{15}$-*b*-PFOEMA$_{31}$ (P1) (a) SEC trace and (b) ^{1}H NMR.[1]

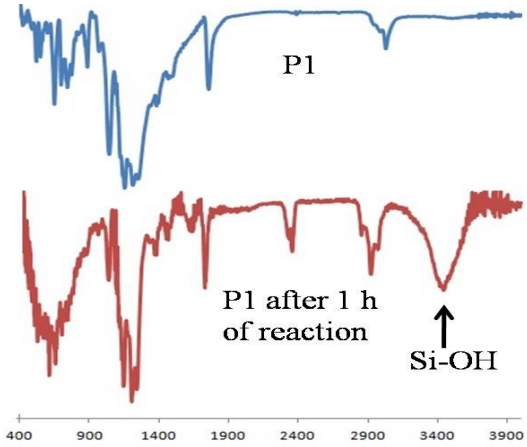

Figure S2. FTIR spectra of P1 before and after 1 h of sol-gel reaction. The peak at 3500 cm^{-1} present in the spectra of the reacted polymer corresponds to the silanol groups indicative of P1 undergoing a hydrolysis reaction.[2]

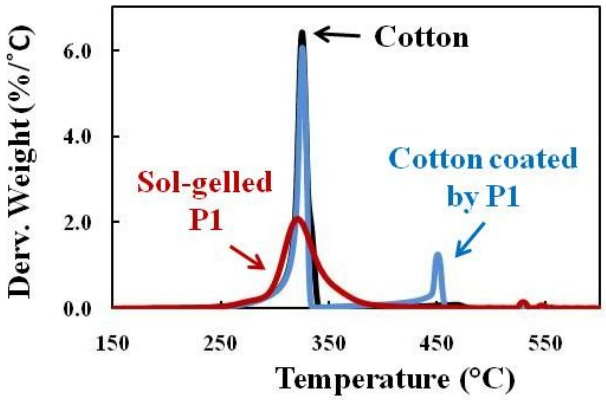

Figure S3. DTGA traces for cotton fabric, sol-gelled P1, and coated cotton at a P1 concentration of 5.00 mg/mL.

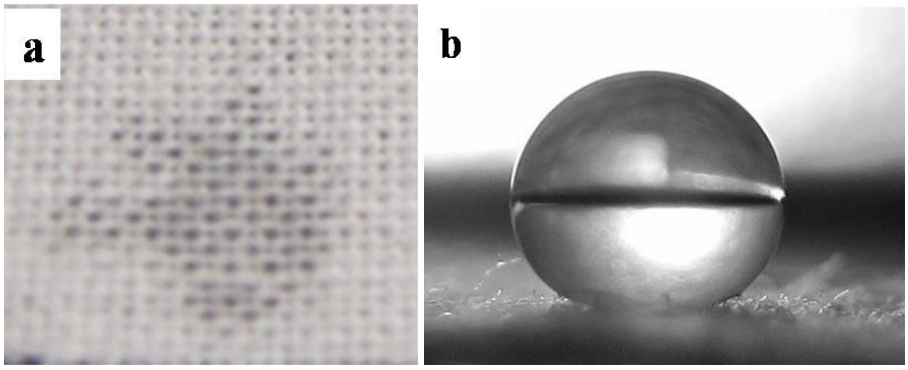

Figure S4. Photographs of 5.0 μL water droplets on (a) uncoated cotton (top view), and (b) coated cotton at a P1 concentration of 5.00 mg/mL (side view).

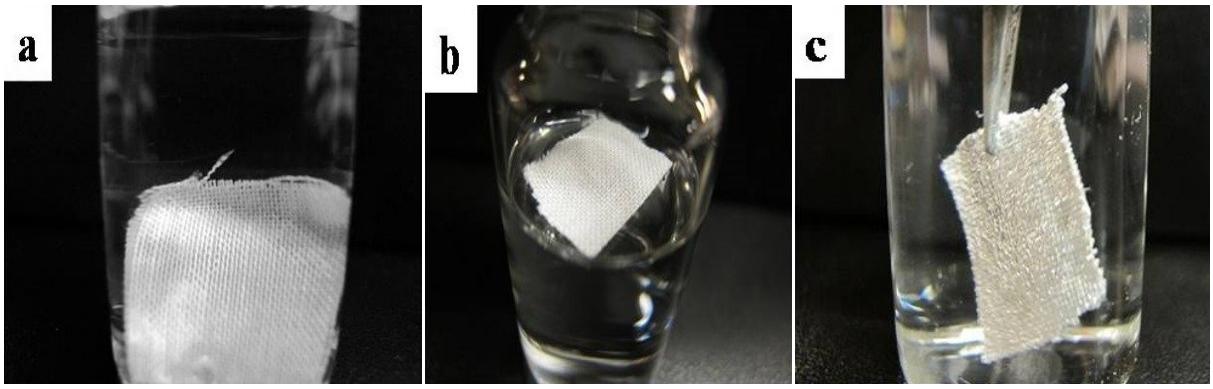

Figure S5. Photographs of (a) uncoated cotton, and (b) coated cotton at a P1 concentration of 5.00 mg/mL in a vial with water, and (c) same coated cotton piece forcibly submerged into the water. The coated cotton shows a plastron layer.

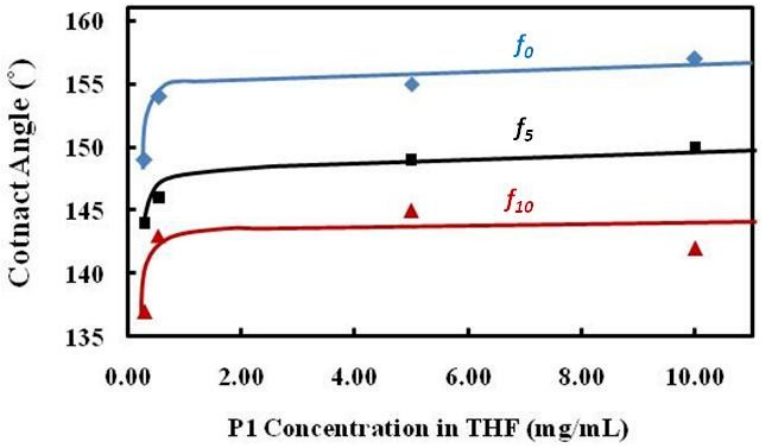

Figure S6. Changes in static contact angles for 5.0 μL droplets of f_0, f_5, and f_{10} loaded with QD at a 4.0 mg/mL concentration on coated cotton fabrics at different P1 concentrations.

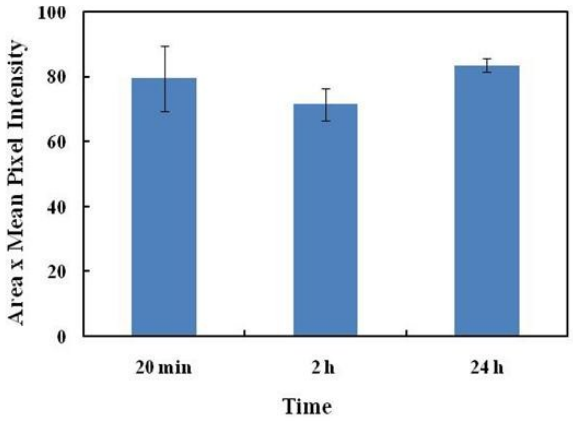

Figure S7. QD fluorescence intensity as a function of time for coated cotton fabrics at a P1 concentration of 5.00 mg/mL.

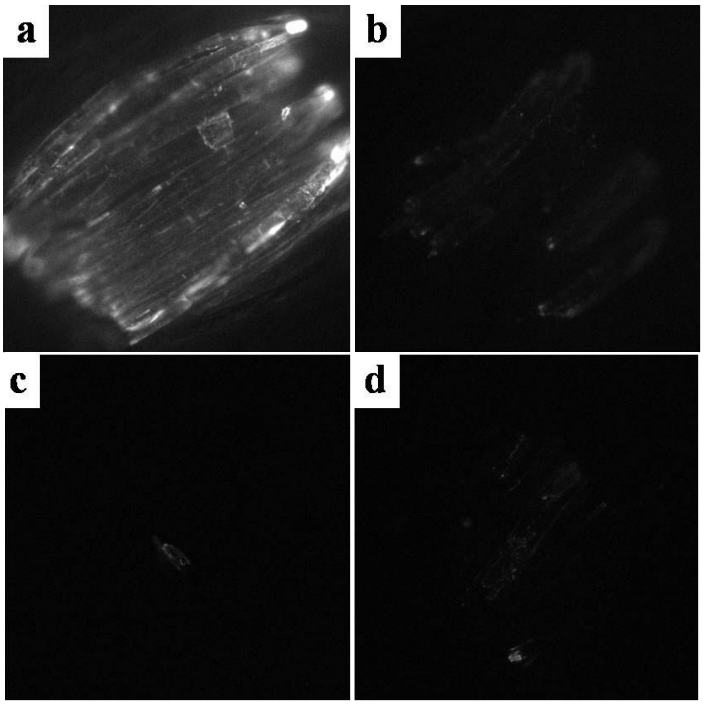

Figure S8. Fluorescence images of fabrics slanted at 60 º after roll off of QD-containing f_5. The fabrics were coated at a P1 concentration of (a) 0.30, (b) 0.55, (c) 5.00, and (d) 10.00 mg/mL. Images were cropped to 0.27 × 0.27 mm^2.

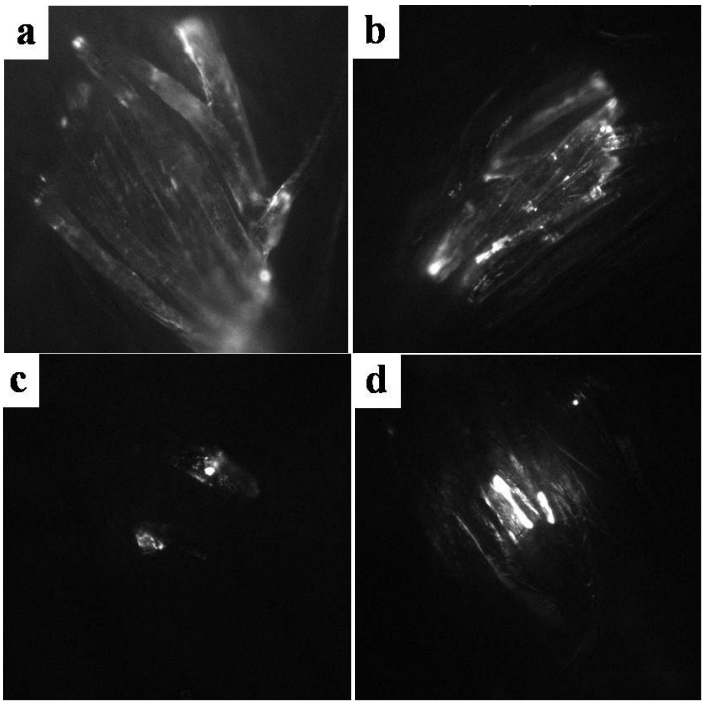

Figure S9. Fluorescence images of fabrics slanted at 60 º after roll off of QD-containing f_{10}. The fabrics were coated at a P1 concentration of (a) 0.30, (b) 0.55, (c) 5.00, and (d) 10.00 mg/mL. Images were cropped to 0.27 × 0.27 mm^2.

Table S1. Amount of residual liquid left behind on fabrics slanted at 60 ° after roll off using 10.0 µL droplets containing 4.0 x 10^{-2} mg QD.

P1 Concentration in THF (mg/mL)	f_0 (mg)	f_5 (mg)	f_{10} (mg)
0.30	(8 ± 5) x 10^{-4}	(4 ± 1) x 10^{-3}	(2.4 ± 0.8) x 10^{-2}
0.55	(2 ± 1) x 10^{-5}	(1.2 ± 0.2) x 10^{-4}	(4 ± 1) x 10^{-3}
5.0	(2.0 ± 0.4) x 10^{-6}	(9 ± 5) x 10^{-6}	(3.1 ± 8) x 10^{-4}
10.0	(1.9 ± 0.4) x 10^{-6}	(2.1 ± 0.3) x 10^{-4}	(1.4 ± 4) x 10^{-3}

Table S2. Percent of residual liquid left behind on fabrics slanted at 60 ° after roll off of using 10.0 µL droplets containing 4.0 x 10^{-2} mg QD.

P1 Concentration in THF (mg/mL)	f_0 (%)	f_5 (%)	f_{10} (%)
0.30	2 ± 1	10 ± 4	60 ± 19
0.55	0.06 ± 0.03	0.31 ± 0.06	10 ± 3
5.0	0.005 ± 0.001	0.02 ± 0.01	0.8 ± 0.2
10.0	0.005 ± 0.001	0.53 ± 0.08	3 ± 1

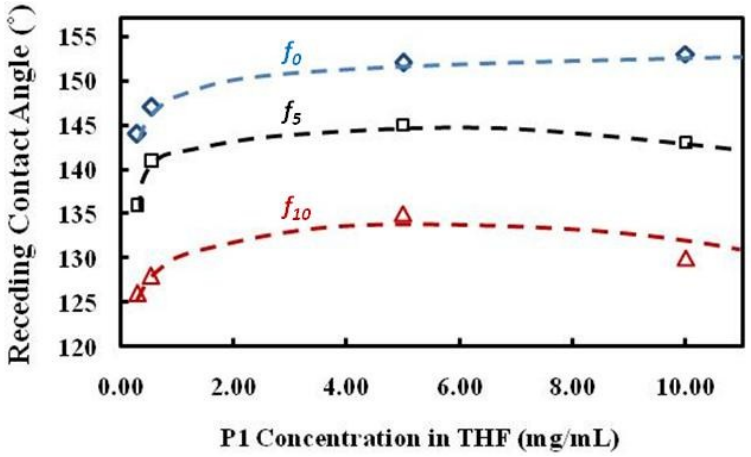

Figure S10. Changes in receding contact angles for 5.0 µL droplets of f_0, f_5, and f_{10} on coated cotton fabrics at different P1 concentrations.

References

1. C. M. Grozea, M. Rabnawaz, G. Liu and G. Zhang, *Polymer*, 2015, **64**, 153-162.
2. B. H. Stuart, *Infrared spectroscopy: fundamentals and applications*, John Wiley & Sons, Chichester, UK, 2004.