Supplementary Materials for

Inhibition of Heterogeneous Ice Nucleation by Bioinspired Coatings of Polyampholytes

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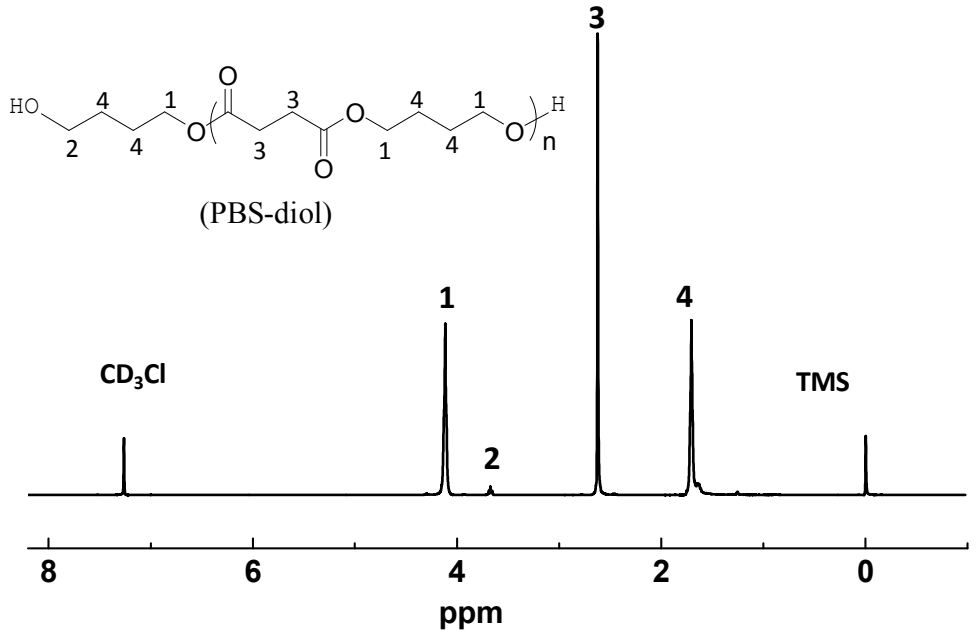

Figure S1. 1H NMR spectrum of PBS-diol (M_n ~ 5000).

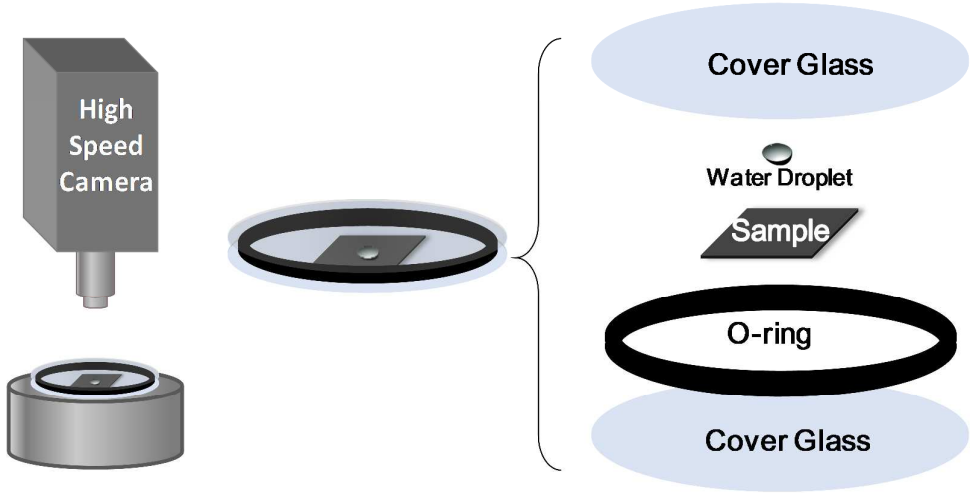

Figure S2. The experimental apparatus used to detect HIN on PBS-based derivative surfaces. The sample cell was composed of a rubber O-ring sandwiched between two cover glasses.

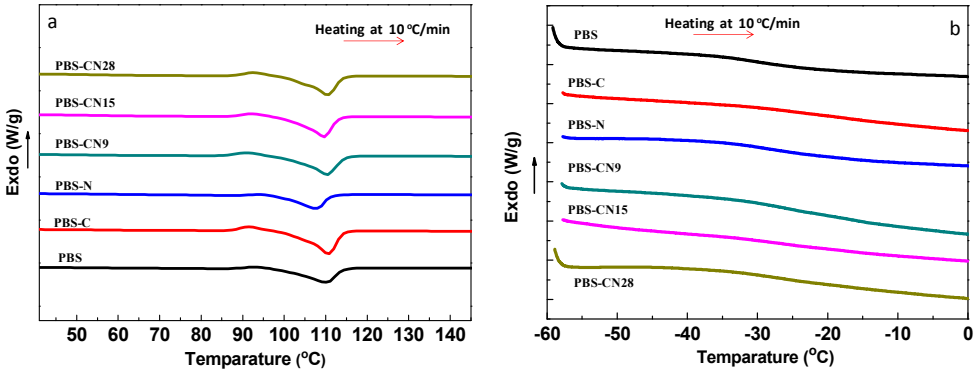

Figure S3. (a) The melting behaviors and (b) glass transition of different PBS-based derivatives.

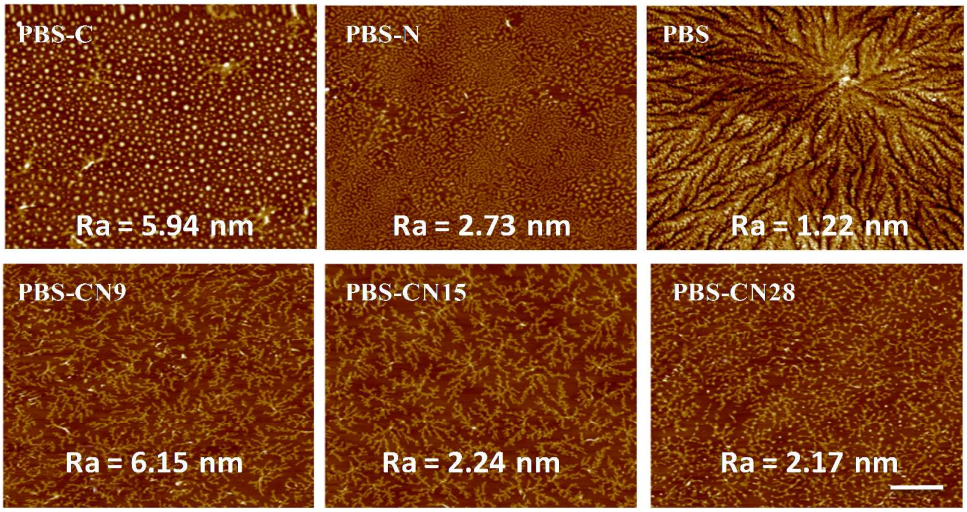

Figure S4. The surface morphology and roughness of PBS-based derivative surfaces. The scale bar is 1 μm. All the values of R_a are less than 7 nm, exhibiting relative smooth surfaces.

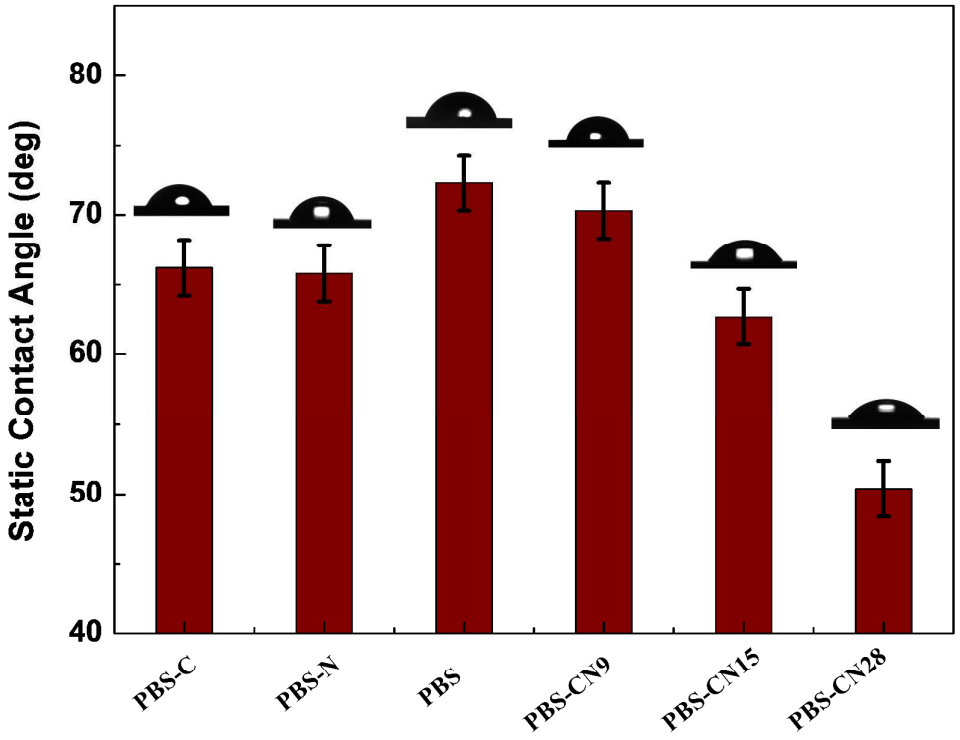

Figure S5. The contact angle (CA) of PBS-based derivative surfaces.

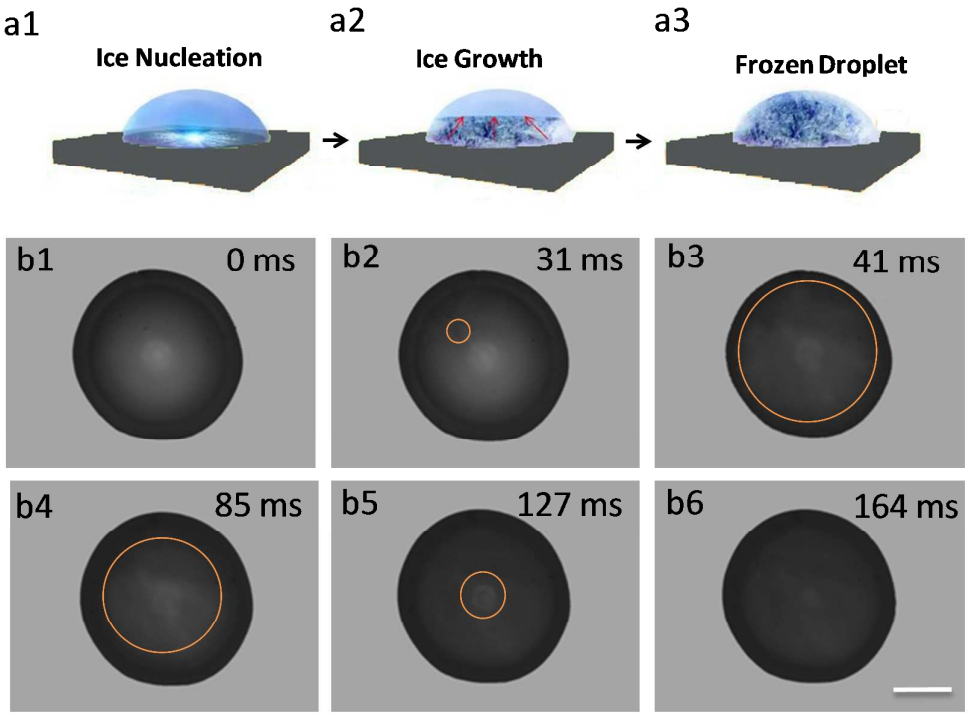

Figure S6. (a) Illustration of freezing of a water droplet on different PBS-based derivative surfaces. (b) Freezing process of a water droplet on PBS-C surface during the temperature-jump experiment at -25.0 °C (detected by a high-speed camera). HIN occurred at PBS-C/water interface rather than water/air interface, and then ice crystals grow upward to fill the whole droplet. The crystallization process finishes within 164 ms.

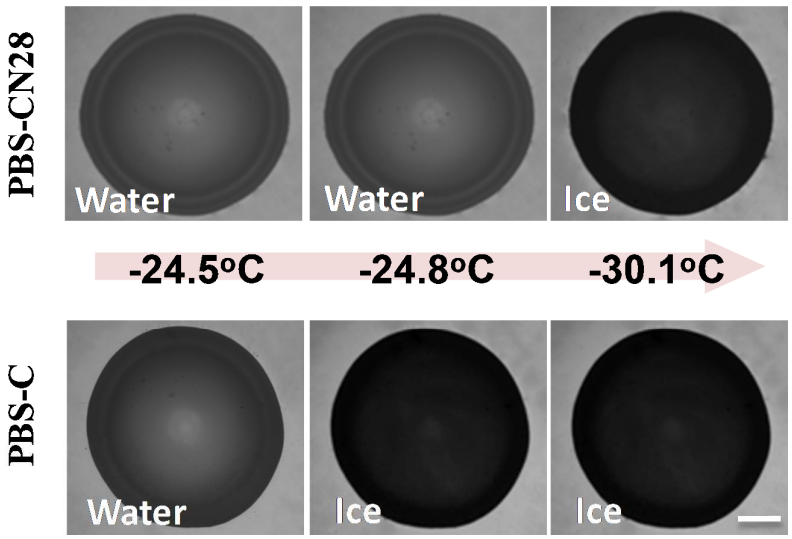

Figure S7. In-situ optical microscopic observation of water droplets (1.0 uL) freezing on different PBS-based derivative surfaces of PBS-CN28 (upper row) and PBS-C (bottom row) at a cooling rate of 5.0 ^{o}C. The scale bar is 200 μm.

Table S1. Atomic Concentrations of PBS-based derivatives by elemental analysis.

Sample	N (wt%)	C (wt%)	H (wt%)
PBS	0.96	56.18	7.15
PBS-C	1.43	55.8	7.22
PBS-N	1.76	55.81	7.2
PBS-CN9	1.65	55.42	7.19
PBS-CN15	2.28	55.72	7.35
PBS-CN28	3.37	55.08	7.39