The Nanogram Water Expelled by the Ultra-Thin Poly(N-isopropylacrylamide) Brushes upon the Thermo-induced Collapse

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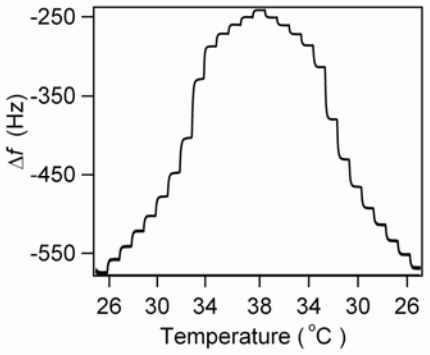

Figure S1. A representative temperature scan for ~32.5 nm pNIPAM in water. Temperature was conducted in a step by step mode. Starting from 25 °C and ending at 38 °C, we increased 1 °C at each step, which was kept for 20 min to achieve equilibrium.

(a) (b)

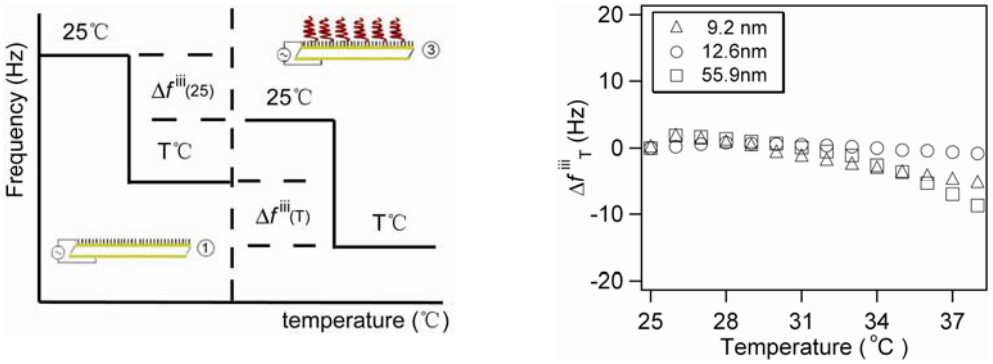

Figure S2. Control experiments of dry pNIPAM under temperature scan. (a) definitions of frequency changes, Δf^{iii} is the frequency difference between the SAM modified QCM chip and pNIPAM modified QCM chip at 25 °C; Δf^{iii} (T) is the frequency difference between the SAM modified QCM chip and pNIPAM modified QCM chip at T °C; (b) dry pNIPAM of three thicknesses had negligible frequency changes as temperature changed.

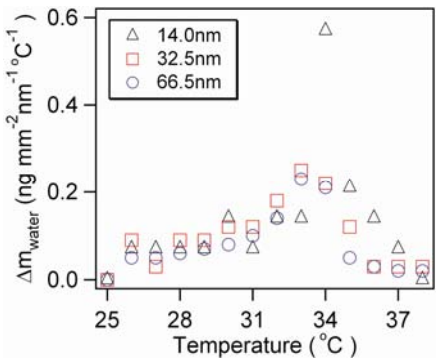

Figure S3. The mass of expelled water for 1 °C change per nm of dry pNIPAM was plotted against temperature. For the starting point of 25 °C, the change was zero. For 26 °C, the change was the value at 25 °C minus the value at 26 °C and was plotted against 26 °C. From the thickness averaged Δm values, thin films had a more dramatic change. Detailed studies are currently undergoing.

Table S1. The full list of $k_{1,n,t}$ at all tested temperatures.

T(℃)	25	26	27	28	29	30	31	32	33	34	35	36	37	38
$K_{1,n,t}$	14.4	13.7	13.4	12.9	12.4	11.8	11.1	10.6	8.3	7.4	6.1	5.8	5.6	6.2
R^2	0.995	0.996	0.995	0.996	0.995	0.993	0.991	0.98	0.93	0.91	0.91	0.91	0.92	0.91