Supporting Information

Confinement-Induced Change in Chain Morphology of Ultra Thin Polymer Fibers

Junho Chung[a], Jae Woo Chung,[b,c*] Rodney D. Priestley[d], and Seung-Yeop Kwak[a,e*]

[a]Department of Materials Science and Engineering, Seoul National University, 1 Gwanak-ro, Gwanak-gu, Seoul 151-744, South Korea

[b]Department of Organic Materials and Fiber Engineering, Soongsil University, 369 Sangdo-ro, Dongjak-gu, Seoul 06978, South Korea

[c]Department of Information Communication, Materials, and Chemistry Convergence Technology, Soongsil University, 369 Sangdo-ro, Dongjak-gu, Seoul 06978, South Korea

[d]Department of Chemical and Biological Engineering, Princeton University, Princeton, New Jersey 08544, United States

[e]Department Research Institute of Advanced Materials (RIAM), Seoul National University, 1 Gwanak-ro, Gwanak-gu, Seoul 151-744, South Korea

* Corresponding Author: **Seung-Yeop Kwak;** Tel.: +82-2-880-8365; Fax: +82-2-885-1748;

E-mail: sykwak@snu.ac.kr

Jae Woo Chung; Tel: +82-2-828-7047; Fax: +82-2-817-8346;

E-mail: jwchung@ssu.ac.kr

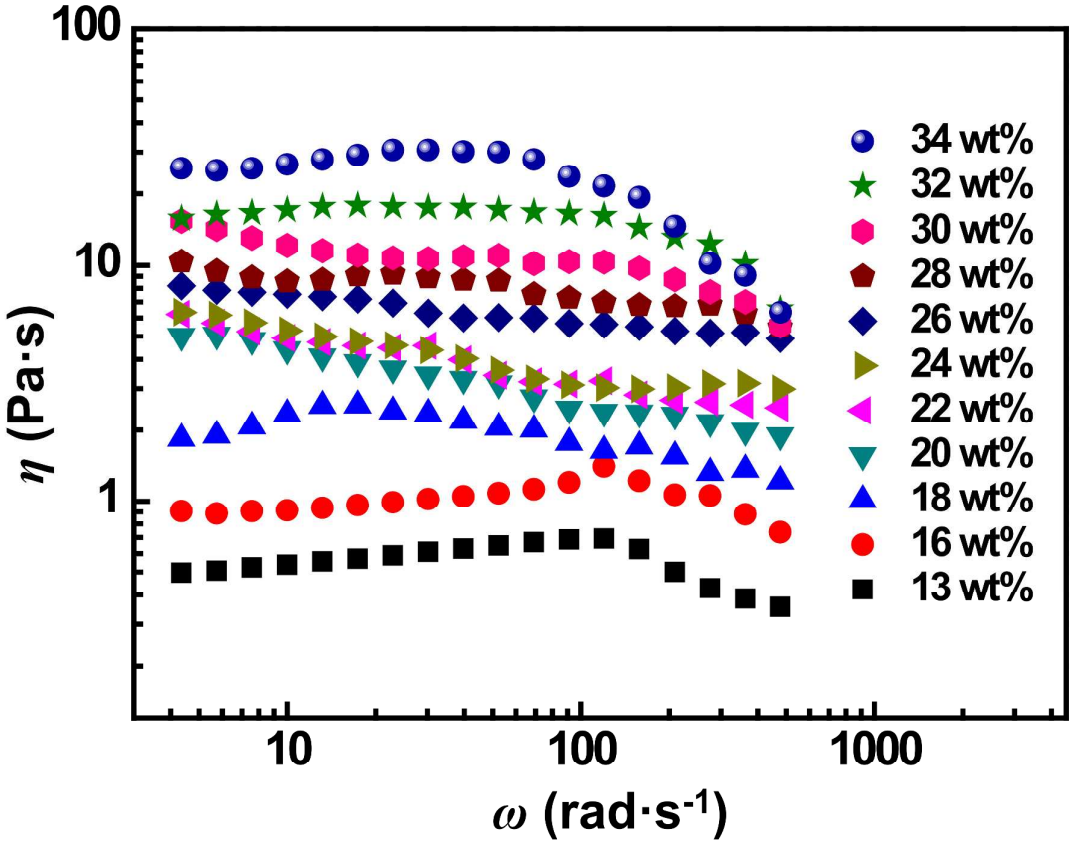

Figure S1. Steady shear viscosity of nylon 6/formic acid solution with different concentration from 13 to 34 wt%.

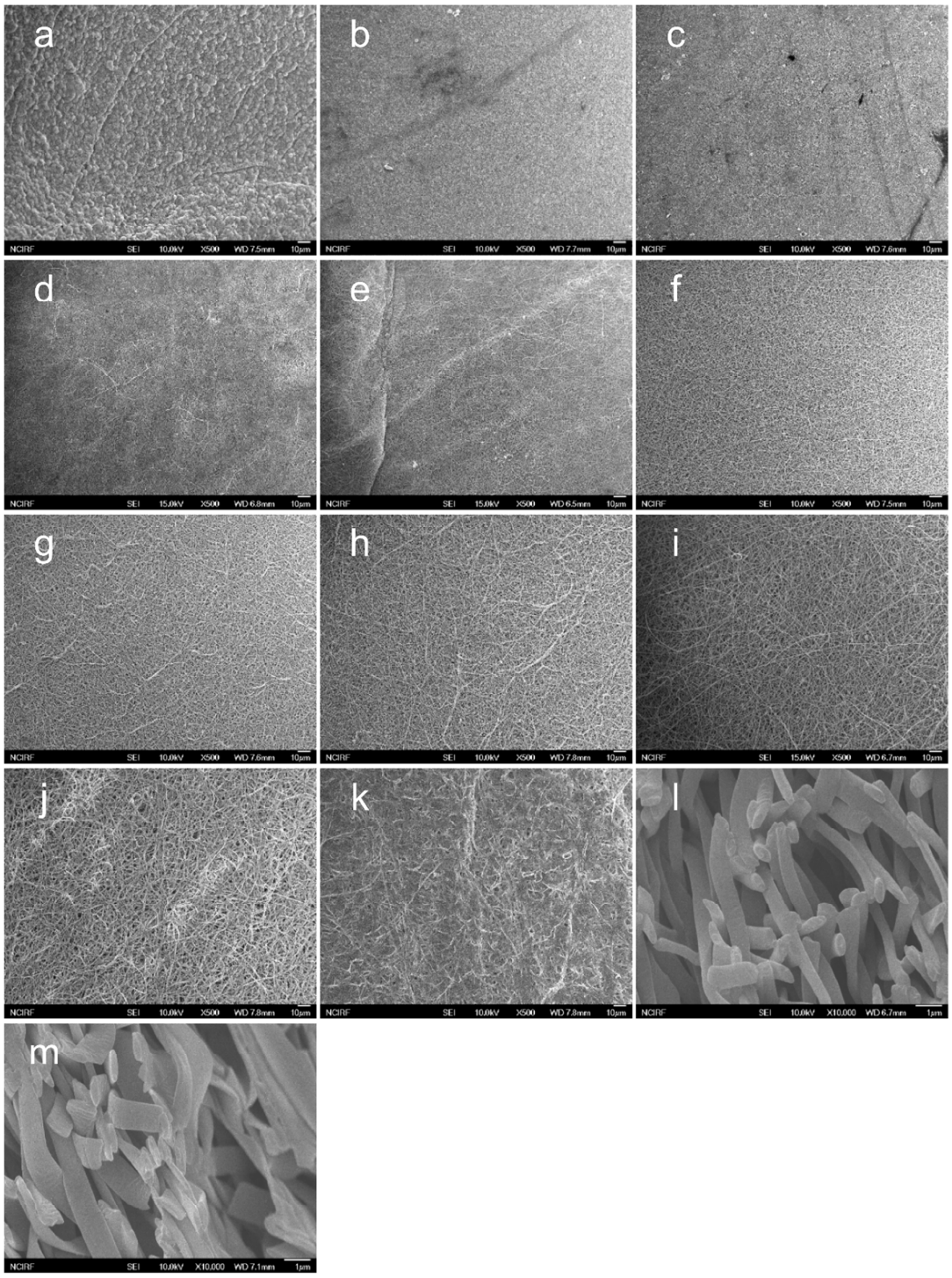

Figure S2. FE-SEM images of (a) c-NF-70, (b) c-NF-80, (c) c-NF-100, (d) c-NF-120, (e) c-NF-200, (f) c-NF-220, (g) c-NF-270, (h) c-NF-290, (i) c-NF-370, (j) r-NF-800-350, (k) r-NF-1140-270 at low magnification and cross-section of (l) r-NF-800-350 and (m) r-NF-1140-270 at high magnification.

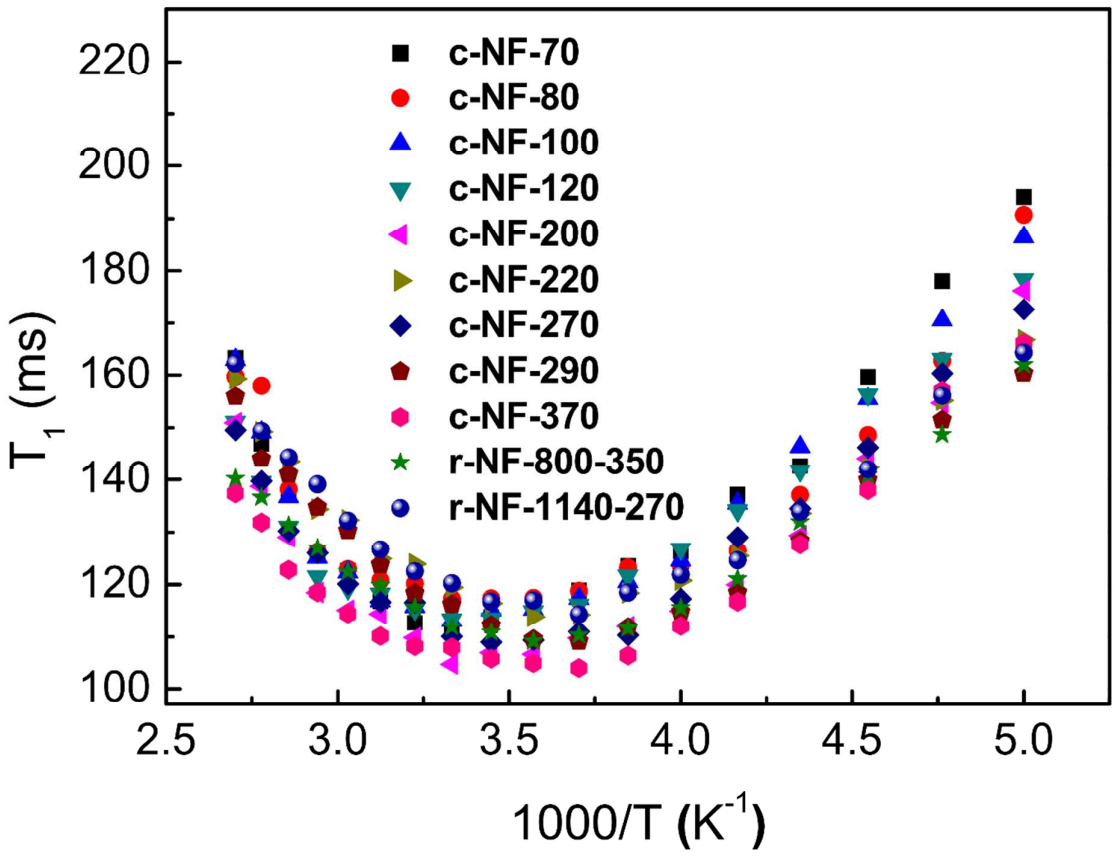

Figure S3. ^{1}H T_1 vs the inverse temperature (1000/T) of Nylon 6 nanofibers with different size and shape

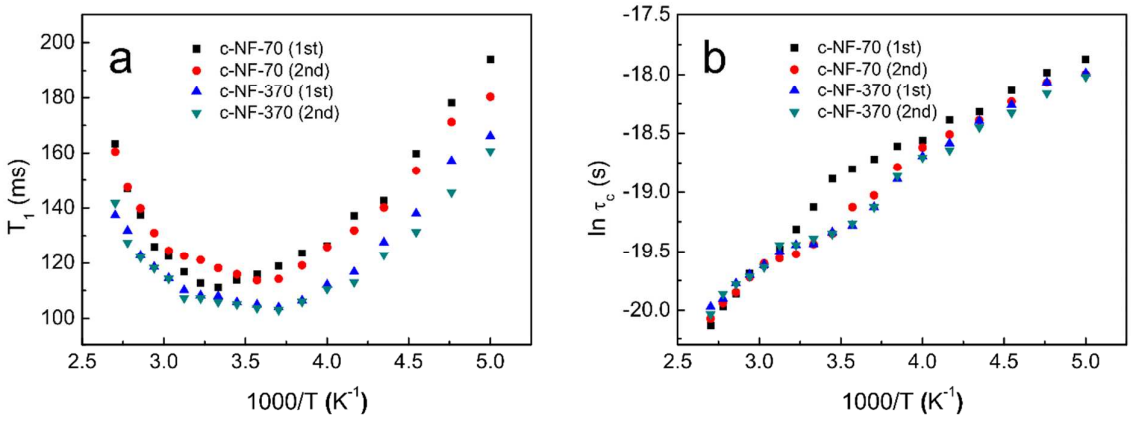

Figure S4. (a) ^{1}H T_1 vs the inverse temperature (1000/T) and (b) logarithmic plot of the correlation time, τ_c vs the inverse temperature (1000/T) of c-NF-70 and c-NF-370 during the two heating cycles

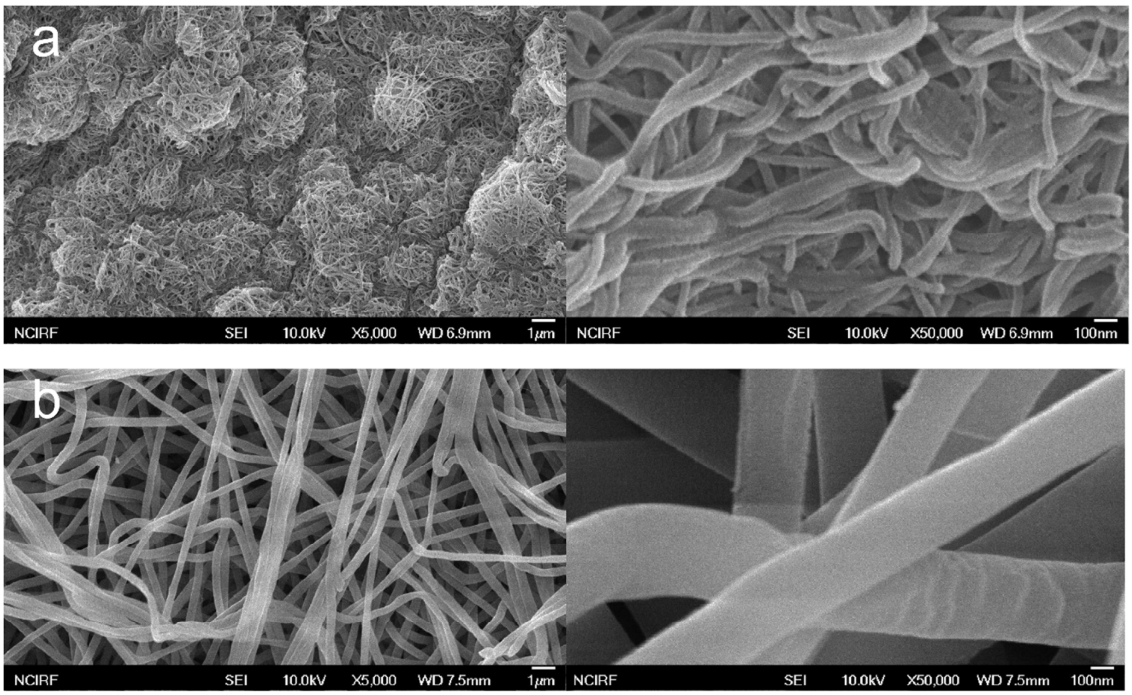

Figure S5. FE-SEM images of (a) c-NF-70 and (b) c-NF-370 after the measurement of T_1 at a temperature range from 200 to 370 K.

Table S1. Composition of rhodamine B-loaded Nylon 6 nanofibers and the amount of rhodamine B released for 24 h.

Sample	Rh-NF-60	Rh-Nf-140	Rh-NF-250
RhB/Nylon 6 (wt%)	0.58	0.61	0.82
Dye release at 24 h (%)	42.0 ± 1.9	56.9 ± 4.0	50.8 ± 1.2