

Supplementary Material

Performance Enhancement of a Quartz Tuning Fork Sensor using a Cellulose Nanocrystal-Reinforced Nanoporous Polymer Fiber

Wuseok Kim [†], Eunjin Park [†], and Sangmin Jeon ^{*}

Department of Chemical Engineering, Pohang University of Science and Technology (POSTECH), 77 Cheongam-Ro, Nam-Gu, Pohang, Gyeongbuk, Republic of Korea

[†] The authors contributed equally to this paper.

^{*} Correspondence: jeons@postech.ac.kr; Tel.: +82-054-279-2392

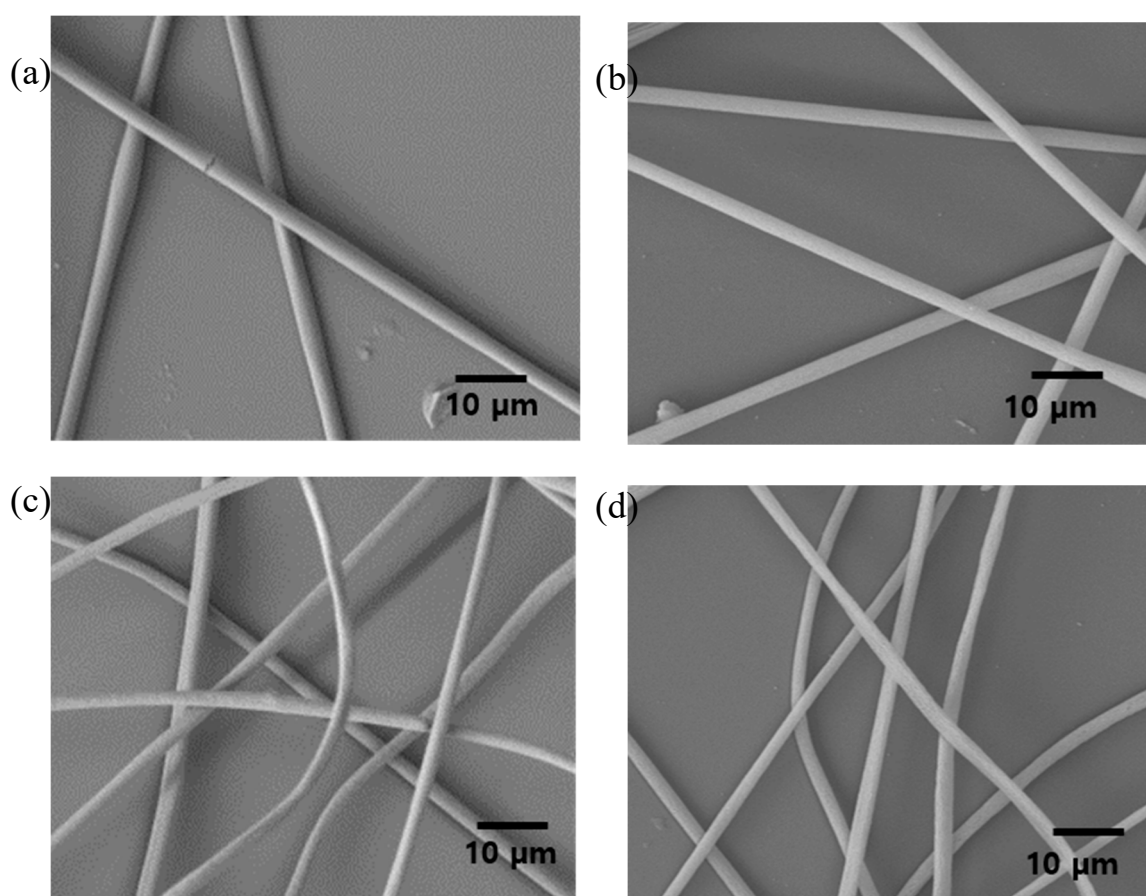


Figure S1. SEM images of (a) P30 fibers, (b) P60 fibers, (c) CP30 fibers, and (d) CP60 fibers.

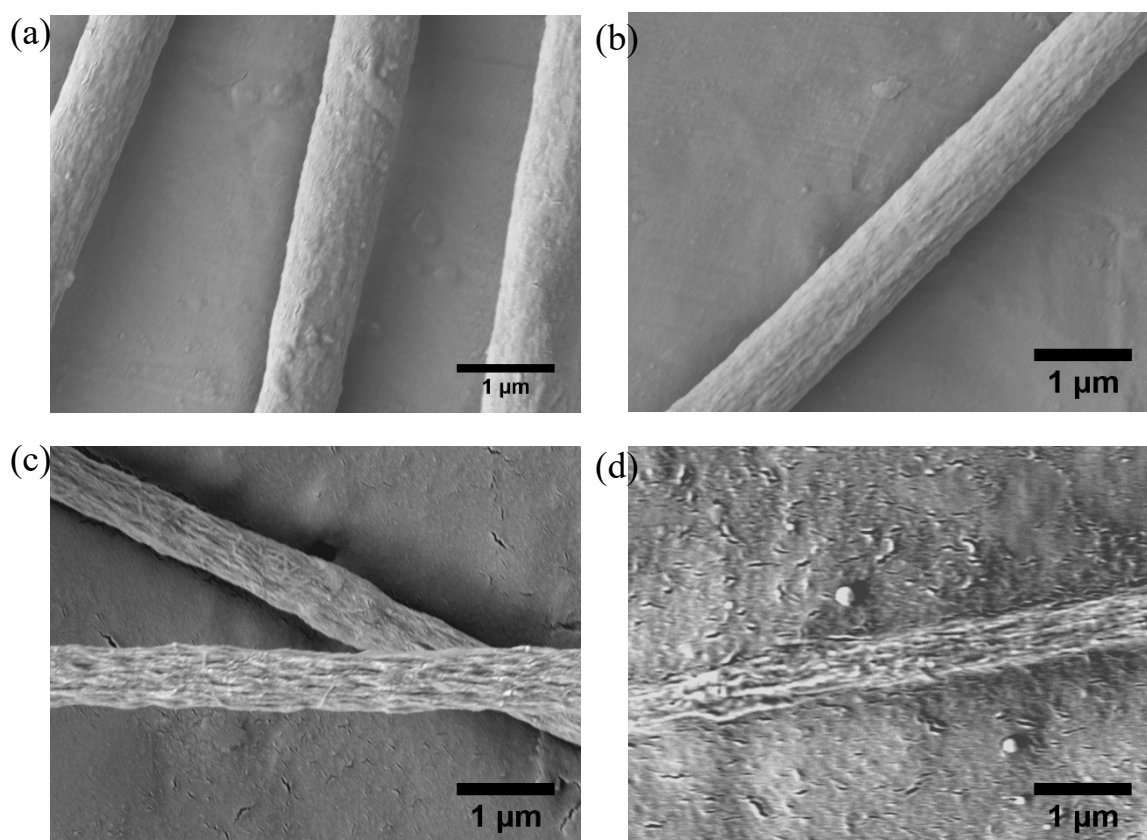


Figure S2. SEM images of CNC/PMMA fiber (3:7, *wt/wt*) after dropping 100 μl of THF (a) 1 time, (b) 3 times, (c) 5 times, and (d) 10 times.

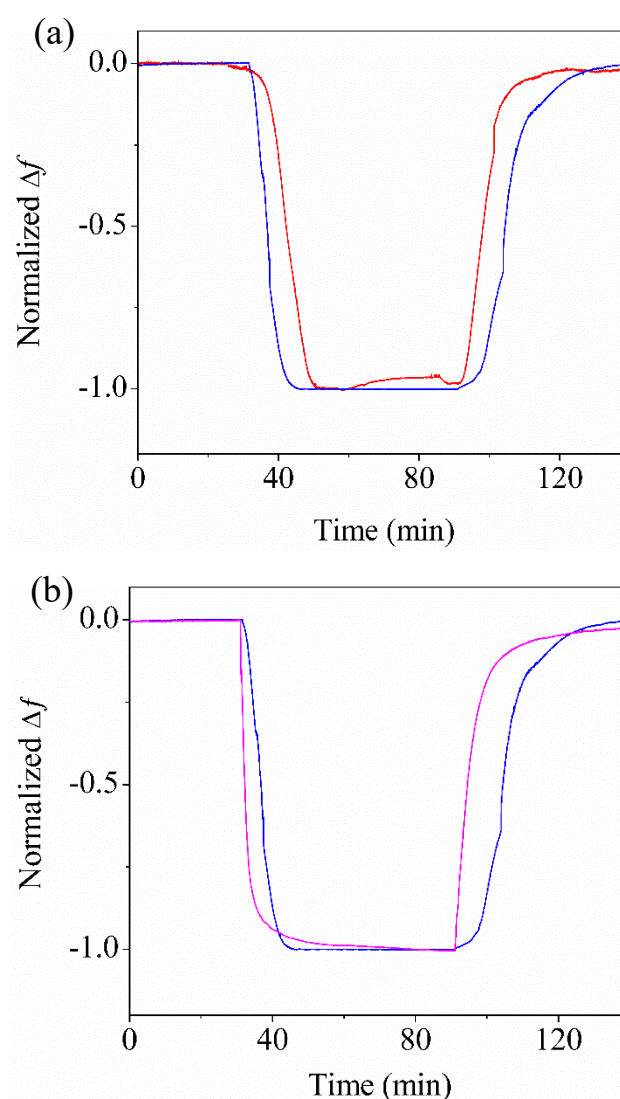


Figure S3. (a) Normalized frequency change of P30-QTF (red) and CP30-QTF (blue) upon exposure to 25 % ethanol vapor (b) Normalized frequency change of CP30-QTF (blue) and CP60-QTF (magenta) upon exposure to 25 % ethanol vapor.

Table S1. Performance of bare-, P30-, CP30-, P60-, CP60-QTFs for ethanol sensing.

	LOD	Response Time	$ \Delta f $ at EtOH 25 %	SNR at EtOH 25 %
Bare QTF	20 %	-	< 0.1	7.5
P30	15 %	465 s	51.7	487.7
CP30	5 %	223 s	177.9	2869.8
P60	10 %	< 1 min	47.5	1826.9
CP60	3 %	< 1 min	173.0	2369.7