Supplementary Information

Cracking-assisted Micro-/Nanofluidic Fabrication Platform for Silver Nanobelt Arrays and Nanosensors

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Supplementary Table

Table S1. Comparison of the detection limits of Ag nanostructure-based H_2O_2 sensors.

Electrode	Detection limit	Ref.
AgNB arrays	0.0084	This work
HRP[1)]/AgNWs/Au	0.0012	1
Dendritic Ag nanostructure/GC[2)]	0.5	2
Ag microsphere/GC	1.2	3

[1)] HRP: Horseradish peroxidase, [2)] GC: Glassy carbon

Supplementary Figures

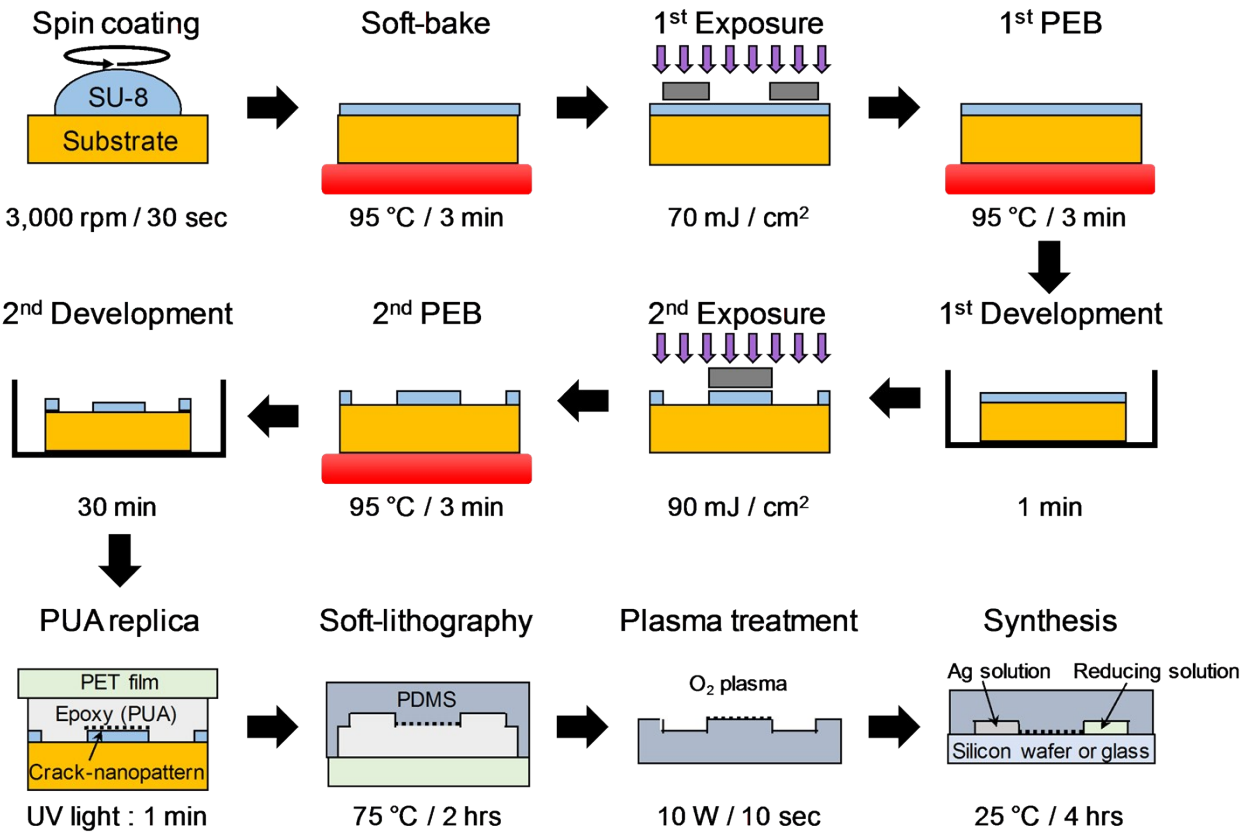

Figure S1. Crack-photolithography fabrication process under standard conditions. (i) Spin-coating of SU-8 on a Si substrate at 3,000 rpm for 30 s. (ii) Baking the coated SU-8 film at 95 °C for 3 min (soft-bake). (iii) Exposing to UV-light at 70 mJ/cm^2 through the 1st mask onto the SU-8 film (1st exposure). (iv) Baking the exposed SU-8 film at 95 °C for 3 min (1st PEB). (v) Development of the un-exposed area for 1 min (1st development). (vi) Exposing to UV-light at 90 mJ/cm^2 through the 2nd mask. (vii) Baking the exposed SU-8 film at 95 °C for 3 min (2nd PEB). (viii) Immersing the SU-8 film into the developer for 30 min to induce crack propagation. (ix) Fabrication of a micro-/nanofluidic platform using PUA replication and (x) soft lithography. xi) Oxygen plasma treatment at 10 W for 10 sec to render the PDMS surfaces hydrophilic. (xii) Synthesizing AgNBs by introducing Ag and reducing solution into the PDMS device (e.g., for 4 hrs growth at 25 °C).

Element	Weight%	Atomic%
C	0.33	1.73
O	8.58	33.73
Si	6.87	15.40
Ag	84.22	49.13

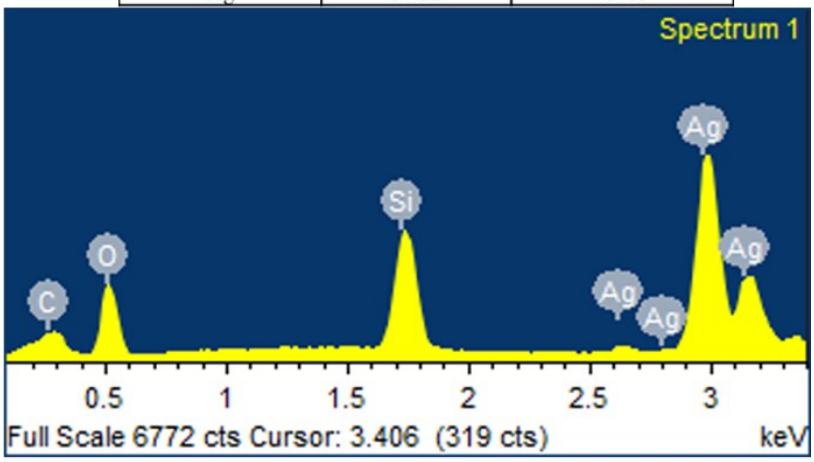

Figure S2. Energy-dispersive spectral patterns of the as-prepared AgNBs.

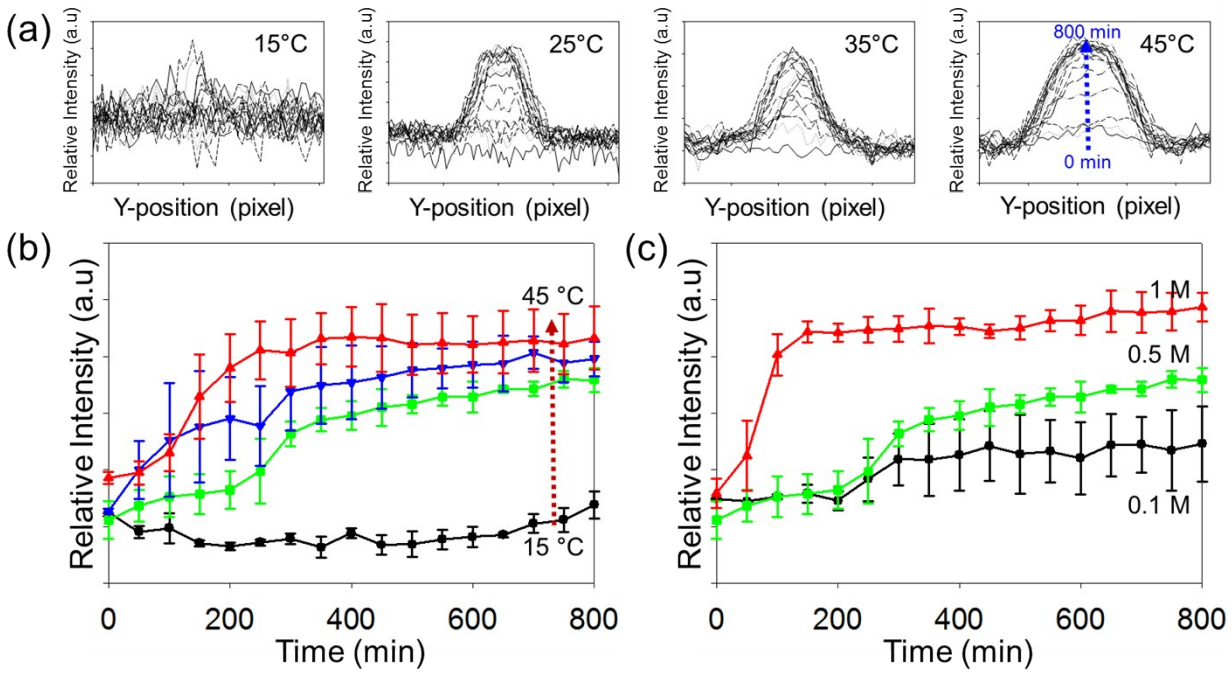

Figure S3. Transient AgNB growth phenomena optically observed under different synthesis conditions. (a) Relative optical intensities of AgNBs growing in the middle of a crack nanochannel for 800 min at four different temperatures. (b) Quantification of the relative intensities of the AgNBs in (a). (c) Quantification of the relative intensities of the AgNBs for three different $AgNO_3$ concentrations. The average values and error bars were obtained from three random positions on a sample.

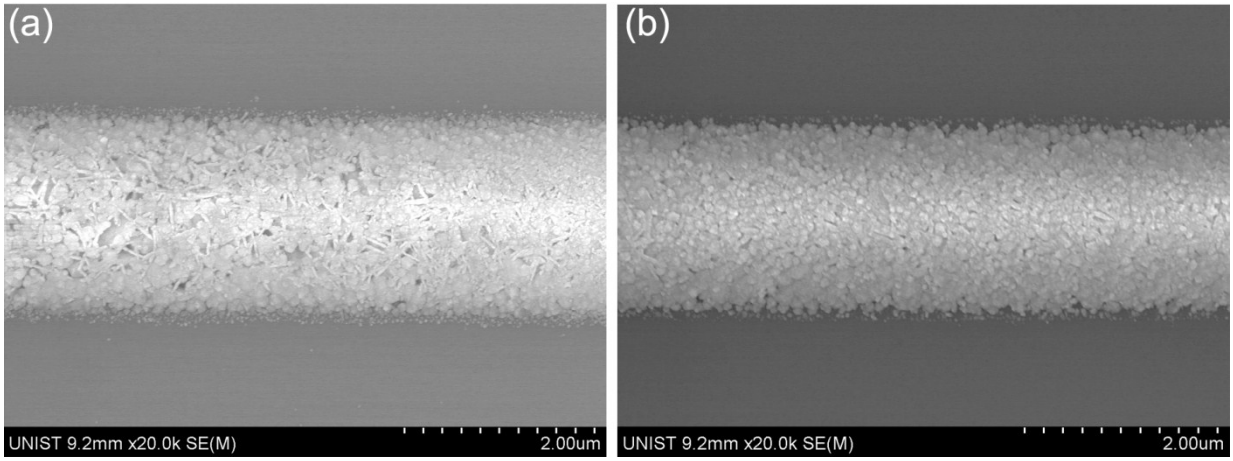

Figure S4. FE-SEM image of a single AgNB synthesized at (a) 25 °C, and (b) 20 °C. All other synthesis conditions are the same (e.g., 14 h synthesis).

Reference

1. M.-J. Song, S. W. Hwang and D. Whang, *J. Appl. Electrochem.*, 2010, **40**, 2099-2105.
2. X. Qin, H. Wang, X. Wang, Z. Miao, Y. Fang, Q. Chen and X. Shao, *Electrochim. Acta*, 2011, **56**, 3170-3174.
3. B. Zhao, Z. Liu, Z. Liu, G. Liu, Z. Li, J. Wang and X. Dong, *Electrochem. Commun.*, 2009, **11**, 1707-1710.