

Electronic Supplementary Material (ESI) for Lab on a Chip.
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Lab on a Chip

Biomolecular recognition on nanowire surfaces modified by the self-assembled monolayer

Taisuke Shimada^{a,b*}, Takao Yasui^{a,b,c*}, Asami Yokoyama^a, Tatsuro Goda^d, Mitsuo Hara^e, Takeshi Yanagida^{f,g}, Noritada Kaji^h, Masaki Kanai^f, Kazuki Nagashima^f, Yuji Miyahara^d, Tomoji Kawai^g, and Yoshinobu Baba^{a,b,i*}

^aDepartment of Biomolecular Engineering, Graduate School of Engineering, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan

^bImPACT Research Center for Advanced Nanobiodevices, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan

^cJapan Science and Technology Agency (JST), PRESTO, 4-1-8 Honcho, Kawaguchi, Saitama 332-0012, Japan

^dInstitute of Biomaterials & Bioengineering, Tokyo Medical and Dental University (TMDU), 2-3-10 Kanda-Surugadai, Chiyoda, Tokyo 101-0062, Japan

^eDepartment of Molecular and Macromolecular Chemistry, Graduate School of Engineering, Nagoya University Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan

^fInstitute for Materials Chemistry and Engineering, Kyushu University, 6-1 Kasuga-koen, Kasuga, Fukuoka 816-8580, Japan

^gThe Institute of Scientific and Industrial Research, Osaka University, 8-1 Mihogaoka, Ibaraki, Osaka 567-0047, Japan

^hDepartment of Chemistry and Biochemistry, Graduate School of Engineering, Kyushu University, Moto-oka 744, Nishi-ku, Fukuoka 819-0395, Japan

ⁱHealth Research Institute, National Institute of Advanced Industrial Science and Technology (AIST), Takamatsu, Kagawa 761-0395, Japan

*Corresponding authors: Taisuke Shimada, Takao Yasui, Yoshinobu Baba

Tel: +81-52-789-3560; Fax: +81-52-789-4666; E-mail: shimada.taisuke@c.mbox.nagoya-u.ac.jp,

Tel: +81-52-789-4611; Fax: +81-52-789-4666; E-mail: yasui@chembio.nagoya-u.ac.jp,

Tel: +81-52-789-4664; Fax: +81-52-789-4666; E-mail: babaymtt@chembio.nagoya-u.ac.jp

This PDF file includes: Figs. S1 to S4

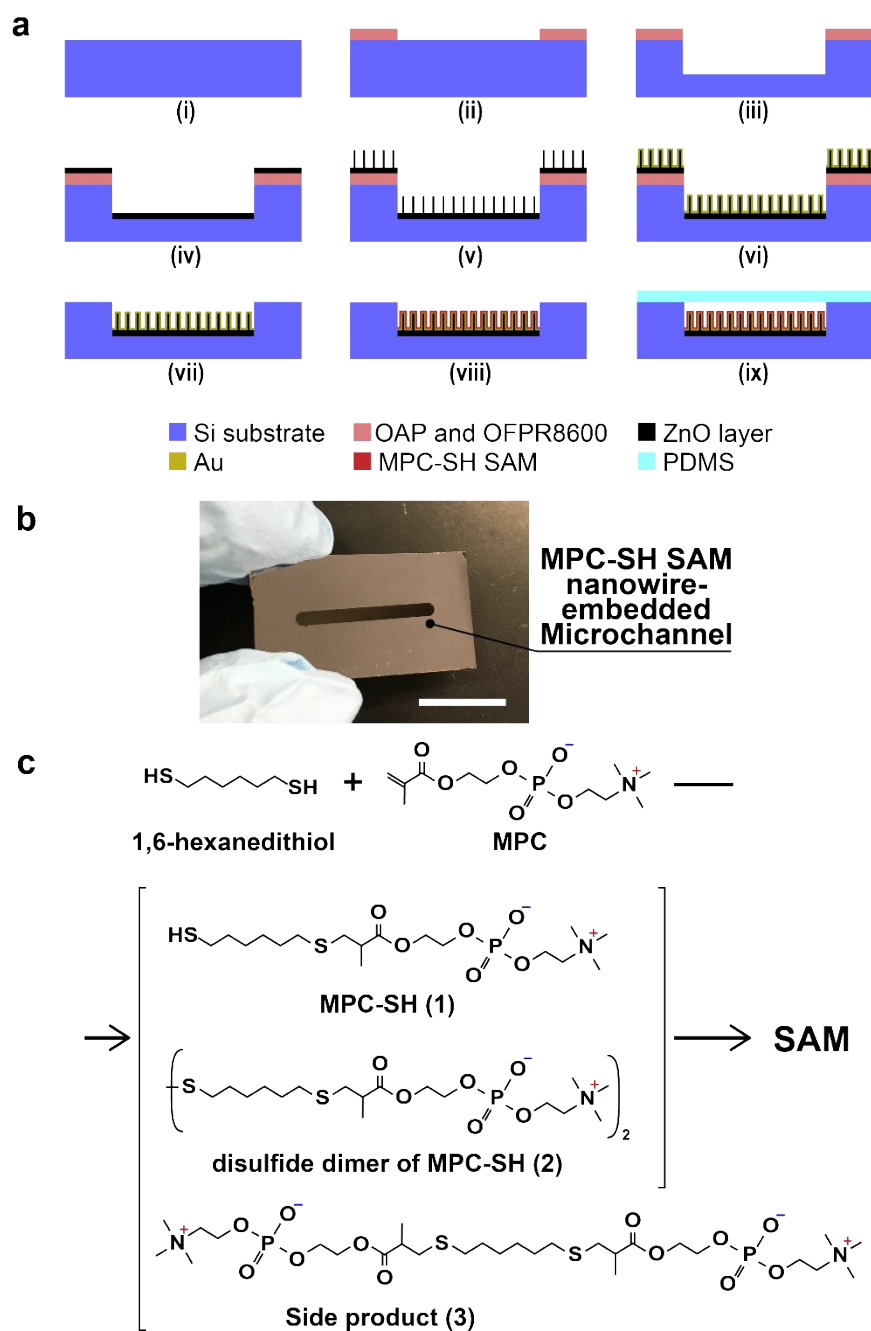


Figure S1. (a) Schematic illustrations of fabrication procedures for MPC-SH SAM modified nanowires in a microchannel: (i) washing the Si substrate; (ii) microchannel patterning using OAP and OFPR8600; (iii) microchannel etching using DRIE; (iv) ZnO layer sputtering; (v) ZnO nanowires being fabricated by hydrothermal growth; (vi) Au sputtering; (vii) removing OAP and OFPR8600; (viii) modifying the MPC-SH SAM; and (ix) covering with a PDMS sheet. (b) A photo of MPC-SH SAM modified nanowires in a microchannel (scale bar, 1 cm). (c) Reaction scheme of MPC-SH SAM modification.

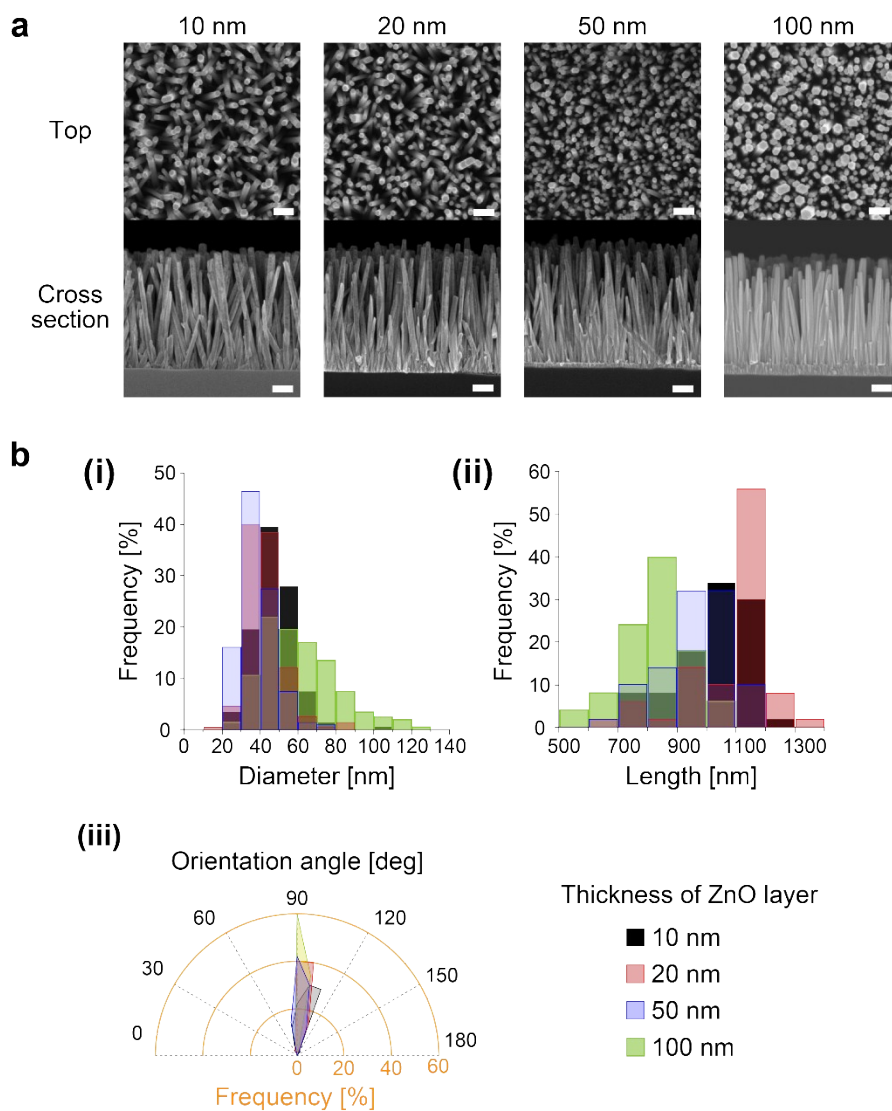


Figure S2. (a) FESEM images of nanowires fabricated from different thicknesses of ZnO layers (10, 20, 50, and 100 nm; upper images, top view; lower images, cross-sectional view; scale bars, 200 nm). (b) (i) Diameter (N=200), (ii) length (N=50) and (iii) orientation angle (N=50) of nanowires (black, 10 nm; red, 20 nm; blue, 50 nm; green, 100 nm). These were measured from FESEM images.

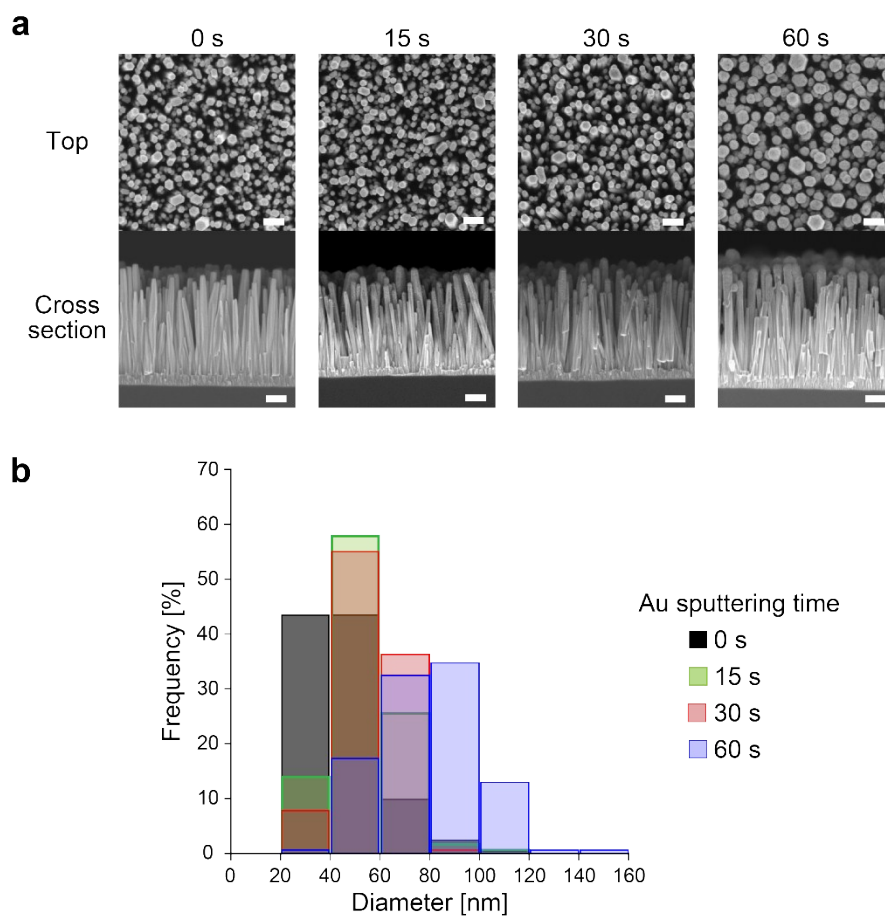


Figure S3. (a) FESEM images of Au-coated nanowires fabricated with different sputtering times (0, 15, 30, and 60 s; upper images, top view; lower images, cross-sectional view; scale bars, 200 nm). These nanowires were fabricated from the 100 nm ZnO layer. (b) Diameter ($N > 100$) of nanowire tips (black, green, red, and blue correspond to 0, 15, 30, and 60 s sputtering times, respectively). These were measured from FESEM images.

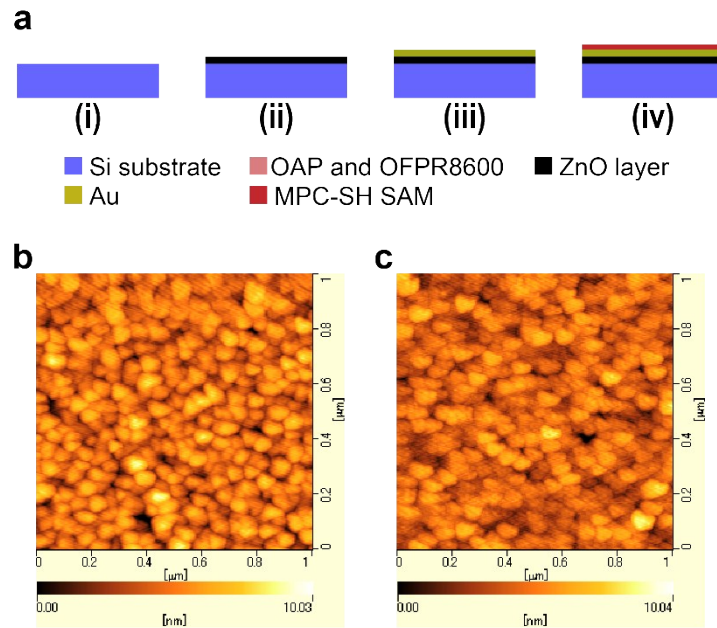


Figure S4. (a) Schematic illustrations of fabrication procedures for MPC-SH SAM modified flat surfaces prepared for the atomic force microscopy (AFM) measurement; (i) washing the Si substrate; (ii) sputtering the ZnO layer (~ 100 nm); (iii) sputtering the Au layer (~89 nm); (iv) modifying the MPC-SH SAM. (b) AFM image of Au/ZnO/Si substrate (before MPC-SH modification) and (c) AFM image of MPC-SH/Au/ZnO/Si substrate (after MPC-SH modification).