

Electronic Supplementary Information for

Facile fabrication of wafer-scale, micro-spacing and high-aspect-ratio silicon microwire arrays

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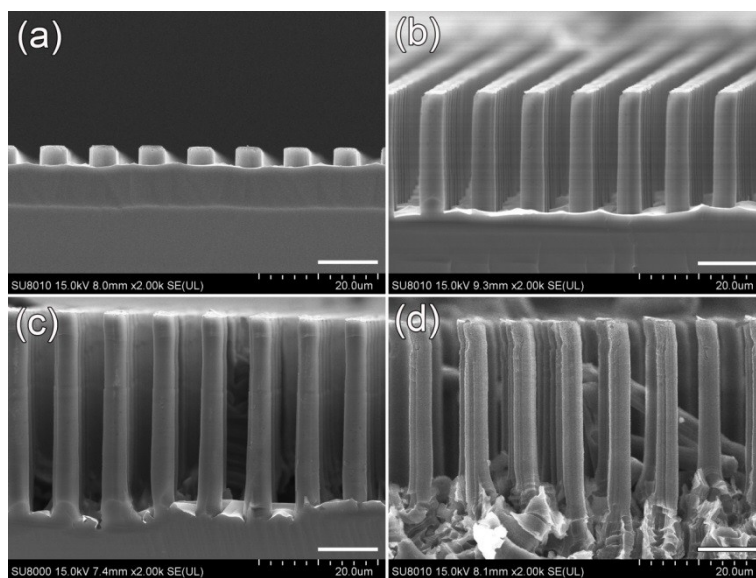


Fig. S1. Typical cross-sectional SEM images of the as-etched Si produced with the catalyst of 30/3 nm Au/Ti film. The etching durations of (a–d) are 1, 4, 8 and 10 h, respectively. The etching temperature is 30 °C. The H₂O₂ (HF) concentration is 0.2 (8.0) mol/L. Scale bar is 10 μm in all figures.

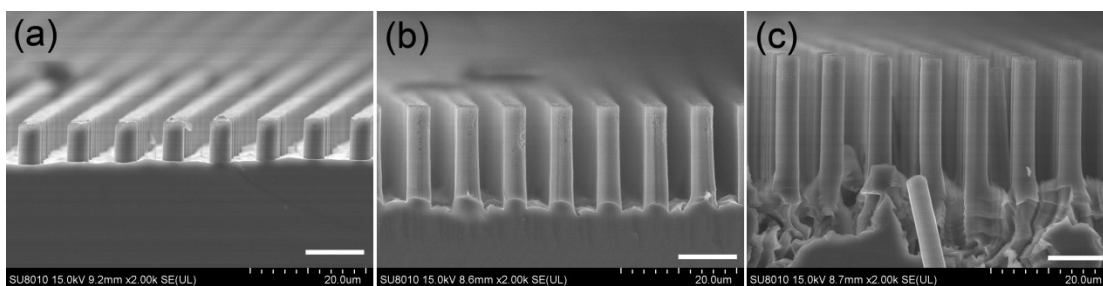


Fig. S2. Typical cross-sectional SEM images of the as-etched Si produced with the catalyst of 30/3 nm Au/Ti film. The H_2O_2 concentrations of (a-c) are 0.2, 0.4 and 0.6 mol/L, respectively. The etching temperature is 30 °C. The HF concentration is 8 mol/L. The etching duration is 2 h. Scale bar is 10 μm in all figures.

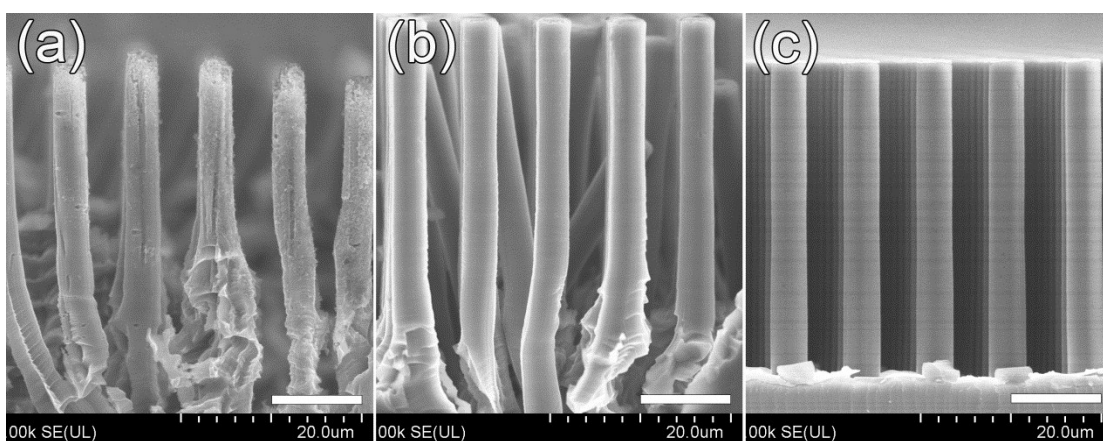


Fig. S3. Typical cross-sectional SEM images of the as-etched Si produced under different etching temperatures (50 °C, 30 °C and 8 °C). The metal catalyst is 40/5 nm Au/Ti. The etching duration is 12 h. H_2O_2 (HF) concentration is 0.2 (8.0) mol/L. Scale bar is 10 μm in all figures.

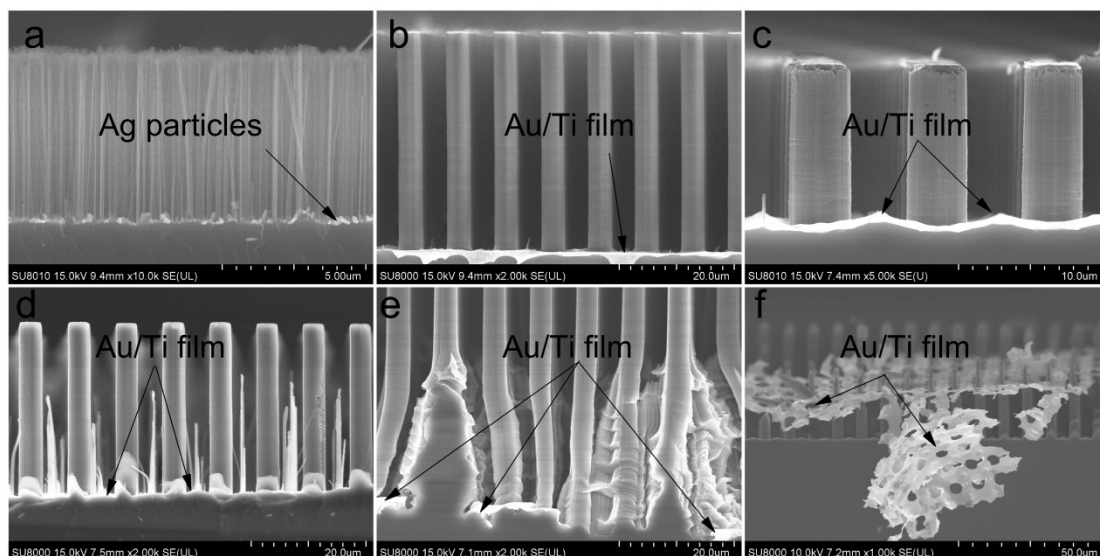


Fig. S4. Typical morphologies of the as-etched Si with residual metal catalyst corresponding to Models 1–6. The etching time of (a–f) is 20 min, 22 h, 4 h, 18 h, 24 h and 12 h, respectively. The H_2O_2 concentration of (a–e) and (f) is 0.2 mol/L and 0.8 mol/L, respectively. The HF concentration of (a) and (b–f) is 5.0 mol/L and 8.0 mol/L, respectively. The metal catalysts of (a), (b, e, f) and (c, d) are Ag particles obtained by electroless chemical deposition, 40/5 nm Au/Ti films and 30/5 nm Au/Ti films, respectively. The etching temperature of (a), (c) and (b, d, e, f) is 15 °C, 30 °C and 8 °C, respectively.