

Supporting Information

Nanowire Arrays with Controlled Structure Profiles for Maximizing Optical Collection Efficiency

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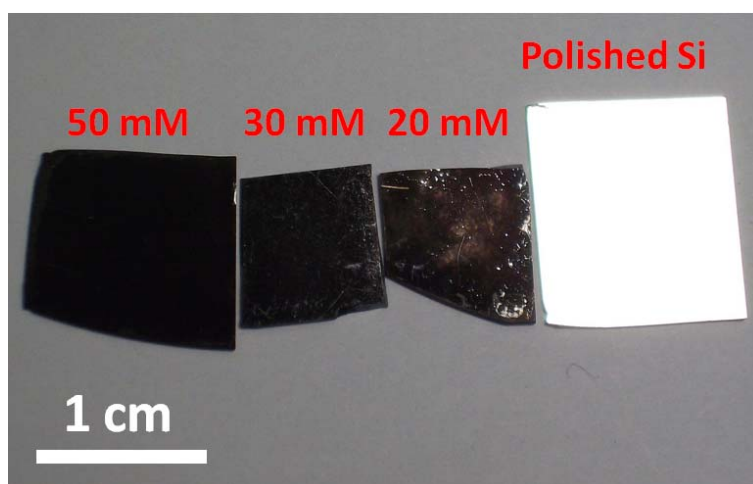


Figure S1 The photographs of the large-area samples with polished surfaces and the NWAs prepared with the AgNO_3 concentrations of 20 mM, 30 mM and 50 mM.

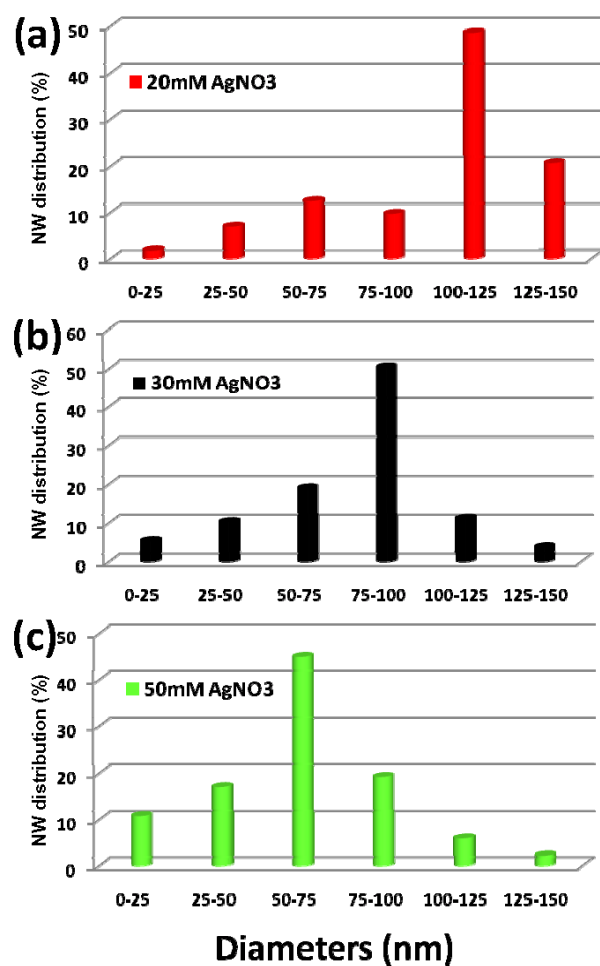


Figure S2 The diameter distributions of nanowires etched with various Ag concentrations. The statistics from the three samples are obtained within the area of $10 \mu\text{m}^2$ in the top-view SEM images.

Table S1. n and k values in every representative layer of the Si NWA samples extracted from RCWA simulated reflectance. The listed values are those at 810 nm. Layer I: the air/NWA transition layer; Layer II: the middle NWA layer; Layer III: the NWA/substrate transition layer.

AgNO ₃ Concentrations	Representative Layers	Thickness (μm)	n	k
20 mM	Layer I	1	2.38	0.00423
	Layer II	0.25	2.90	0.00585
	Layer III	0.06	3.43	0.00747
30 mM	Layer I	1.2	1.68	0.00208
	Layer II	1.01	2.55	0.00477
	Layer III	0.1	3.43	0.00747
50 mM	Layer I	3.72	1.49	0.00149
	Layer II	1.1	2.46	0.00448
	Layer III	0.65	3.50	0.00747

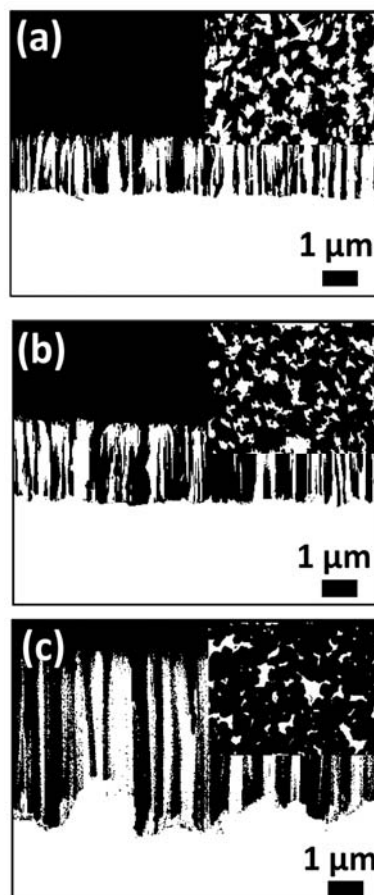


Figure S3 Cross-sectional and top-view SEM images with maximized contrast difference of the NWAs fabricated with (a) 20 mM, (b) 30 mM , and (c) 50 mM AgNO₃. FF's of the NWAs are estimated by the ratios of the white-pixel numbers to the total pixel numbers using image software. The FF's at the air/NWAs interfaces were obtained by the top-view images shown in the insets of Fig. S3, while those below the air/NWAs interfaces were determined by the cross-sectional images.

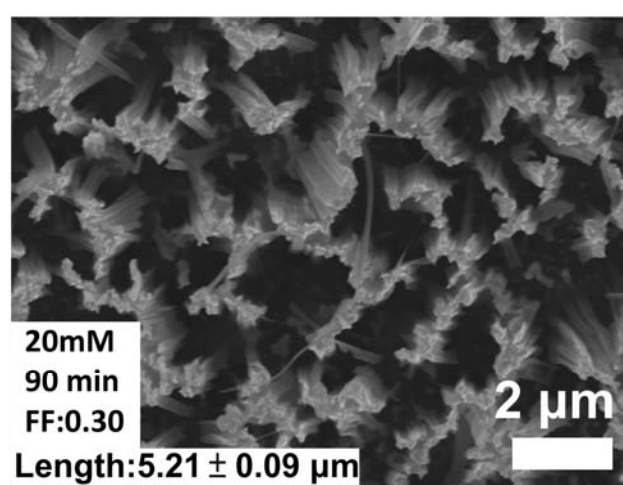


Figure S4 The top-view SEM image of Si NWA layers fabricated by 90 minutes in 20 mM AgNO₃ solution.