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Supporting Information

A continuous process for Si nanowires with prescribed lengths

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Supporting Information S1

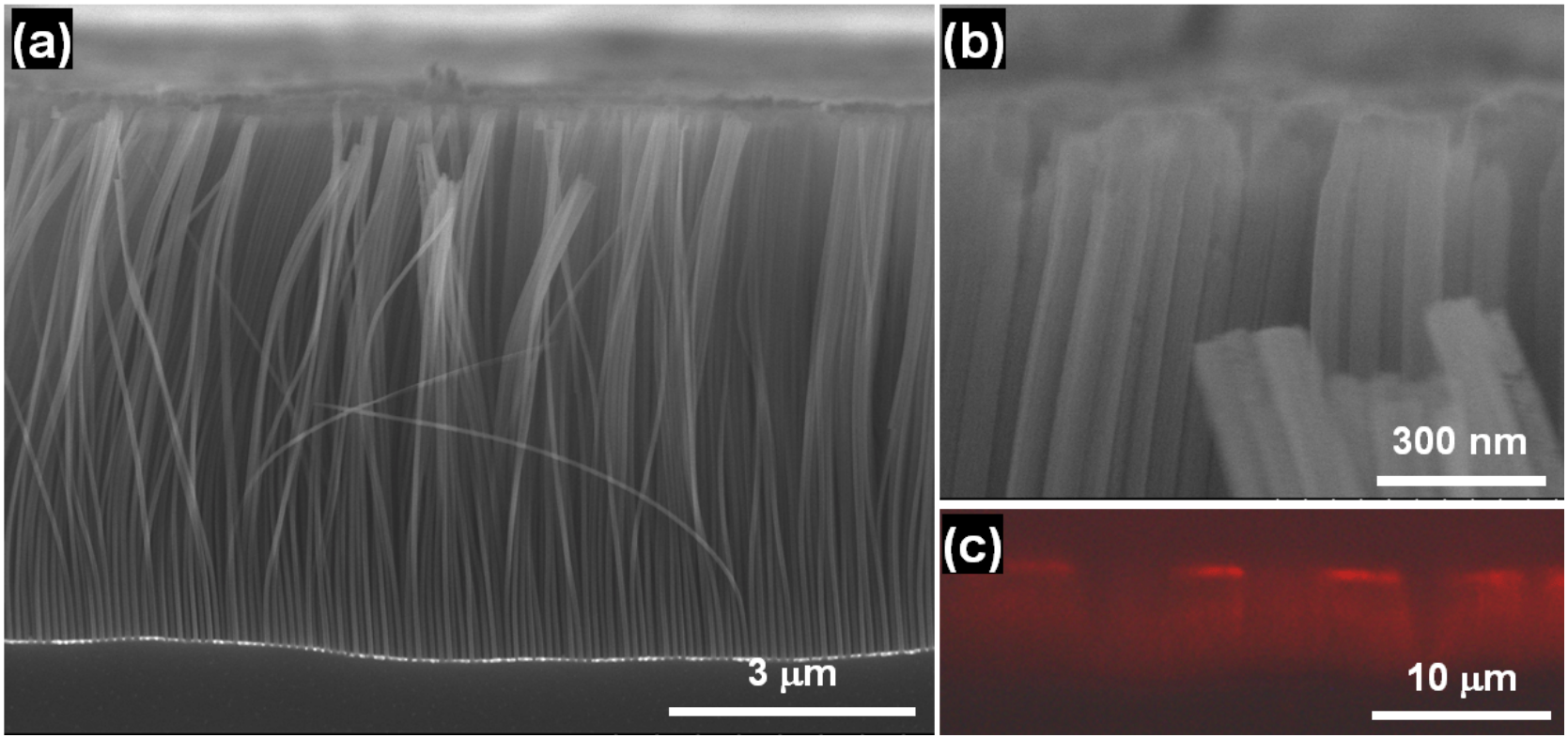

Fig. S1. (a) SEM micrograph of [100] SiNW arrays formed by applying anodic potential pulses (U_{ano} = 5 V, τ_{ano} = 0.2 s, and τ_{int} = 3 s) between the silicon substrate (rather than the gold mesh) and the platinum counter electrode during metal-assisted chemical etching of Si(100) wafer. (b) a magnified SEM image of the top-part of SiNWs, showing porous nanowire morphology. Anodic potential pulses with a high pulse amplitude (U_{ano} = 5 V) result in severe porosification of the entire surface of SiNWs without forming any porosity patterns along the wire axes. It is well established that porous silicon can exhibit visible photoluminescence due to the deep quantum confinement in nanometer-sized silicon crystallites. We were able to confirm the porous nanowire morphology by fluorescence microscopy. (c) Fluorescence image of SiNW arrays (excitation: 100 W Hg lamp with a 330-385 nm band-pass filter).

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Supporting Information S2

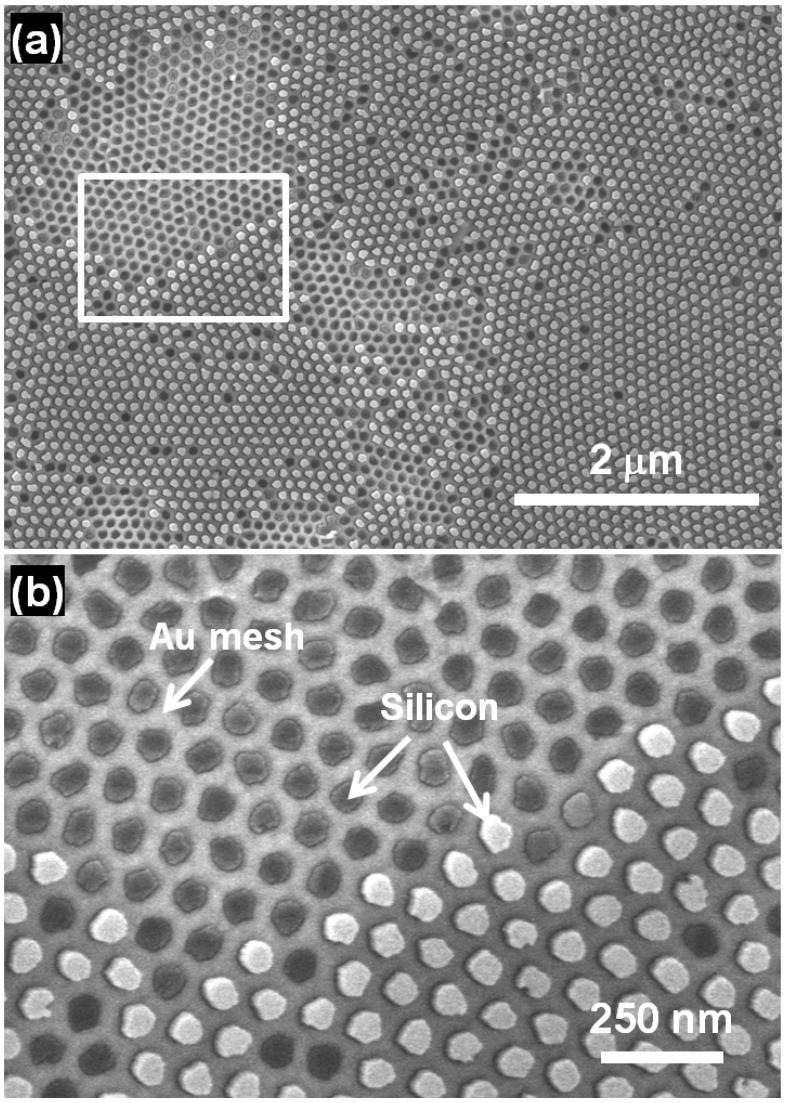

Fig. S2. Surface SEM micrographs of gold mesh-loaded silicon wafer after separation of SiNWs from its surface by ultrasonic treatment; (a) a low magnification image, (b) a magnified image of the area marked with a white rectangle in (a). The present micrographs show that the original structure of gold mesh is intact even after the ultrasonic treatment for nanowire separation.