

Supporting Information

Supercritical Fluid-Solid Growth of Single Crystalline Silicon Nanowires:

An Example of Metal-Free Growth in an Organic Solvent

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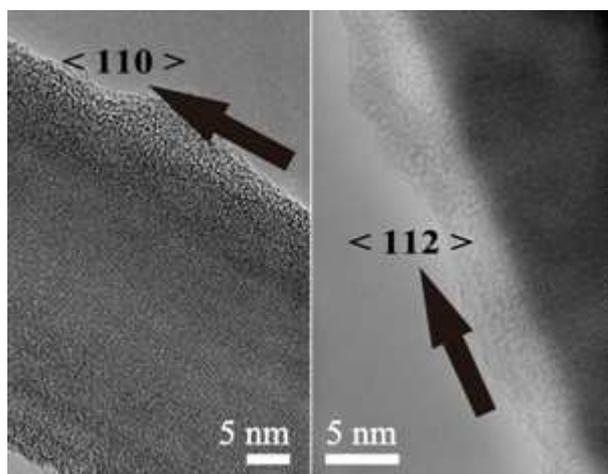


Figure S1. TEM images of single-crystal Si nanowires with (a) <110> and (b) <112> growth direction, respectively.

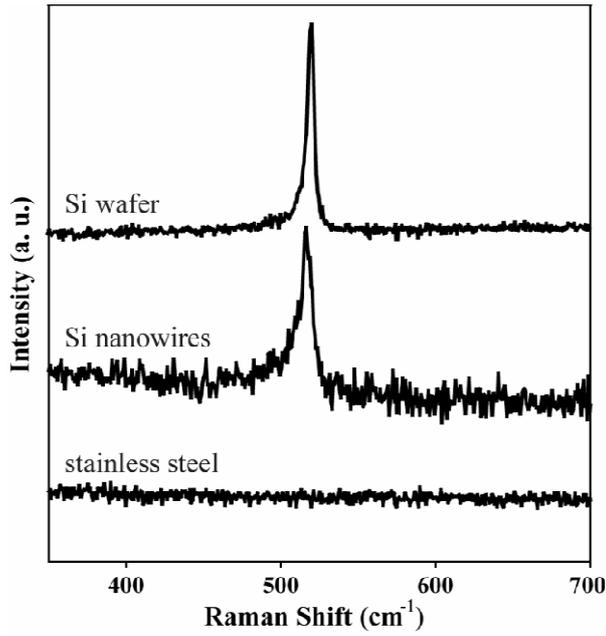


Figure S2. Raman spectrum of a crystalline Si wafer, Si nanowires on a stainless steel, and a stainless steel. The narrow symmetrical peak indicative of the Si substrate at 520 cm⁻¹. In comparison, the Raman peak of Si nanowires at 518 cm⁻¹ is due to the thin oxidation layer.

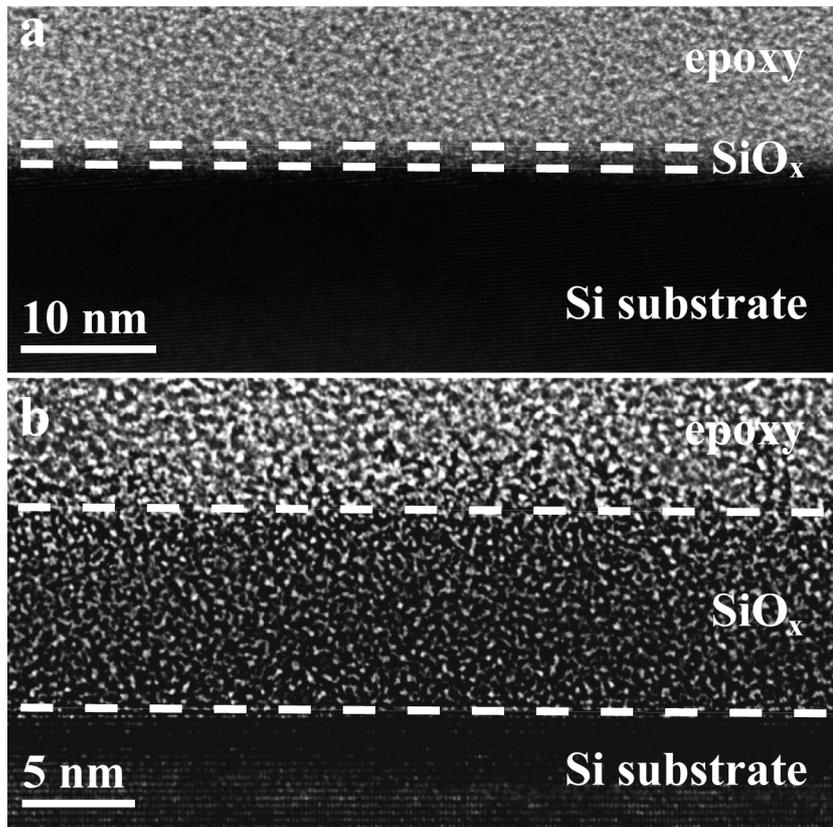


Figure S3 Cross-section TEM image of (a) a Si substrate etched with boiling ultrapure water for 30 min, showing a 1 nm SiO_x layer covered on the substrate and (b) The silicon substrate followed by

annealing at 1100°C for 30 min in Ar ambient, showing the SiO_x layer covered on the substrate increase to 9 nm (b).

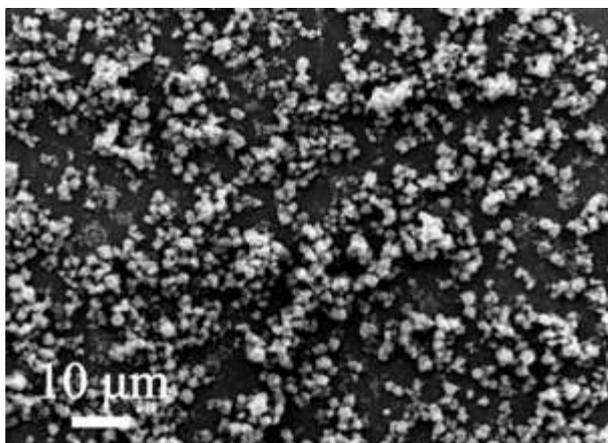


Figure S4. SEM image shows that Si nanowires cannot grow on a native-oxide layer-covered silicon substrate.

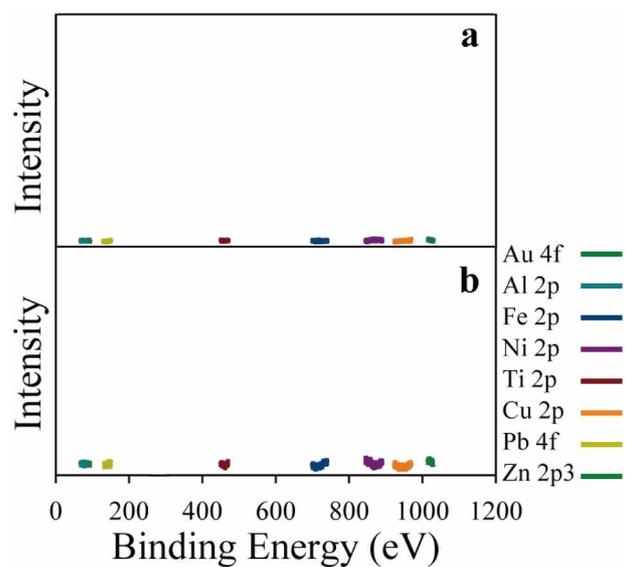


Figure S5. XPS analysis of the silicon substrate covered with reactive SiO_x film (a) before and (b) after nanowire reaction.

Table S1. XPS analysis result of atomic percentage of metal signals of a Si substrate

Atomic (%)	Au	Zn	Pb	Cu	Ti	Ni	Fe	Al
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Before
reaction <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1

After
reaction <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1 <0.1

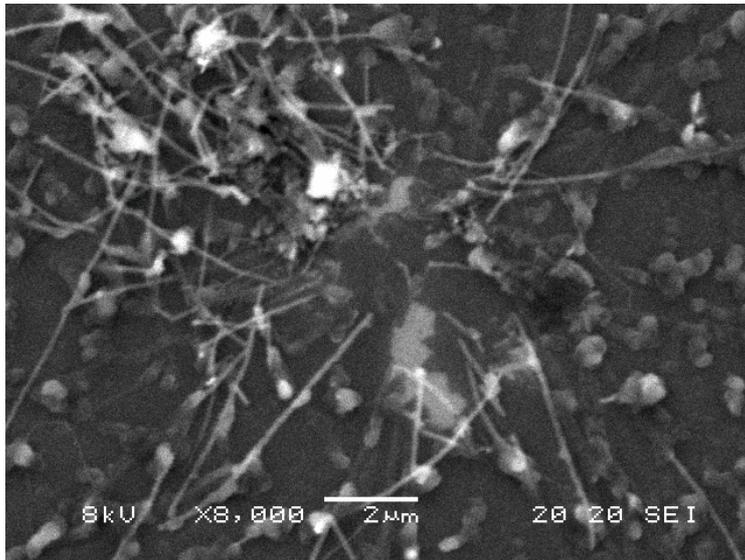


Figure S6. SEM image shows that Si nanowires grow outward from the SiO_x-film covered Si substrate