Supporting Information

Synthesis of Morphology-Improved Single-Crystalline Iron Silicide Nanowires with Enhanced Physical Characteristics

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S1. Experimental preparation flow chart

The flow chart indicates the details of synthesizing the β-$FeSi_2$ nanowires.

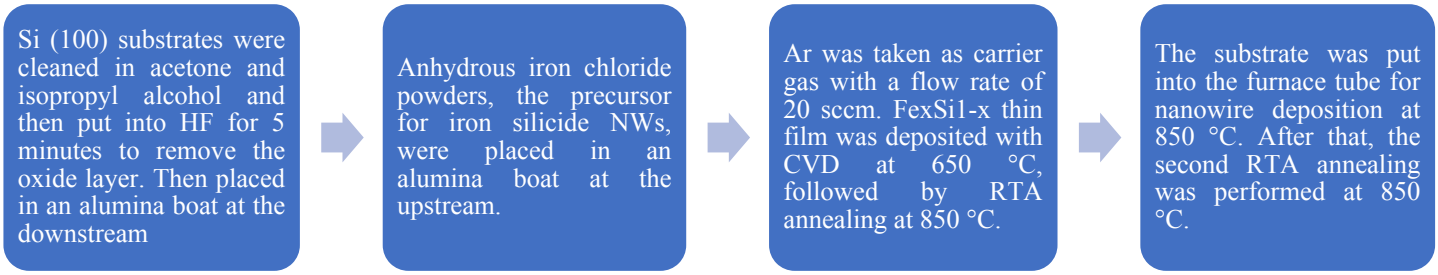

Figure S1. The preparation flow chart of the experiment.

S2. XRD patterns of the nanowires after the second RTA annealing

The peaks of FeSi disappeared, while the peaks of β-$FeSi_2$ remained, demonstrating that all the FeSi nanowires were transformed into β-$FeSi_2$ nanowires after the second RTA annealing.

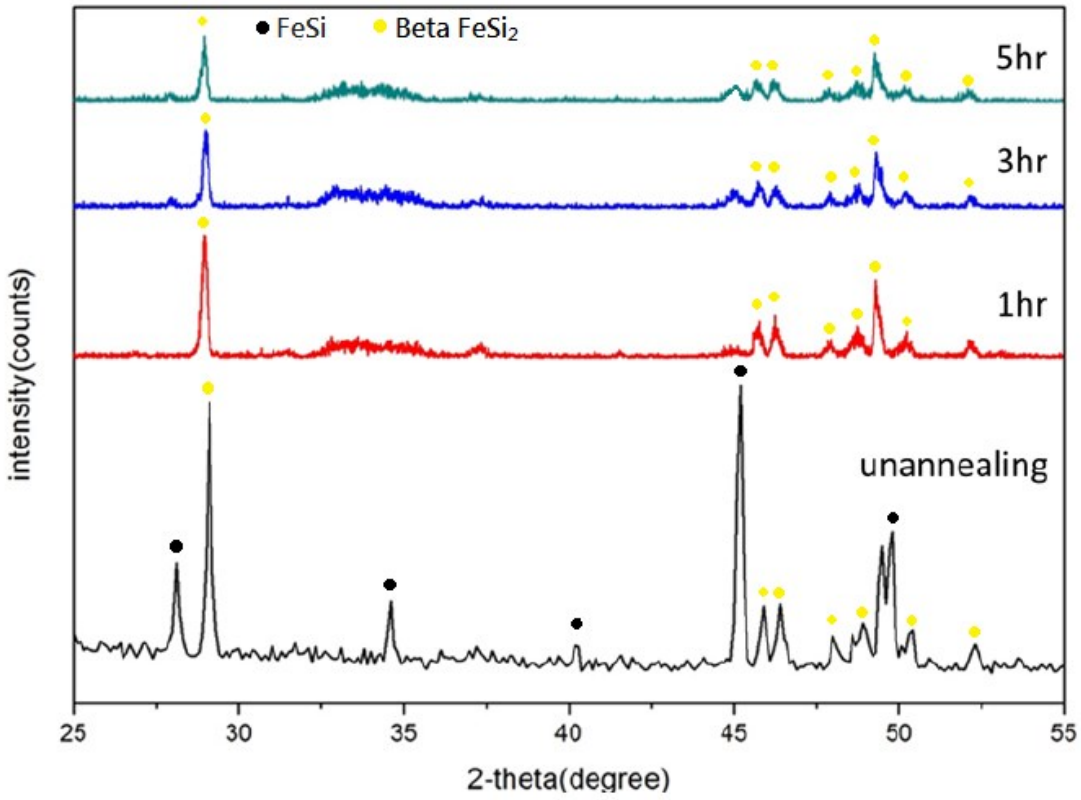

Figure S2. X-ray diffraction patterns of the nanowires which went through the second RTA annealing process in 1, 3, 5 hrs

S3. SEM images of the β-$FeSi_2$ nanowires with different annealing times

Based on XRD patterns of Figure S2, the peaks of β-$FeSi_2$ nanowires became weaker with longer annealing time; if the annealing process was too long, the nanowires would be clumped and the crystallinity decreased. Also, scanning electron microscopy studies show the clumping phenomenon clearly in Figure S3(a)-(c).

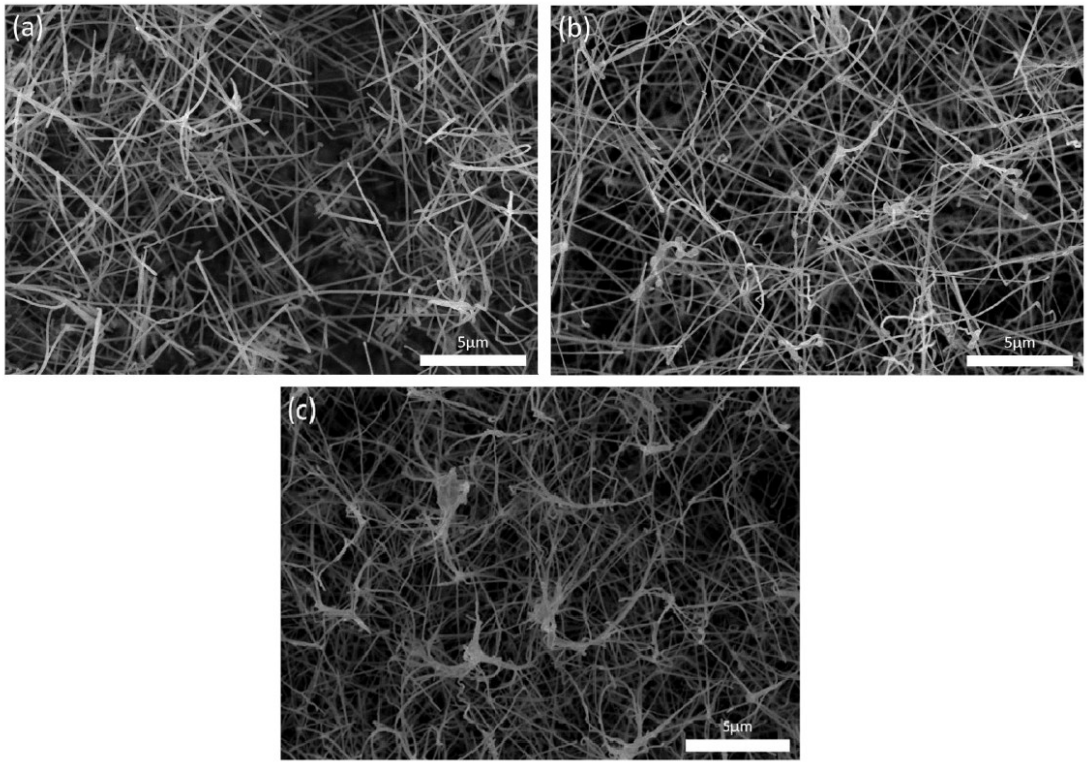

Figure S3. SEM images of the β-$FeSi_2$ nanowires with different annealing times of (a)1 hr (b)3 hrs (c)5 hrs