

SUPPLEMENTARY INFORMATION

Gas-phase synthesis and growth mechanism of SiC/SiO₂ core–shell nanowires

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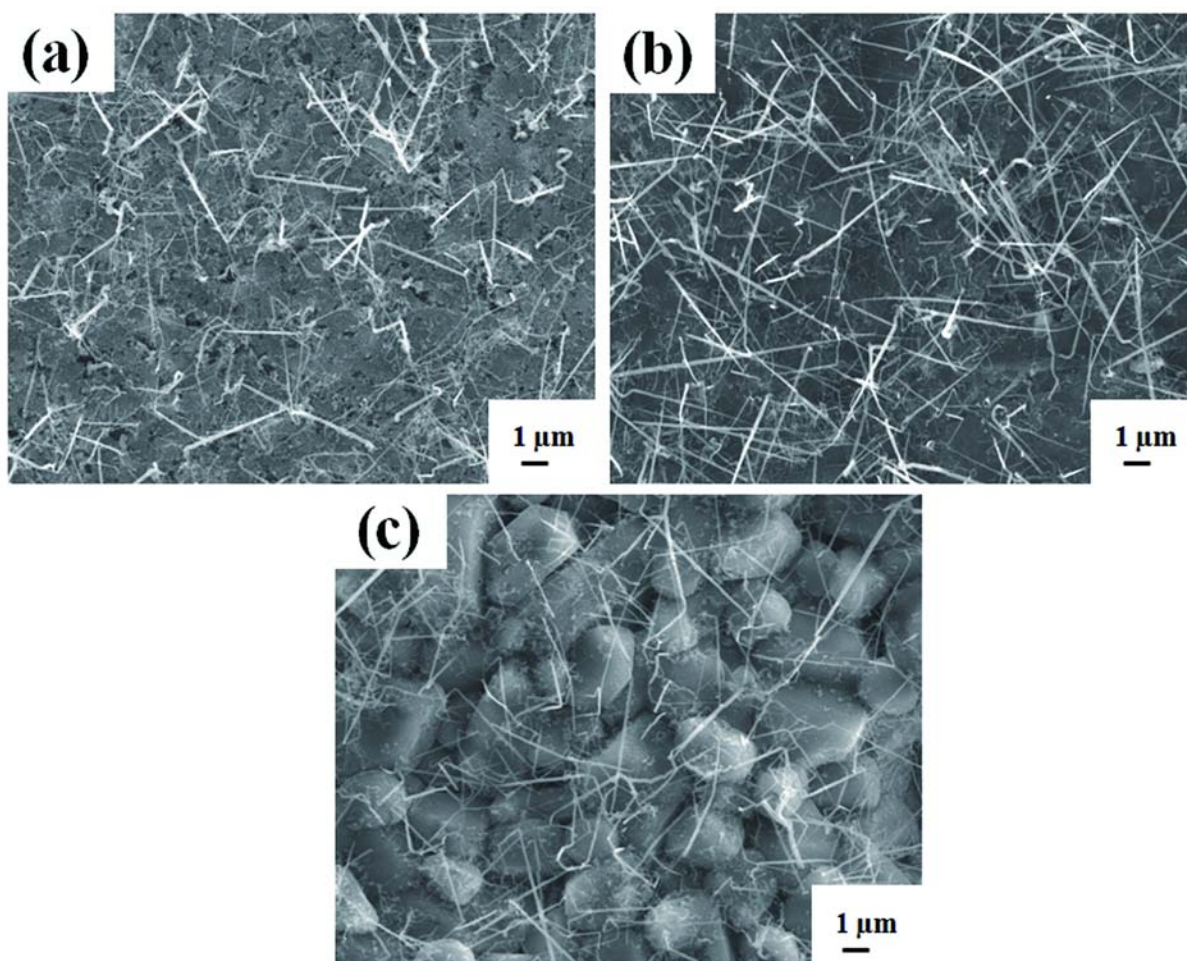


Figure S1. Typical SEM images of SiC/SiO₂ NWs grown on various substrates at a fixed O₂ flow rate of 3 sccm for a deposition time of 2 min. SiC/SiO₂ NWs were grown on (a) a silicon wafer, (b) graphite foil, and (c) an alumina plate. All SiC/SiO₂ NWs grew well on diverse substrates.

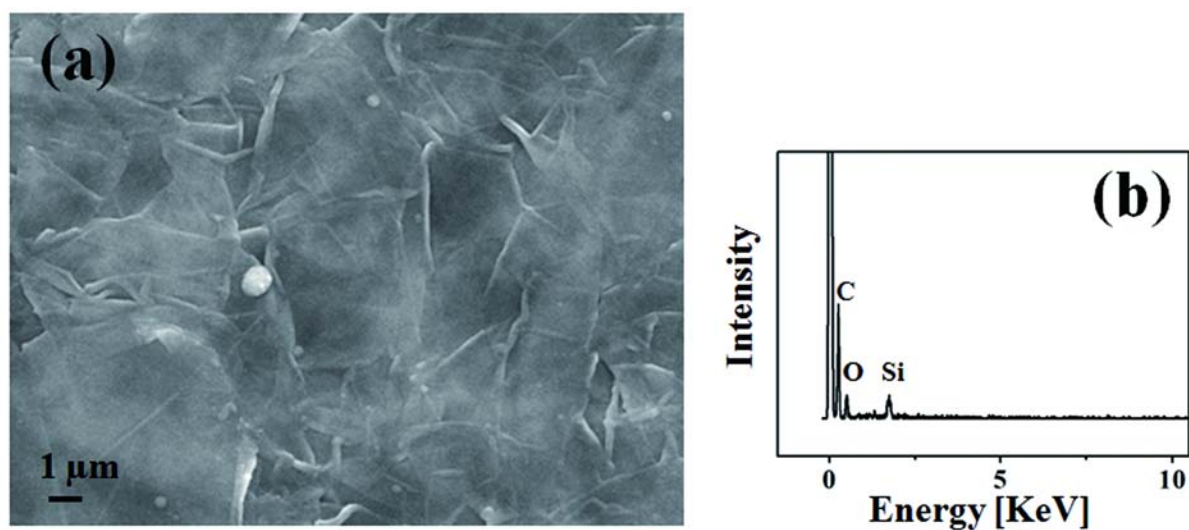


Figure S2. (a) Morphology of graphite foil after deposition when the hot zone temperature was 1020°C. Deposition was conducted at a fixed O_2 flow rate of 3 sccm and deposition time of 10 min. (b) EDS spectrum of the graphite foil after deposition. No SiC/SiO₂ NWs appear, and only SiO_x thin films were deposited on the substrate. This result indicates the importance of the separated regions for the gas-phase reactions.

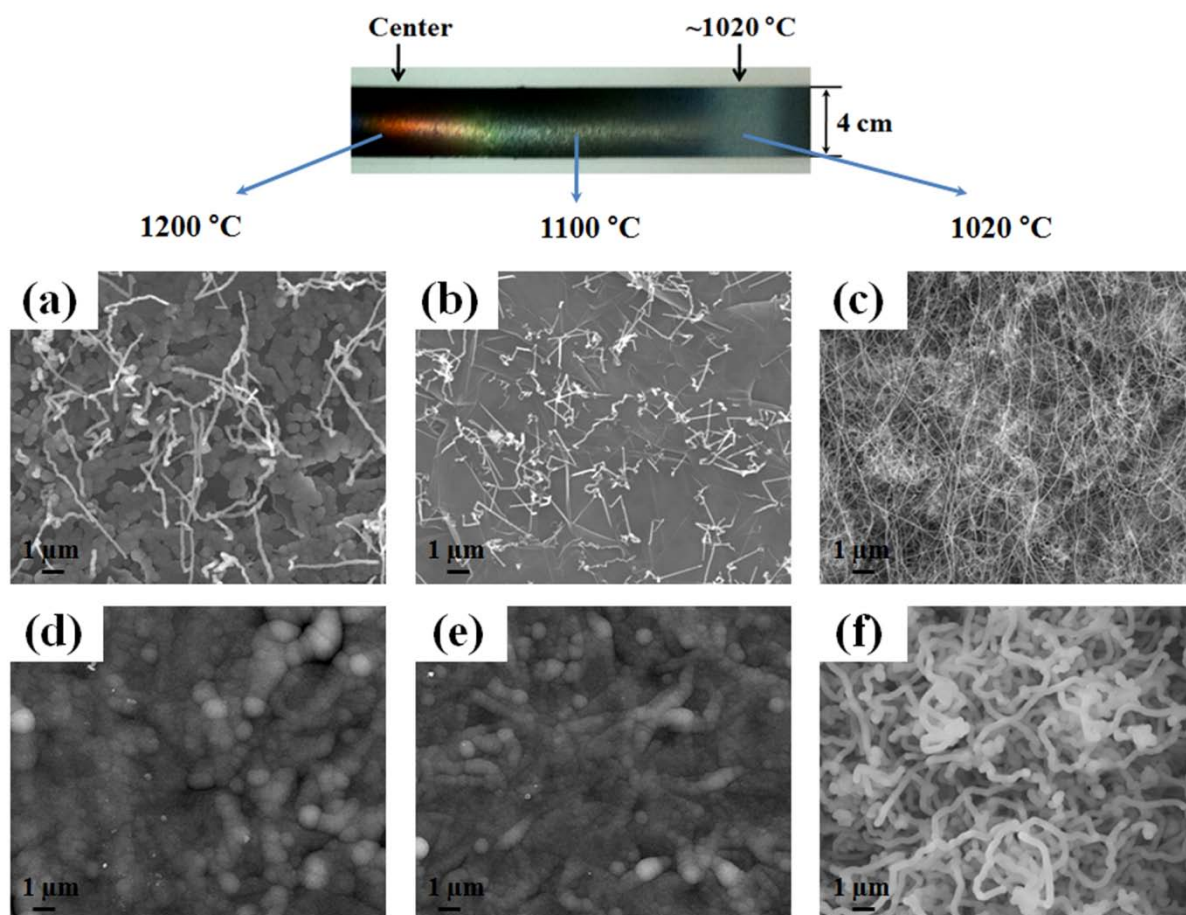


Figure S3. Variations in NW morphology at different regions in the temperature distribution. All NWs were grown on graphite foils with a growth time of 10 min. NWs in (a)–(c) were grown with 3 sccm O₂, whereas (d)–(f) were grown with 10 sccm O₂. SiC/SiO₂ NWs grew densely in the region around 1020 °C. (d) and (e) show thick SiO₂ films deposited on the substrate.