

Supplementary Information

In-situ Synchrotron X-ray Diffraction Study of Coherently Embedded Silver Nanostructures Growth in Silicon

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Figure S1:

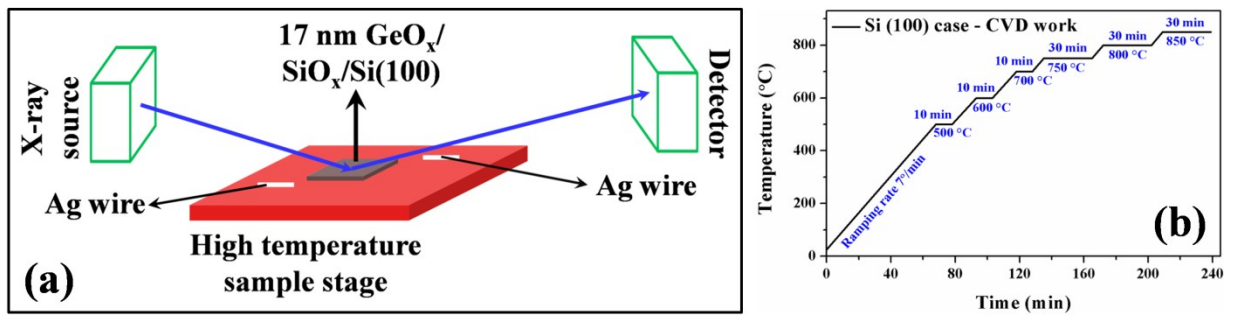


Figure S1: (a) Schematic representation for in-situ annealing and cooling of 17 nm GeO_x/SiO_x/Si(100) sample with two silver wires kept close to the sample (*CVD case*). (b) Schematic diagram of the experimental procedure followed during annealing in *CVD case*.

Figure S2:

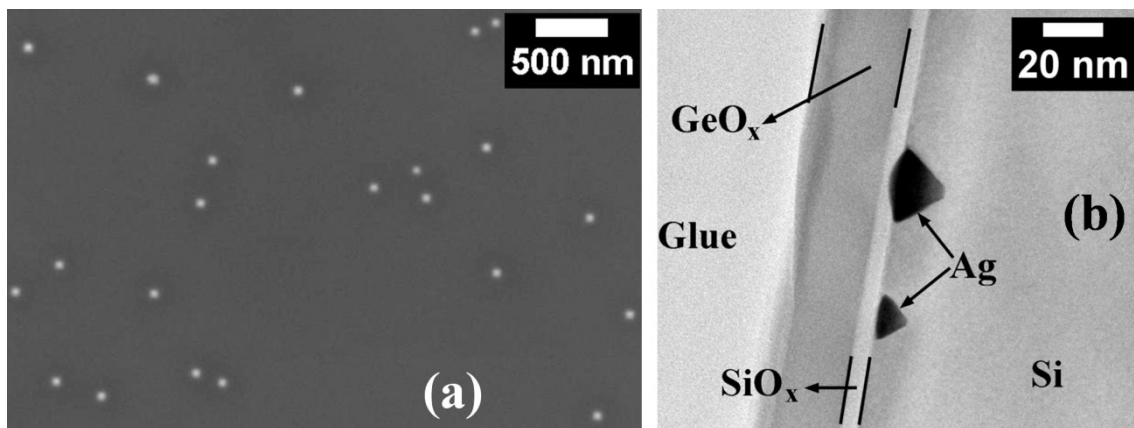


Figure S2: (a) and (b) High magnification SEM image and cross-sectional TEM image of the sample (*CVD case*) after in-situ annealing, confirming the formation of endotaxial silver nanostructures.

Figure S3:

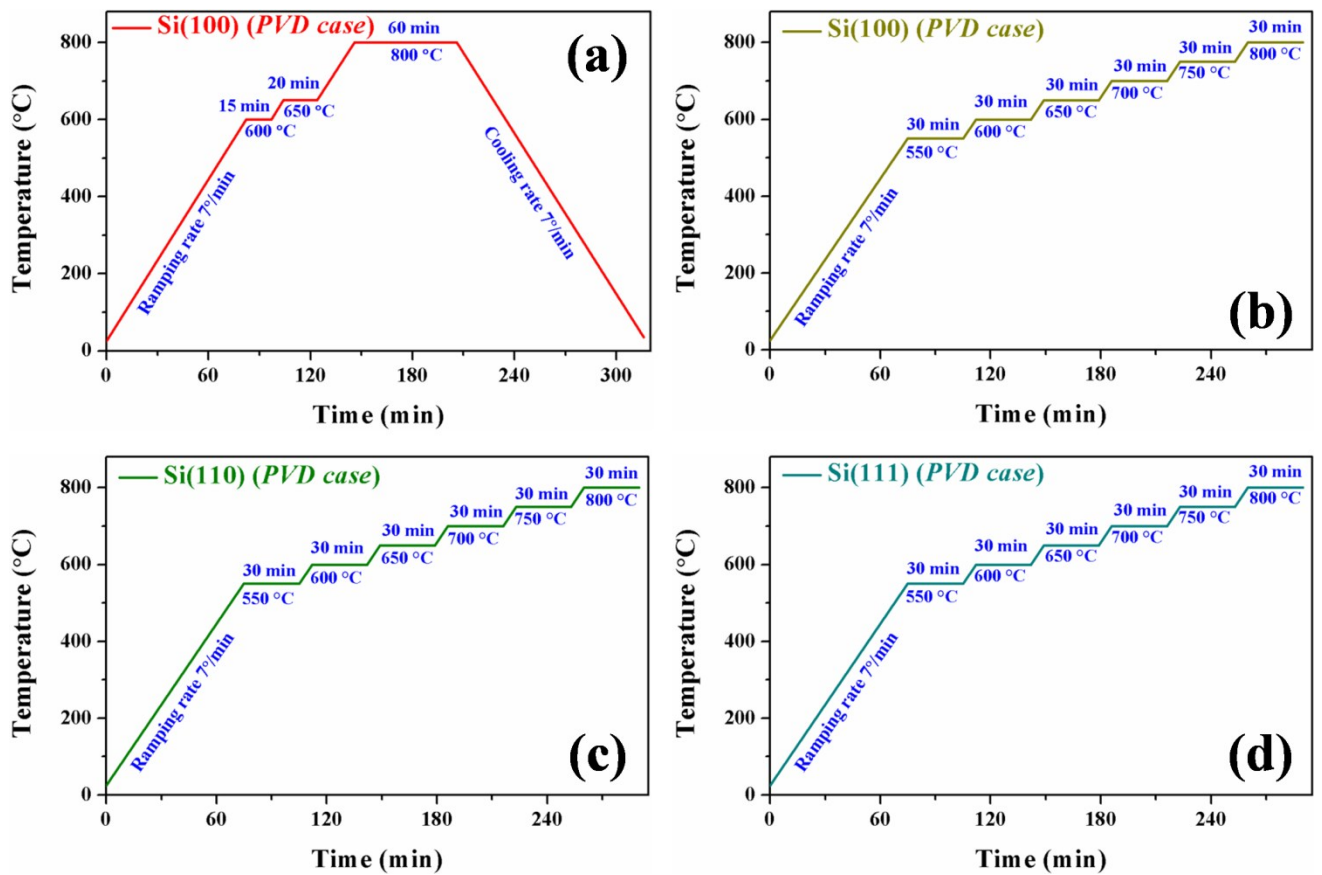


Figure S3: Schematic diagrams of the experimental procedures (a) followed during heating and cooling of 2 nm Ag/17 nm GeO_x/SiO_x/Si(100) sample; schematics of experiments followed during in-situ annealing of (b) 2 nm Ag/17 nm GeO_x/SiO_x/Si(100), (c) 18 ML Ag/17 nm GeO_x/SiO_x/Si(110) and (d) 2 nm Ag/17 nm GeO_x/SiO_x/Si(111) samples.

Figure S4:

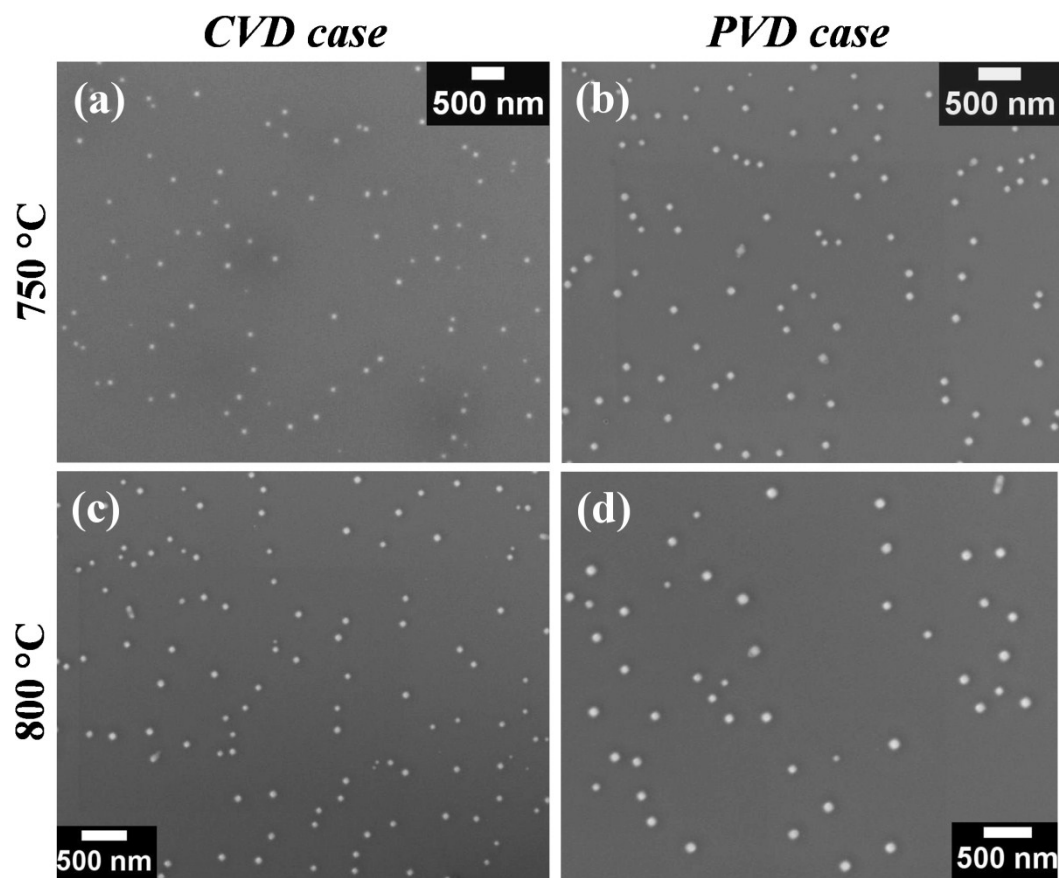


Figure S4: Typical SEM images of endotaxial Ag nanostructures formed at (a) 750 °C and (c) 800 °C (*CVD case*) and (b) 750 °C and (d) 800 °C (*PVD case*).

Figure S5:

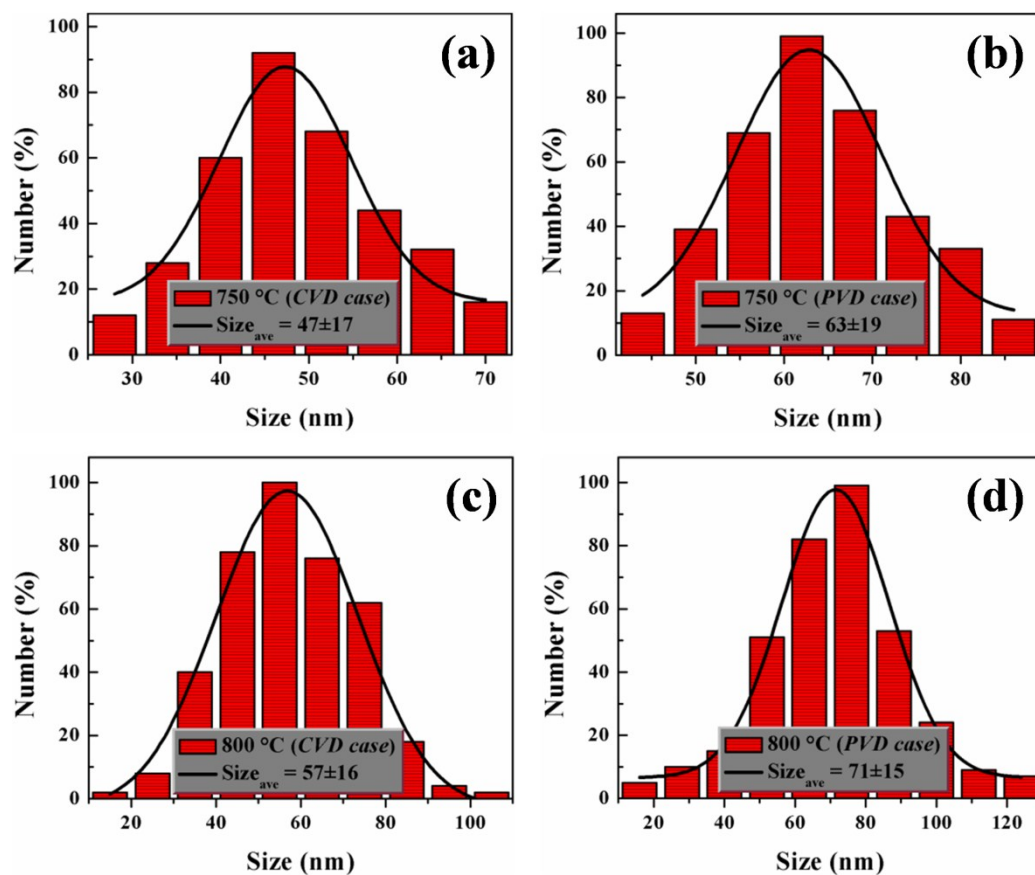


Figure S5: Size distribution of endotaxial Ag nanostructures formed at (a) 750 °C and (c) 800 °C (*CVD case*) and (b) 750 °C and (d) 800 °C (*PVD case*).

Figure S6:

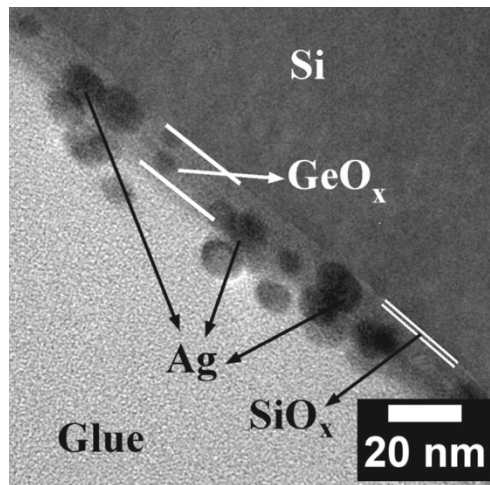


Figure S6: Low magnification cross-sectional TEM image of 2 nm Ag/17 nm GeO_x/SiO_x/Si(100) annealed at 600 °C in air for 30 min.