Supporting Information for

Direct Growth of Graphene on Silicon by Metal-Free Chemical Vapor Deposition

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Figures

![Fig. S1 Sketch of the chemical vapor deposition (CVD) chamber. A well sealed cold-wall CVD chamber with a dedicated built-in heating platform was used for graphene growth](image)

Fig. S1 Sketch of the chemical vapor deposition (CVD) chamber. A well sealed cold-wall CVD chamber with a dedicated built-in heating platform was used for graphene growth
Fig. S2 XPS full scan of the as-grown sample

Fig. S3 SEM image of silicon surface after CVD growth at 950 °C. The flat surface of silicon has been destroyed
**Fig. S4** Si 2p XPS line scan spectra of graphene growth at 935 °C. The interval between every point on the line is 40 μm

**Fig. S5** Raman mapping of the intensity ratio ($I_{2D}/I_G$) for the sample growth at 905 °C. The laser-spot size was about 2 μm with a 473 nm wavelength. The Raman mapping of $I_{2D}/I_G$ over large areas displays uniform distribution (mainly range from 0.9-1.4), implying that the sample is mainly composed of single layer or bilayer graphene domains, consistent with the AFM characterizations.