

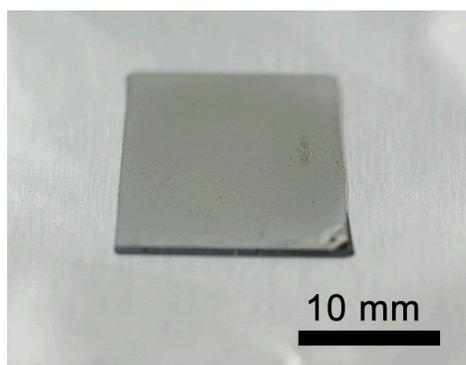
Electronic Supplementary Information

**Investigation of Non-Segregation Graphene Growth on Ni via Isotope-Labeled Alcohol**

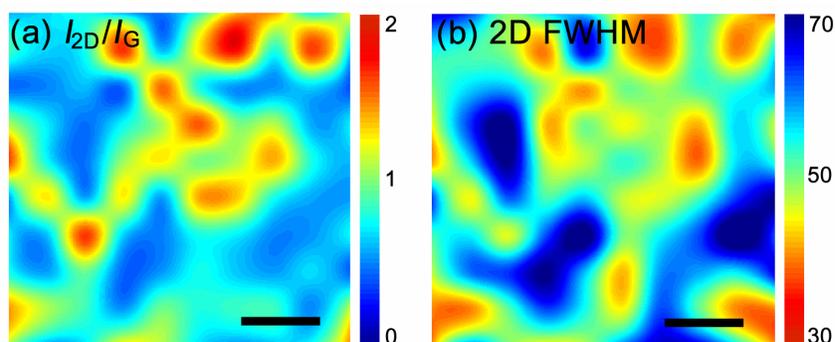
**Catalytic Chemical Vapor Deposition**

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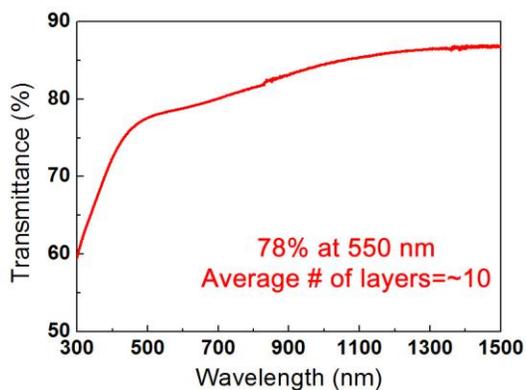
**SUPPORTING FIGURES**



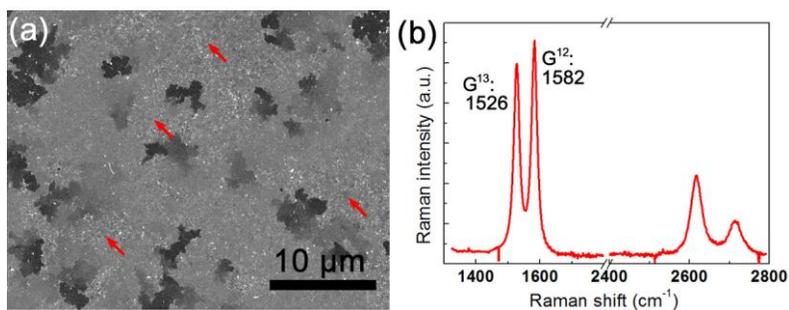
**Fig. S1.** A 17 mm×17 mm graphene film grown on a thermally evaporated Ni (250 nm) film atop a SiO<sub>2</sub> (50 nm)/Si substrate.



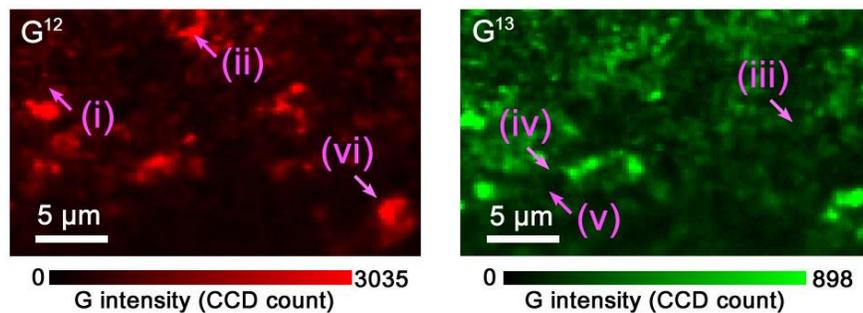
**Fig. S2.** Low-definition (10 μm resolution) Raman scanning maps of an ethanol-derived graphene film transferred onto a Si/SiO<sub>2</sub> substrate. (a) and (b) show  $I_{2D}/I_G$  and 2D-band FWHM, respectively. Scale bars are 20 μm.



**Fig. S3.** Optical transmittance of a graphene film transferred onto a quartz substrate. CVD growth time for this sample was 5 min.



**Fig. S4.** (a) SEM image of as-grown graphene on Ni surface with a growth time of 10 s <sup>12</sup>C<sub>2</sub>H<sub>5</sub>OH followed by 10 s <sup>13</sup>C<sub>2</sub>H<sub>5</sub>OH. Red arrows indicate areas of bare Ni surface. (b) A representative Raman spectrum of the sample in (a) after it was transferred to a SiO<sub>2</sub>/Si substrate.



**Fig. S5.** Spot positions for Raman spectra (i)-(vi) shown in Figure 5c.