## **Synthesis and Characterization of Atomically**

## Flat Methyl-Terminated Ge(111) Surfaces

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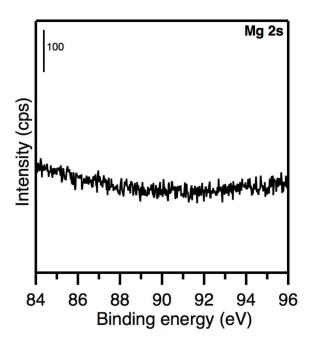
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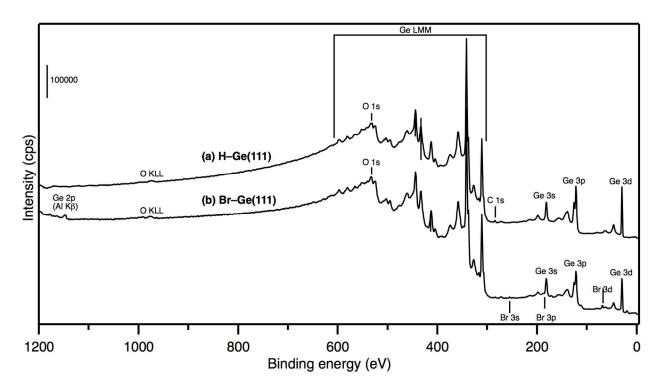
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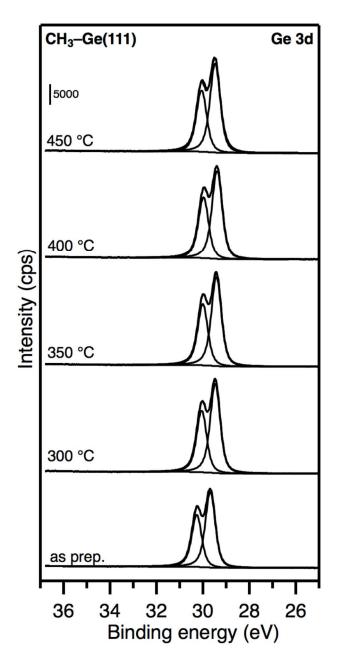
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**Figure S1.** High-resolution XP spectrum of the Mg 2s region of a  $CH_3$ –Ge(111) surface. No Mg from the  $(CH_3)_2$ Mg used for methylation was detected after sonication of methylated surfaces in THF, methanol, and water.



**Figure S2.** XP survey spectra of (a) an H–Ge(111) surface and (b) a Br–Ge(111) surface. No contaminant elements were detected in either spectrum. Note that spectrum b was collected using a non-monochromatic Al X-ray source, leading to the small peak at 1147 eV from Al K $\beta$  excitation of Ge 2p photoelectrons.



**Figure S3.** High-resolution XP spectra of the Ge 3d photoelectron region of a  $CH_3$ –Ge(111) surface (bottom to top) as prepared and after sequential 60 min anneals in UHV at 300, 350, 400, and 450 °C. No significant shift of the Ge 2p peaks or oxidation was detected upon annealing.