Electronic Supplementary Information

High-Pressure Hydrogenation of Graphene: Towards Graphane

Hwee Ling Poh\textsuperscript{a}, Filip Šaněk\textsuperscript{b}, Zdeněk Sofer\textsuperscript{b}, Martin Pumera*\textsuperscript{a}

\textsuperscript{a} Division of Chemistry & Biological Chemistry, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore 637371, Singapore.; E-mail:pumera@ntu.edu.sg
\textsuperscript{b} Institute of Chemical Technology, Department of Inorganic Chemistry, 166 28 Prague 6, Czech Republic.
Figure S1. SEM micrographs of (A) G-H: [60 bar/220 °C], (B) G-H: [100 bar/200 °C], (C) G-H: [150 bar/220 °C], (D) G-H: [100 bar/350 °C], (E) G-H: [100 bar/500 °C] and (F) G-Ar: [100 bar/350 °C]. Scale bars (a) 10 μm, (b) 1 μm and (c) 100 nm.

Figure S2. TEM images of (A) G-H: [60 bar/220 °C], (B) G-H: [100 bar/200 °C], (C) G-H: [150 bar/220 °C], (D) G-H: [100 bar/350 °C], (E) G-H: [100 bar/500 °C] and (F) G-Ar: [100 bar/350 °C]. Scale bars (a) 200 nm, (b) 50 nm.
Figure S3. Survey XPS spectra of hydrogenated graphenes under (A) constant temperature of \(~220^\circ\text{C}\) and pressure of (a) 60, (b) 100 and (c) 150 bar and under (B) constant pressure of 100 bar and varying temperature of (a) 200, (b) 350 and (c) 500 \(\circ\text{C}\). Also shown XPS spectra of graphite oxide exfoliated in Ar atmosphere (d).
Figure S4. High-resolution XPS of hydrogenated graphene materials.