

Supporting Information

Mechanical properties of freestanding few-layer graphene/boron nitride/polymer heterostacks investigated with local and non-local techniques

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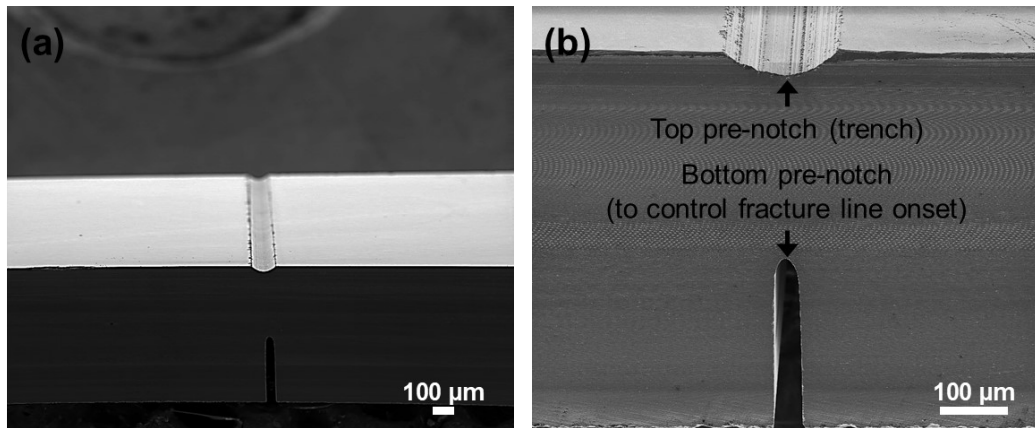


Figure S1. Representative SEM images of trenched substrates: (a) and (b) SEM images at different magnifications, 100X and 300X respectively, and the corresponding tilt angles of 70 and 85 degrees. Images show the double pre-notched Si substrate with a $\sim 200\ \mu\text{m}$ wide and $50\ \mu\text{m}$ deep trench used in all experiments.

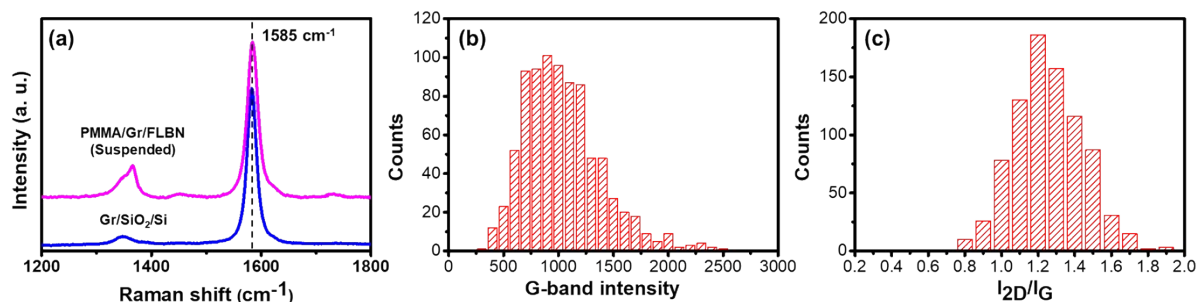


Figure S2. Raman spectra of Gr/SiO₂/Si and PMMA/Gr/FLBN suspended heterostacks. (a) G-band peak at 1585 cm⁻¹ is designated by “a black” dashed line. Histograms of (b) G-band intensity at 1585 cm⁻¹ and (c) I_{2D}/I_G ratio. The acquired data used are extracted from the Raman mapping spectral images (shown in Fig 2c,d of the main text) of Gr in suspended PMMA/Gr/FLBN heterostacks with a total of 841 points (“counts” on y-axis depict the number of points for the indicated range).

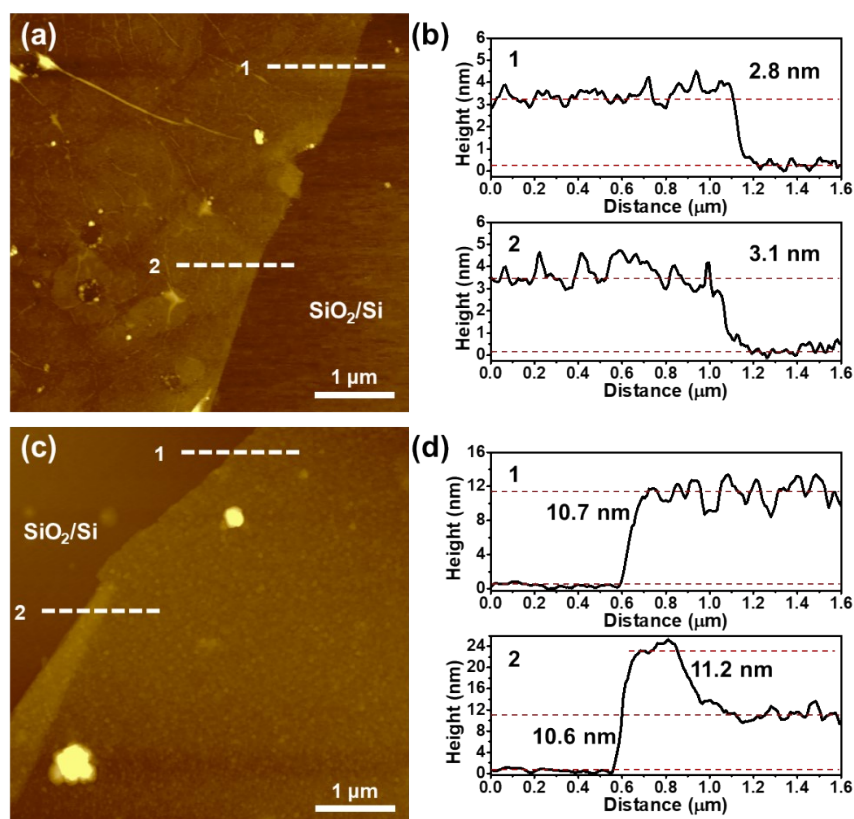


Figure S3. AFM height profiles of Gr and FLBN on SiO₂/Si substrate reference samples: (a), (c) AFM images and (b), (d) line profiles for Gr and FLBN, respectively. The AFM images show an area of 5 μm by 5 μm. The location of the line profiles is shown as white dashed lines (1 and 2) on the AFM images. Line 2 shows a folded edge, which is sometimes observed mostly at the perimeter of the sample.