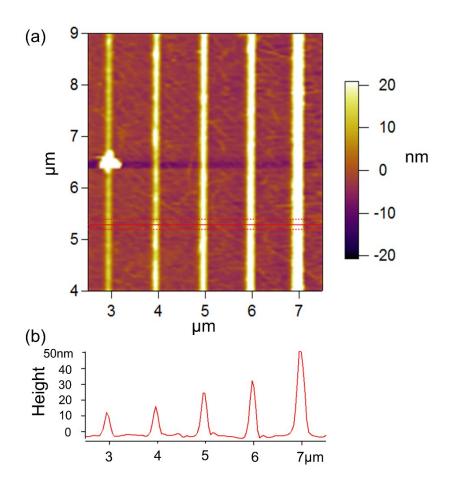


**Figure S1.** Representative Raman spectra of unpatterned CVD-grown graphene and TBN-patterned graphene. CVD-grown graphene (black) is largely monolayer with very small D-peak indicating largely defect free growth. The D-peak becomes more prominent in the circular patterned graphene (blue) which is approximately 450 nm wide and in the GNRs (red) which are approximately 250 nm in width.



**Figure S2.** (a) AFM topography image of PMMA nanowires desposited by the heated AFM tip at a scan speed of 400nm/s and at temperature of 260 °C, 265 °C, 270 °C, 275 °C and 280 °C from left to right. (b) Cross-sectional profile of PMMA nanowires with the leftmost one as narrow as 200nm.