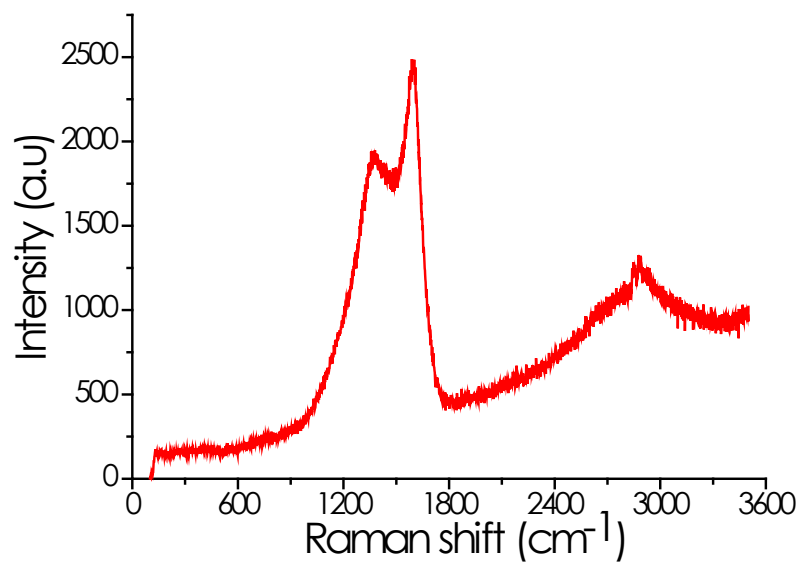
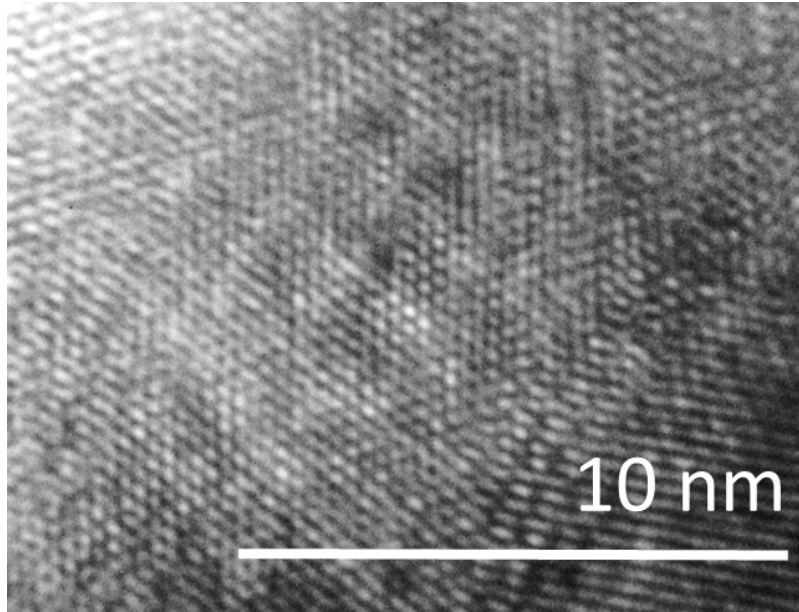


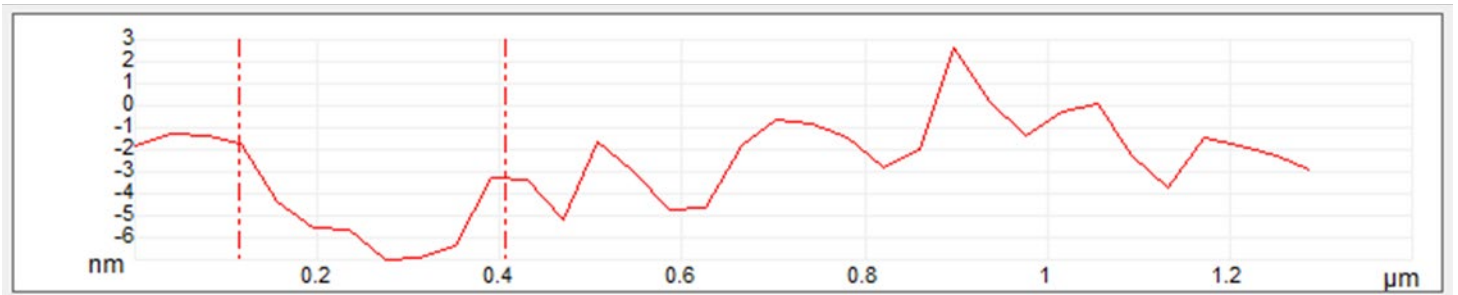
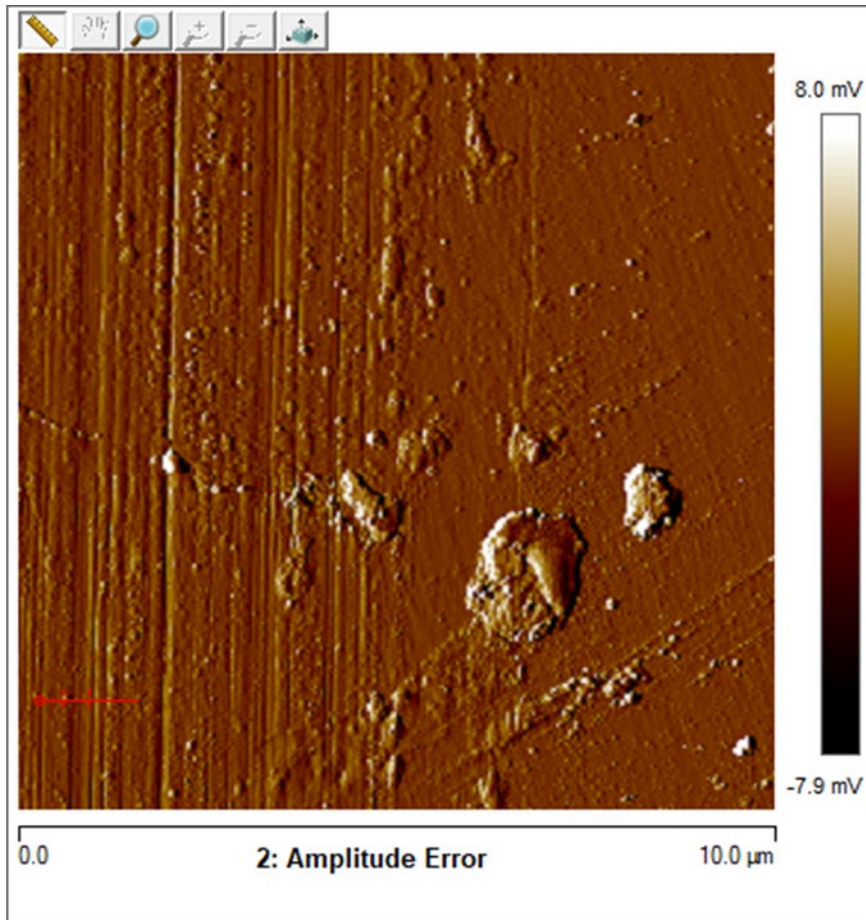
Supplementary information



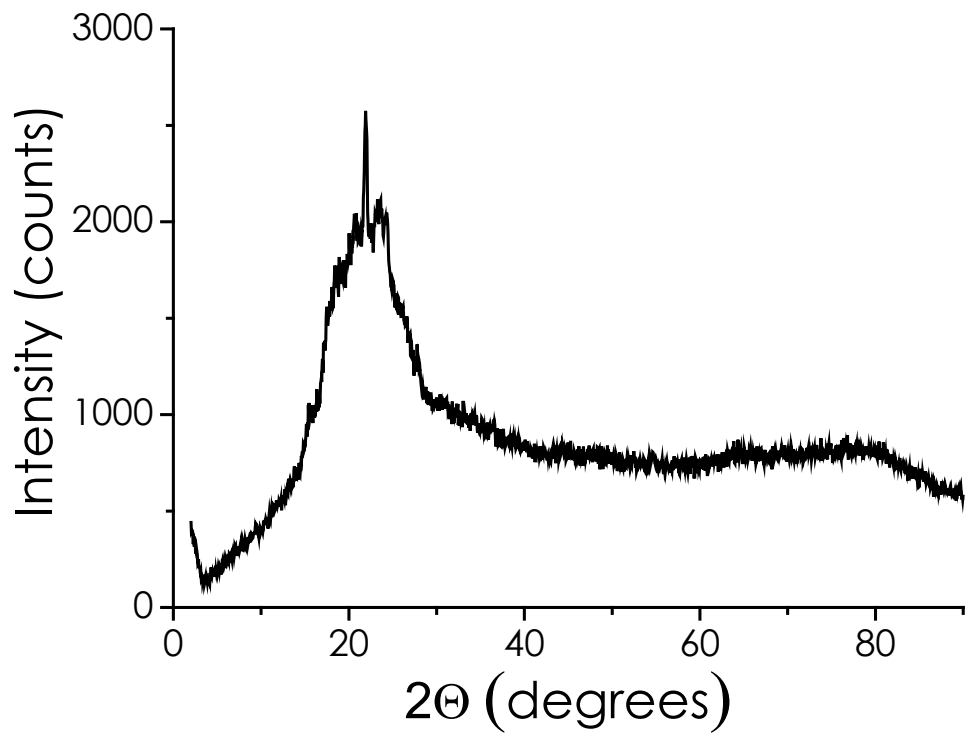
S.1. Raman graphene from polystyrene



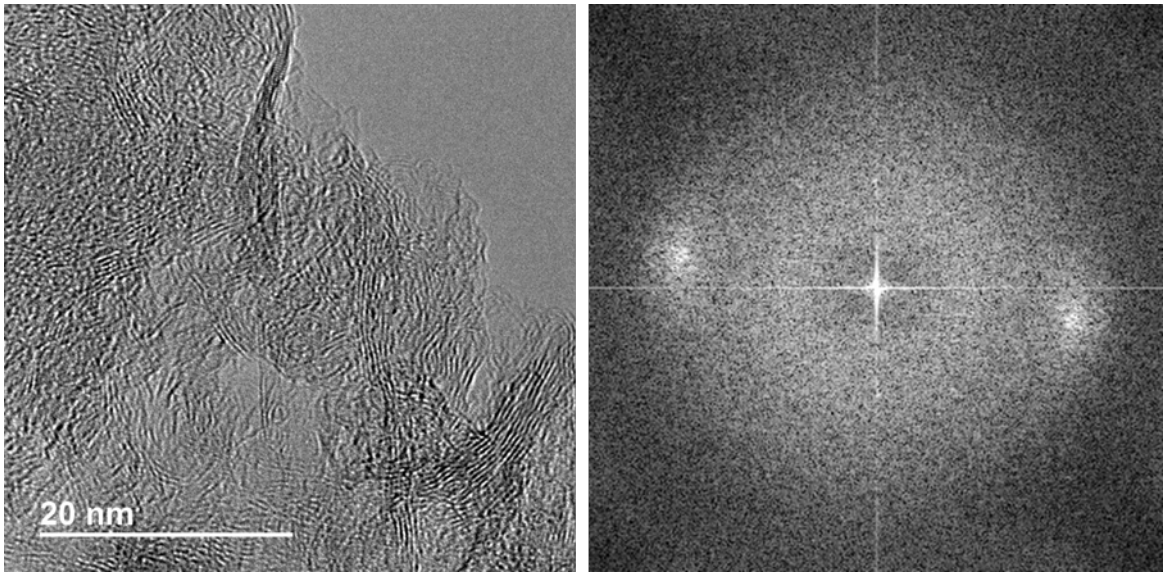
S.2. High resolution transmission electron microscopy graphene from polystyrene



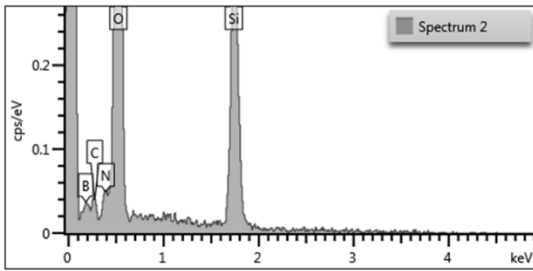
S.3. AFM image of graphene film from polystyrene where the thickness is measured doing a scratch in the film obtaining a value of 4-5 nm corresponding to a few layers graphene.



S.4. XRD graphene from polystyrene



S.5. TEM and SAED images of commercial G and BN sheets mixtures after pyrolysis.



Element	Line Type	Apparent Concentration	k Ratio	Wt%	Wt% Sigm	Standard Label	Factory
B	K series	0.12	0.00049	38.09	35.29	BN	Yes
C	K series	0	0.00005	6.64	17.32	CVit	Yes
N	K series	0.34	0.00061	55.27	13.58	BN	Yes
Total:				100			

B	3.5 moles	
N	3.9 moles	
C	0.55 moles	

S.6. EDS analysis of G-BN film on quartz substrate.



S7. Photographs of PS-BN (left) and G-BN superlattice (right) films.

Table S.1. Values of the impedance parameters determined for EIS spectra of G-BN superlattice and random G-BN assembly sheets in Figure 2, recorded in contact with air-saturated 0.10 M potassium phosphate aqueous buffer at pH 7.0; bias potential -0.60 V vs. Ag/AgCl using the equivalent circuits depicted in Figures 2a, 2b, respectively. Averaged values from three independent measurements.

Element	G from PS	G-BN random assembly	G-BN superlattice
R_s (Ω)	200	160	250
R_{ct} (Ω)	7900	3800	1450
Q_{dl} (Ωs^{-n}) (n)	6.8×10^{-5} (0.92)	8.6×10^{-5} (0.99)	3.0×10^{-5} (0.81)
W ($\Omega s^{-1/2}$)	2.3×10^{-3}	7.3×10^{-4}	4.4×10^{-3}