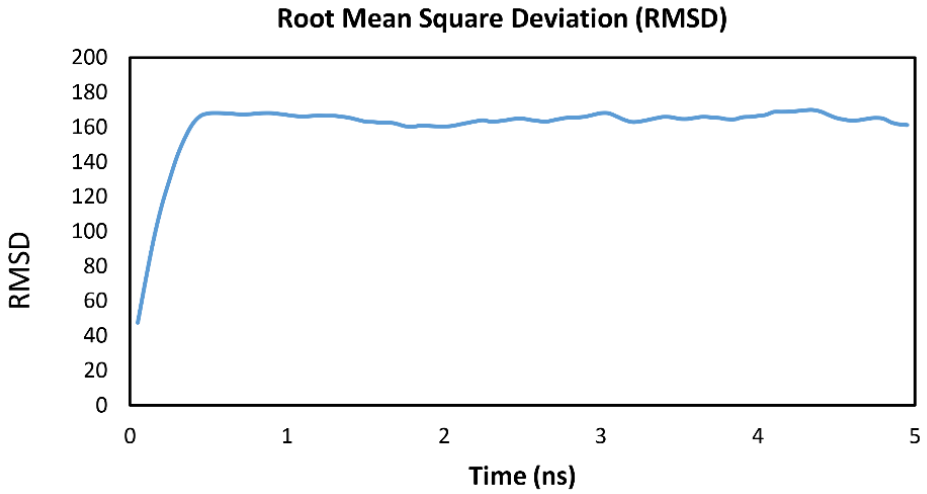

Figure 1S. The root mean square displacement (RMSD) of the simulated system

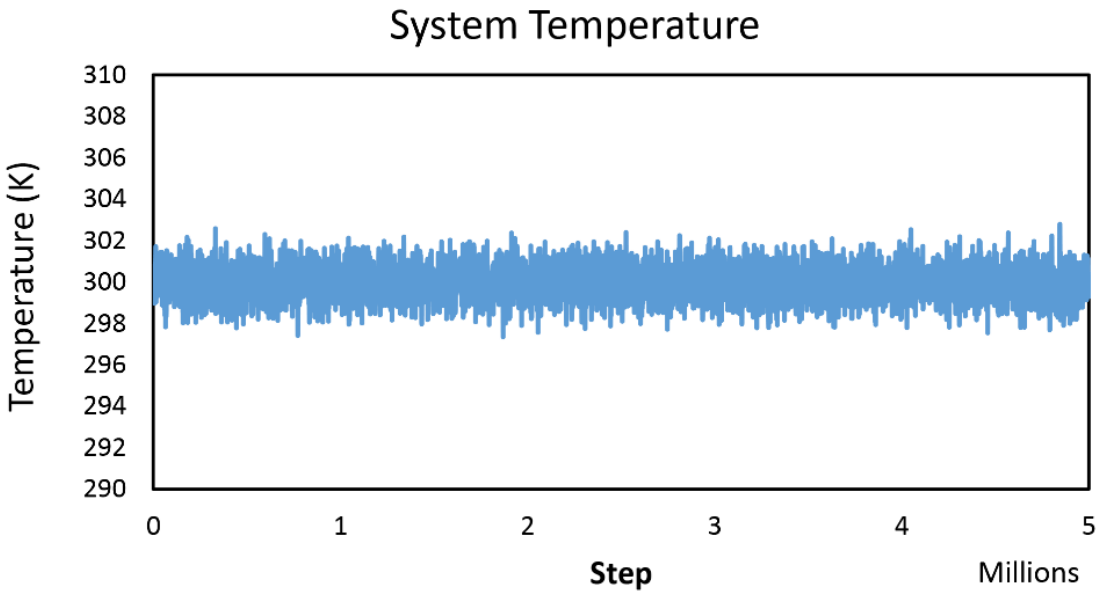

Figure 2S. The temperature fluctuation of the NPT simulated system at 300 K.

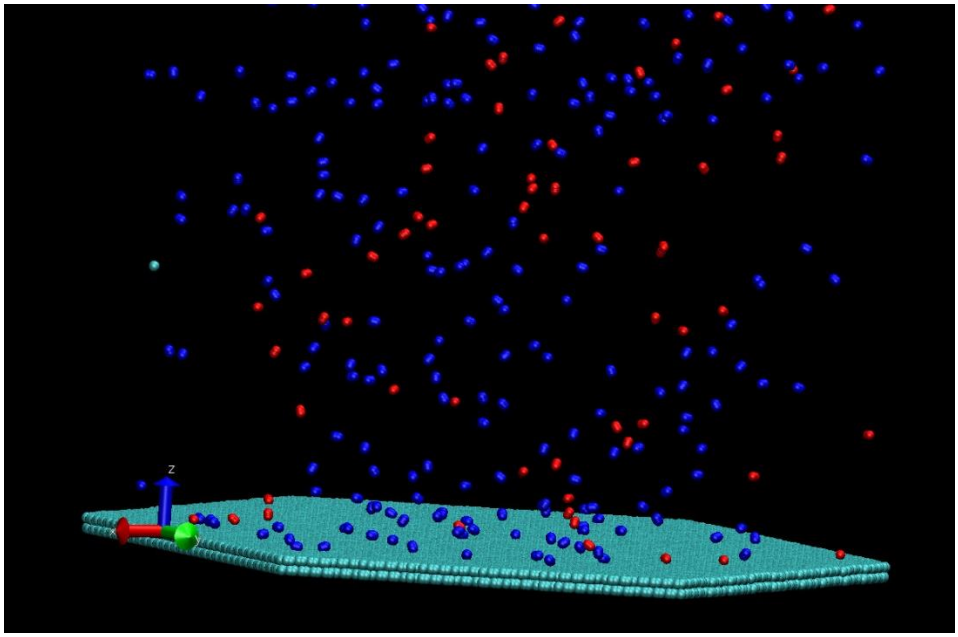

Figure 3S. A snapshot of the simulation system. The cyan layers represent the solid surface and N_2, O_2, and Argon atoms are shown by blue, red, and cyan circles, respectively.

Table 1S. The statistical t-test used to determine the significance of interaction results for the smooth and patterned graphene solid surface.

Table Analyzed	Row stats of Data 1
Column B	Smooth Graphene
vs.	vs.
electrmn A	Patterned Graphene
Unpaired t test with Welch's correction	
P value	**0.5844**
P value summary	ns
Significantly different (P < 0.05)?	**No**
One- or two-tailed P value?	Two-tailed
Welch-corrected t, df	t=0.5476 df=249.8

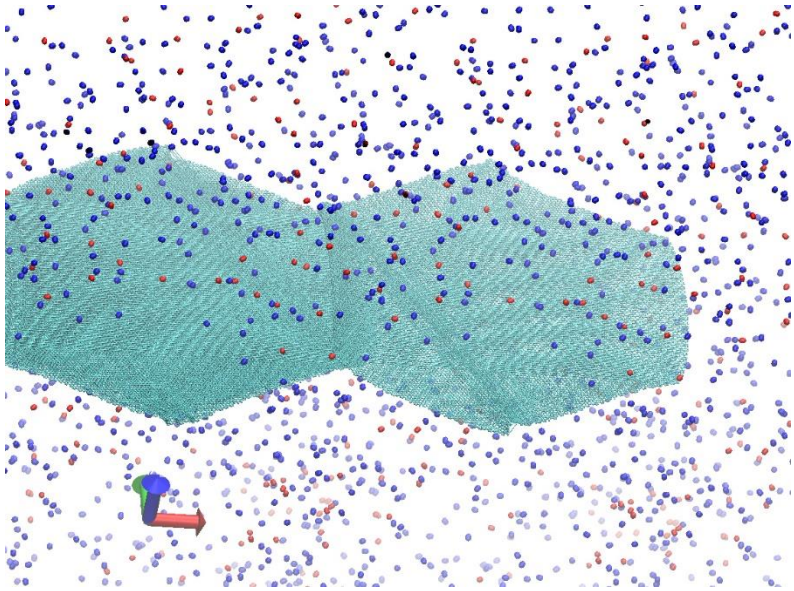

Figure 4S. Separation of graphene monolayers by fluid shear force in supersonic regime (1800 km/h)