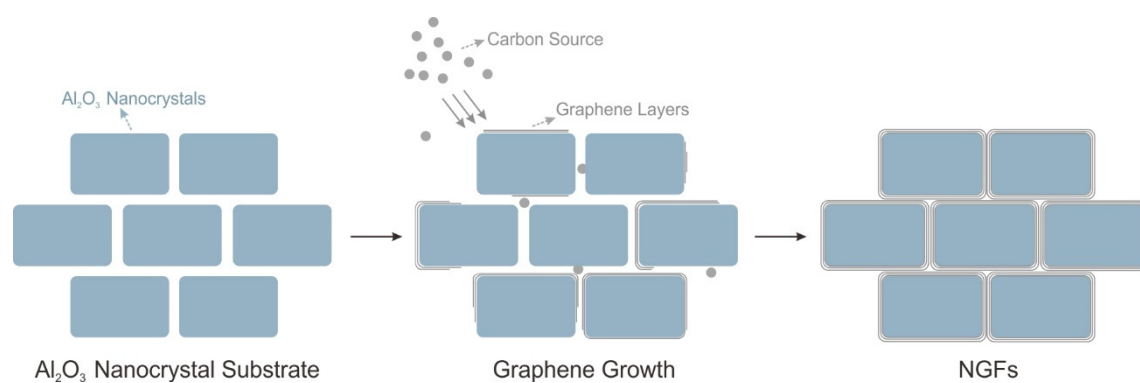


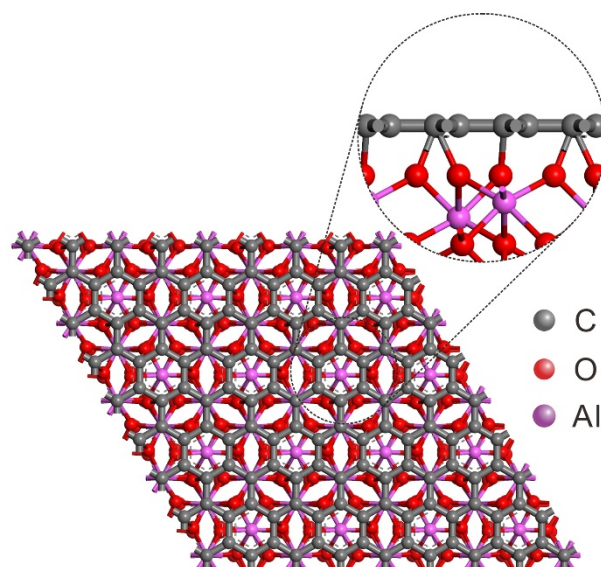
## Supporting Information

### Nanophase Graphene Frameworks

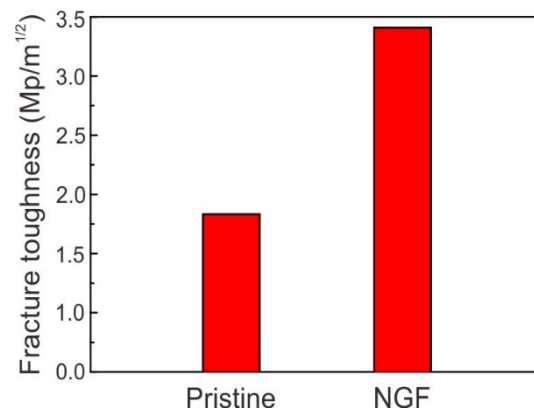
*Jinxin Liu<sup>†</sup>, Luyang Wang<sup>†</sup>, Yumin Da, Liang Li<sup>\*</sup>, Xuefeng Ruan, Mengqi Zeng and Lei Fu<sup>\*</sup>*



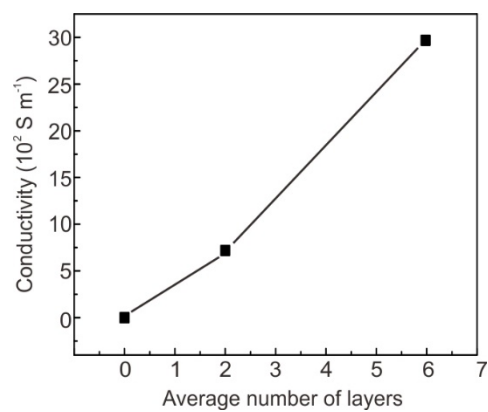
**Fig. S1** Illustration for the growth process of the nanophase graphene frameworks (NGFs) architectures.



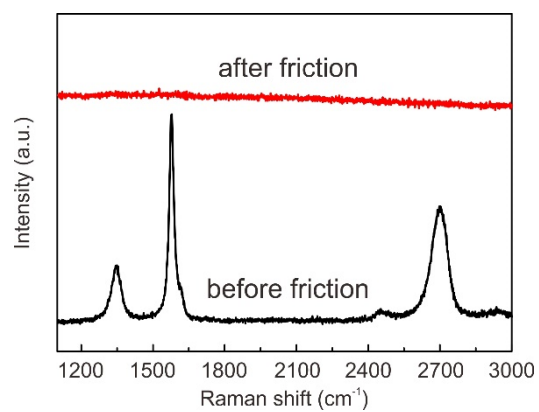
**Fig. S2** A scheme of the covalent coupling between the interface of graphene and  $\text{Al}_2\text{O}_3$ .



**Fig. S3** The fracture toughness data of pure Al<sub>2</sub>O<sub>3</sub>, nanophase graphene frameworks (NGFs), respectively.



**Fig. S4** The conductivity curve showing the relation of conductivity with the thickness of graphene.



**Fig. S5** The Raman spectra of surface coated graphene (SCG) before and after friction-treatment.