

Electronic Supplementary Material

Nanotribology of SiP nanosheets: Effect of thickness and sliding velocity

Zishuai WU^{1,2,†}, Tongtong YU^{2,3,†}, Wei WU¹, Jianxi LIU¹, Zhinan ZHANG⁴, Daoai WANG^{2,3,*}, Weimin LIU^{1,2}

¹ Center of Advanced Lubrication and Seal Materials, School of Materials Science and Engineering, Northwestern Polytechnical University, Xi'an 710072, China

² State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou 730000, China

³ Qingdao Center of Resource Chemistry and New Materials, Qingdao 266100, China

⁴ State Key Laboratory of Mechanical System and Vibration, Shanghai Jiao Tong University, Shanghai 200240, China

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1 Friction experiment of SiP nanosheets

Table S1 PPP-LFMR tip parameters.

Parameter	Value
Length	225 ± 10 μm
Width	48 ± 7.5 μm
Frequency	1–57 kHz
Force constant	0.01–1.87 N/m
Tip height	10–15 μm
Tip radius	7 nm

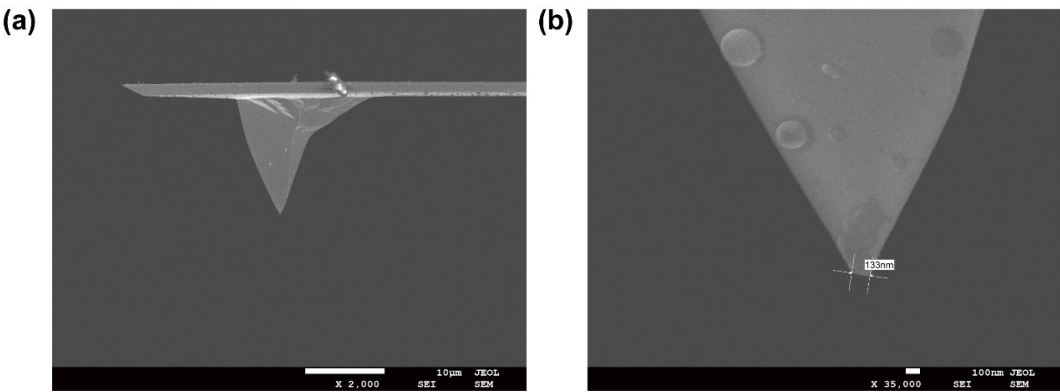


Fig. S1 The SEM image of adopted tip after nanofriction experiment.

[†] Zishuai WU and Tongtong YU contributed equally to this work.

* Corresponding author: Daoai WANG, E-mail: wangda@licp.cas.cn

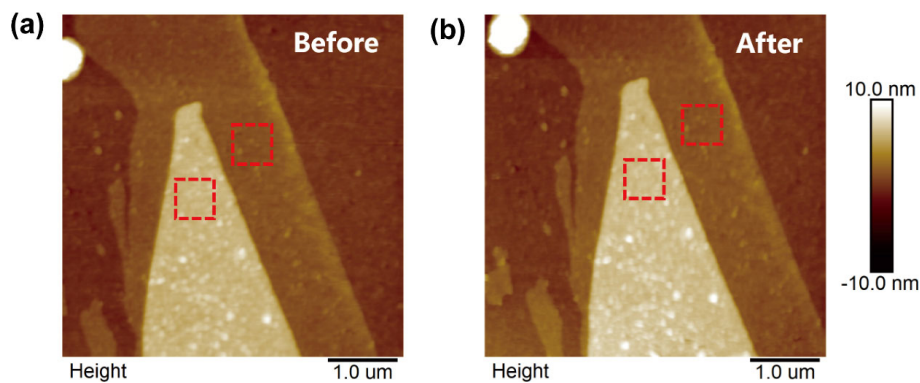


Fig. S2 The SiP nanosheets (a) before and (b) after nanofriction experiment, indicating that there are no obvious wear on SiP surface after nanofriction experiment.

2 Characterization of SiP nanosheets

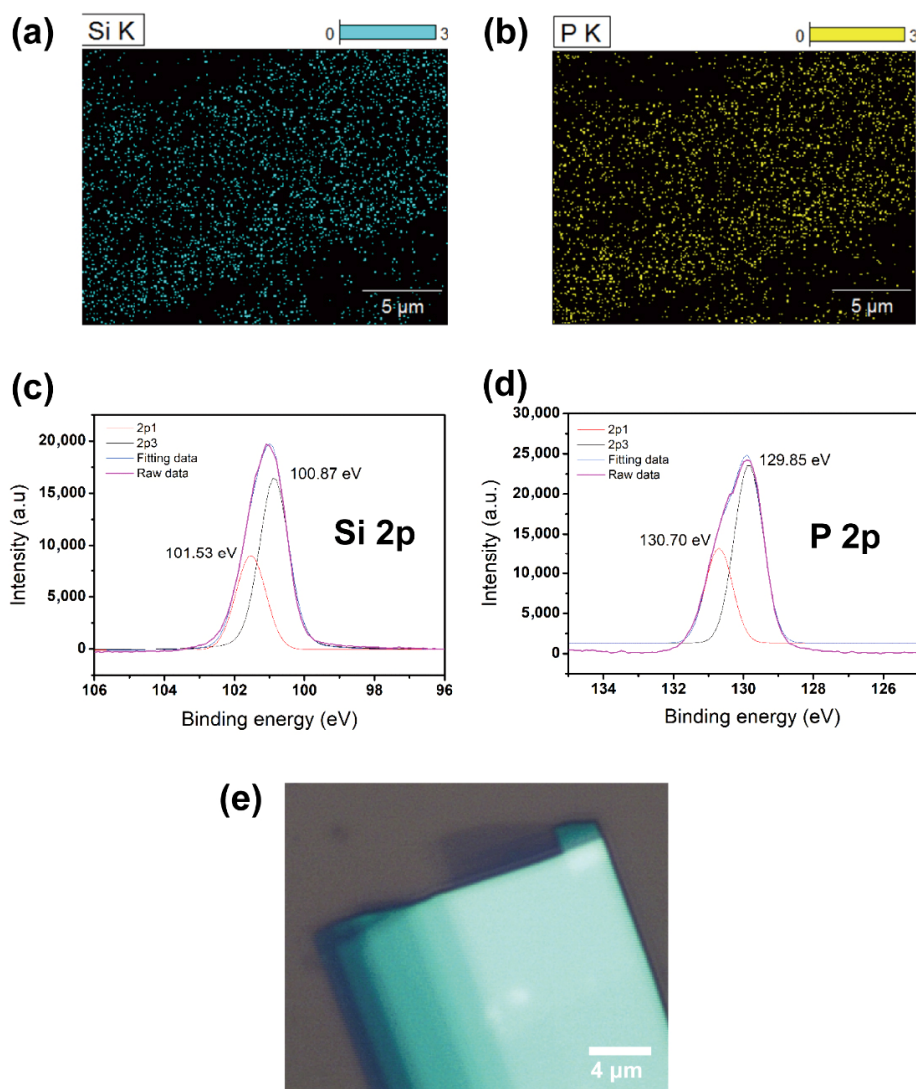


Fig. S3 (a, b) The corresponding elemental maps with even distribution indicated the high quality of SiP nanosheets. (c, d) The XPS pattern for Si 2p and P 2p. (e) The optical image of SiP nanosheets with different layers on SiO_2 substrate.

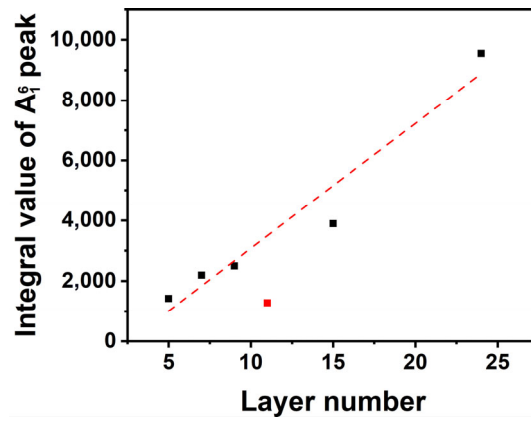


Fig. S4 The relationship between integral value of A_1^6 peak and the layer number of SiP nanosheets.

3 Velocity dependence of the lateral force of SiP nanosheets

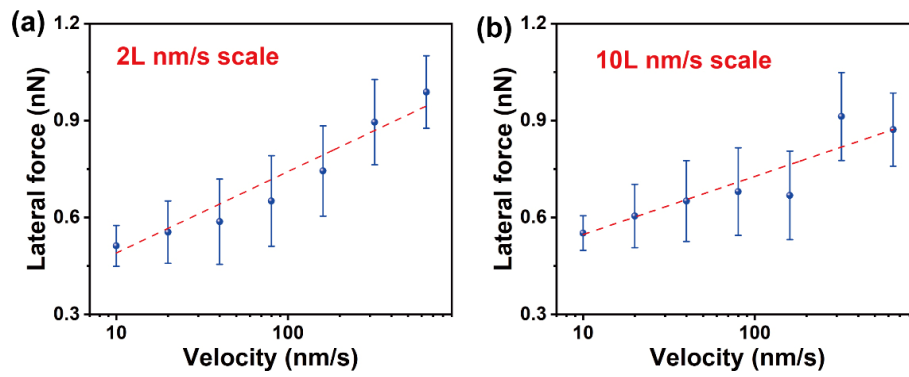


Fig. S5 The relationship between lateral force and the logarithm of sliding speed: (a) 2L, (b) 10L.