

## Boosted Lithium-ion hopping on halogen-doped $\chi_3$ borophene

Zihan Xia<sup>a</sup>, Xianfei Chen<sup>a,b,1</sup>, Wentao Zhang<sup>a</sup>, Junfeng Li<sup>a</sup>, Beibei Xiao<sup>c</sup>, Haiying Du<sup>a\*</sup>

<sup>a</sup> *College of Materials and Chemistry & Chemical Engineering, Chengdu  
University of Technology, Chengdu 610059, China*

<sup>b</sup> *Postdoctoral Innovation Practice Base, Sichuan Konkasnow New Material Co.,  
Ltd., Yaan 625400, China*

<sup>c</sup> *School of Energy and Power Engineering, Jiangsu University of Science and  
Technology, Zhenjiang 212003, China*

---

<sup>1</sup> Corresponding author. Email: [chenxianfei2014@cdut.edu.cn](mailto:chenxianfei2014@cdut.edu.cn); [diane201109@126.com](mailto:diane201109@126.com)

Figure S1

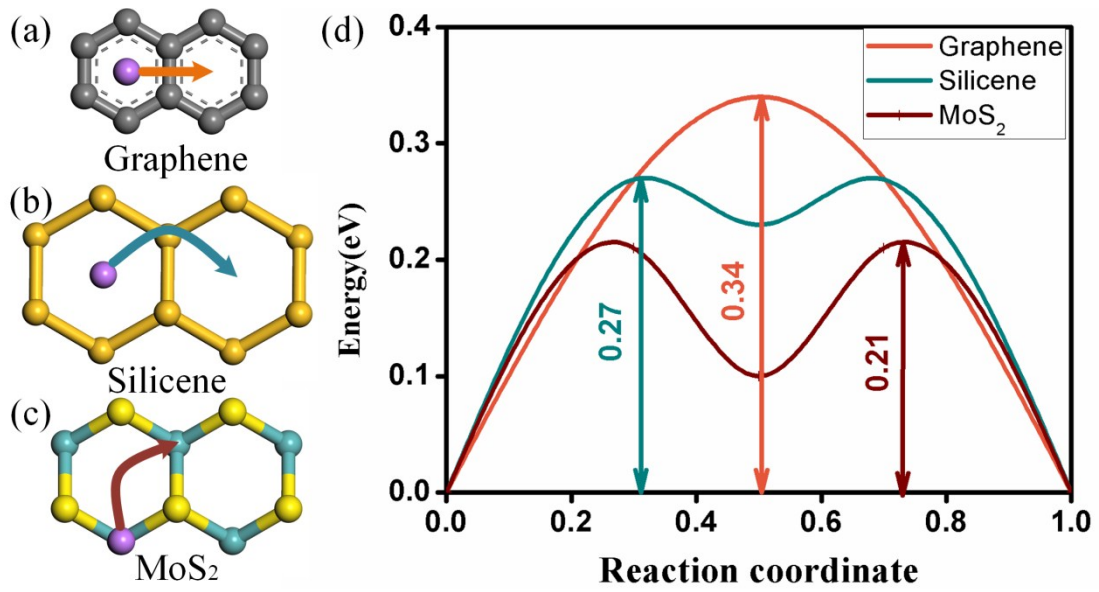


Figure S1. Schematic illustration of Li-ion migration pathways on  $4 \times 4$  supercell (a) graphene, (b) silicene and (c)  $\text{MoS}_2$  and (d) the corresponding energy profiles.

Figure S2

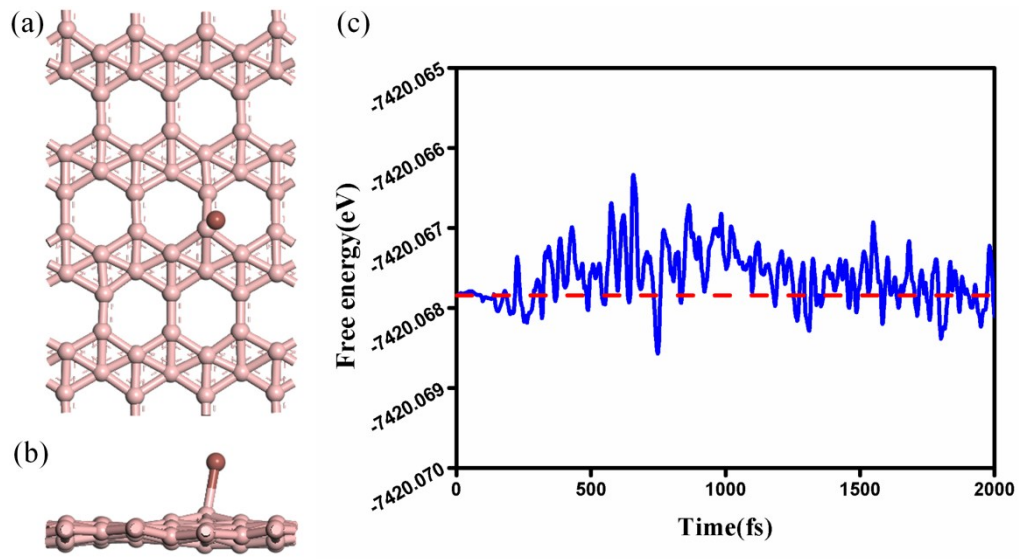


Figure S2. (a) Top and (b) side views of I-doped  $\chi_3$  borophene obtained at the end of the simulation performed at 300 K. (c) Evolution of the free energy versus simulation time.