## Type-II Tunable SiC/InSe Heterostructure in Electric Field and Biaxial Strain

Zhu Wang, a Yan Zhang, a Xing Wei, a Tingting Guo, a Jibin Fan, a Lei Ni, a Yijun Weng, a

Zhengdi Zha, a Jian Liu, b Ye Tian, c Ting Li, a Li Duan a, \*

<sup>a</sup> School of Materials Science and Engineering, Chang'an University, Xi'an, 710064, China

<sup>b</sup> School of Physics, Shandong University, Jinan 250100, China

<sup>c</sup> Institute of Physics, Chinese Academy of Sciences, Beijing 100190, China

\*Corresponding author.

E-mail address: liduan@chd.edu.cn.



Fig. S1. Projected band structure of S1-stacking (a), S2- stacking (b) and S3- stacking (c).



**Fig. S2.** The phonon dispersion of SiC/InSe heterostructure (d = 3.34 Å).



**Fig. S3.** (a)-(c) Projected energy band structures of the freestanding SiC, InSe monolayer, and the SiC/InSe heterostructure calculated by HSE06.



Fig. S4. Band alignment (HSE06) of the SiC, InSe single layers, and SiC/InSe

heterostructure, with the vacuum level being used as a reference.