

Electronic Supplementary Information

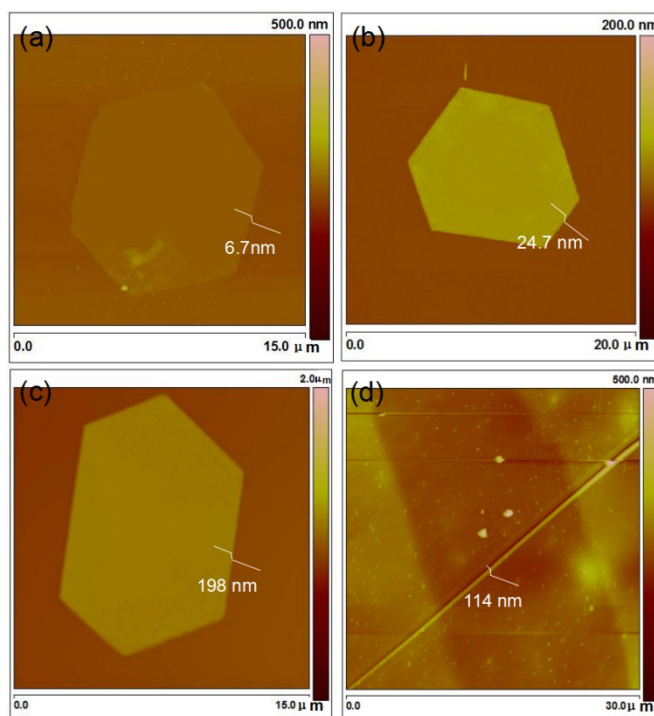
**Flexible Photodetectors based on Phase Dependent PbI<sub>2</sub> Single Crystals**

*Mianzeng Zhong, Le Huang, Hui-Xiong Deng, Xiaoting Wang, Bo Li, Zhongming Wei,\* and Jingbo Li\**

M. Zhong, L. Huang, Dr. H.-X. Deng, X. Wang, B. Li, Prof. Z. Wei and Prof. J. Li

State Key Laboratory of Superlattices and Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, P.O. Box 912, Beijing 100083, China

E-mail: [zmwei@semi.ac.cn](mailto:zmwei@semi.ac.cn); [jbli@semi.ac.cn](mailto:jbli@semi.ac.cn)



**Fig. S1** AFM images and thickness information of PbI<sub>2</sub> nanosheets (a, b, c) and PbI<sub>2</sub> nanowires (d) obtained

from different zone.

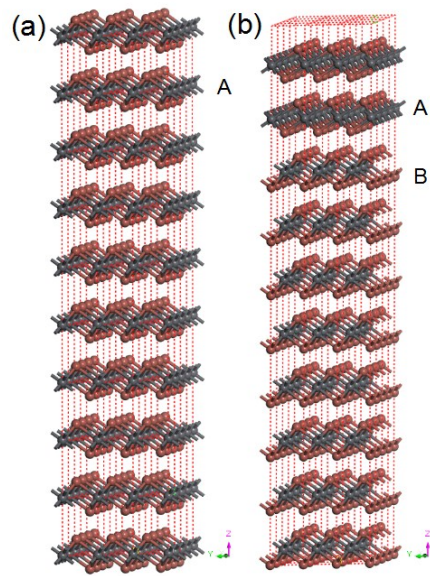


Fig. S2 The overall crystallographic models of Phase I (a) and Phase II (b).

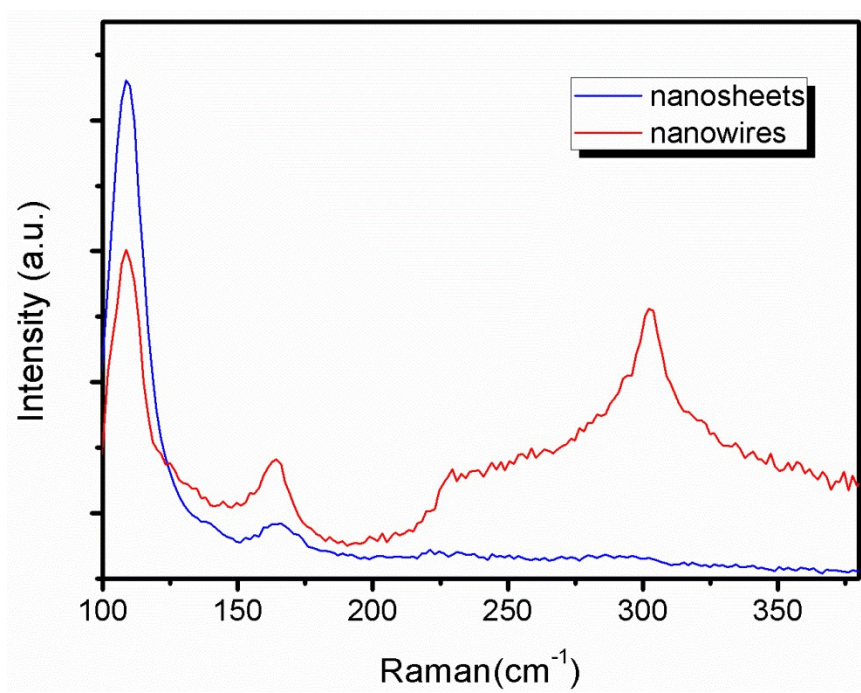


Fig. S3 Raman spectra of PbI<sub>2</sub> nanosheets and nanowires.

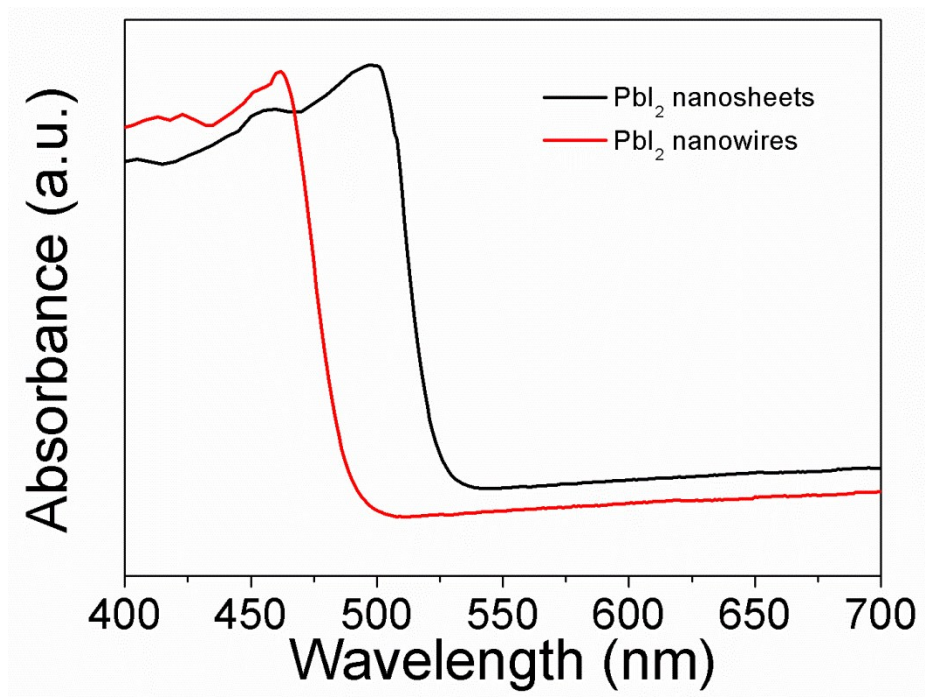


Fig. S4 Room-temperature UV-vis absorbance spectra of PbI<sub>2</sub> nanosheets and nanowires.

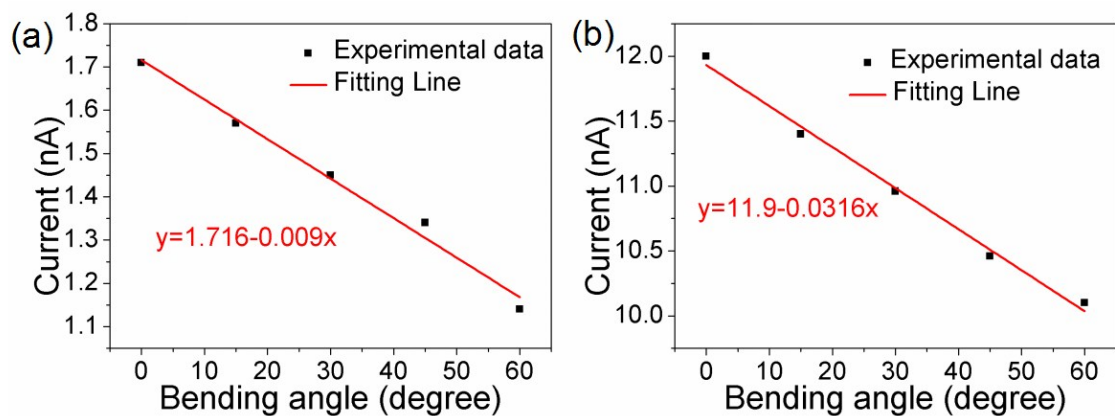
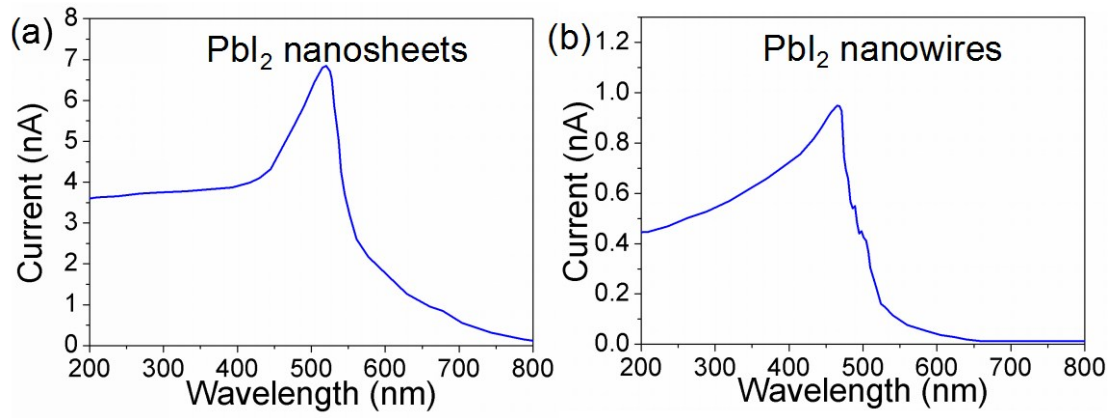


Fig. S5 The bending angles dependence of the photocurrent of PbI<sub>2</sub> nanowire (a) and nanosheet (b) based photodetector measured under the 450 nm laser irradiation with a light intensity of 42.24 mW/cm<sup>2</sup> at 5 V bias.



**Fig. S6** The spectral photoresponse of PbI<sub>2</sub> nanosheets (a) and nanowires (b) under the continuously changing laser wavelengths from 200 to 800 nm.