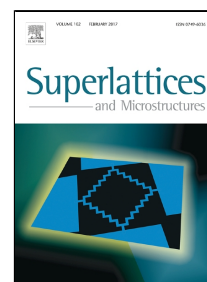


Accepted Manuscript

Electric-field tunable electronic structure in WSe_2 /arsenene van der Waals heterostructure

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PII: S0749-6036(16)31668-8

DOI: 10.1016/j.spmi.2017.02.045

Reference: YSPMI 4857

To appear in: *Superlattices and Microstructures*

Received Date: 04 December 2016

Accepted Date: 24 February 2017

Please cite this article as: Wei Li, Fang Zhang, Xianqi Dai, Electric-field tunable electronic structure in WSe_2 /arsenene van der Waals heterostructure, *Superlattices and Microstructures* (2017), doi: 10.1016/j.spmi.2017.02.045

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Highlights

- It is demonstrated that the WSe₂/arsenene heterobilayer is a type-II vdW heterostructure, and thus electrons and holes are spatially separated.
- The WSe₂/arsenene heterobilayer undergoes a transition from semiconductor to metal when subjected to an external electric field.
- The positive and negative external electric field have different effects on the band gap due to the spontaneous electric polarization in WSe₂/arsenene heterostructure.
- The WSe₂/arsenene vdW heterostructure experiences transitions from type-II to type-I and then from type-I to type-II under various external electric fields.

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