Negative differential resistance in 2-dimensional $MoS_2/BN/MoS_2$ heterostructure

Presenting Author: Shoujun Zheng[1,3]
Co-Authors:
Fucai Liu[2], Liu Zheng[2], Hong Jin Fan[1,3]

[1]*Centre for Disruptive Photonic Technologies, Nanyang Technological University, 637371, Singapore,*

[2]*Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, 637371, Singapore*

[3]*School of Materials Science and Engineering, Nanyang Technological University, 639798, Singapore*

Contact@E-mail
Szheng003@e.ntu.edu.sg

Abstract (Century Gothic 11)

Resonant tunneling diode based on graphene/BN/graphene heterostructure has been reported by L. Britnell et al[1]. The peak-to-valley ratio of negative differential resistance (NDR) is about 4 at 6 K. It was predicted that the peak-to-valley ratio based on 2-dimensional transitional metal chalcogenides is much higher than the one based on graphene[2]. Here, we fabricated a $MoS_2/BN/MoS_2$ heterostructure and observed NDR in this device at room temperature. The peak position of the NDR is gate-tunable. However, the peak-to-valley ration is quite small, which may result from n-type MoS_2 and twist of different layers.

References

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Figures