

Abstract Submitted
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Graphene-MoS₂ Heterojunctions for High-Speed Opto-electronics JASON HORNG, ALEX WANG, UC Berkeley, DANQING WANG, Tsinghua University, ALEXANDER SHENGZHI LI, FENG WANG, UC Berkeley — Heterostructures consisting of two-dimensional materials has drawn significant attention in different research fields owing to their novel electronic states and potential applications. Transmitting information with transition metal dichalcogenides(TMDC) electro-optical modulator switch interconnect is of great interest for technological applications. However, their high-speed applications have been slowed by their intrinsically high resistivity as well as the difficulties in making optimized metal contacts. Here, we present a new strategy by using graphene as a tunable contact to two-dimensional semiconductors to explore possible applications in high-speed opto-electronics. We will present an optical study to provide better understanding of band alignment in graphene/MoS₂ heterostructures and a demonstration of high-speed opto-electronics based on these heterostructures. The result shows the new scheme could have potential in both opto-modulators and optical sensing applications.

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