

Abstract Submitted
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Spatially inhomogeneous barrier height in graphene/MoS₂ Schottky junctions¹ DUSHYANT TOMER, SHIVANI RAJPUT, LIAN LI, University of Wisconsin, Milwaukee — Graphene interfaced with a semiconductor forms a Schottky junction with rectifying properties. In this study, graphene Schottky junctions are fabricated by transferring CVD monolayer graphene on mechanically exfoliated MoS₂ multilayers. The forward bias current–voltage characteristics are measured in the temperature range of 210–300 K. An increase in the zero bias barrier height and decrease in the ideality factor are observed with increasing temperature. Such behavior is attributed to Schottky barrier inhomogeneities possibly due to graphene ripples and ridges at the junction interface as suggested by atomic force microscopy. Assuming a Gaussian distribution of the barrier height, mean barrier of 0.970.10 eV is found for the graphene MoS₂ junction. Our findings provide significant insight on the barrier height inhomogeneities in graphene/two dimensional semiconductor Schottky junctions.

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