Abstract Submitted
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Scanning tunneling microscopy/spectroscopy study of graphene – MoS_2 heterojunction[1] SHIVANI RAJPUT, YAOYI LI, DUSHYANT TOMER, LIAN LI, University of Wisconsin, Milwaukee — Atomic scale topographic fluctuations are relevant to a number of graphene applications including graphene / semiconductor Schottky diodes [1,2]. In this work, we investigate the atomic structures and electronic properties of graphene-MoS_2 heterojunction fabricated by transferring chemical vapor deposited monolayer graphene onto mechanically exfoliated multilayer MoS_2. Scanning tunneling microscopy reveals the formation of Moiré patterns with corrugations $\sim$ 0.03 nm, but no ripples, in contrast to graphene-SiC junctions [1,2]. Scanning tunneling spectroscopy further indicates that the periodic modulations of the Moiré pattern do not influence the electronic properties of the junction. Additional states near the Fermi level are also observed, likely due to impurities trapped at the interface during graphene transfer. These results and their impact on the properties of the van der Waals graphene-MoS_2 heterojunction will be discussed at the meeting.

[1] S. Rajput *et al.* Nat. Commun. **4,** 2752 (2013).
[2] D. Tomer *et al.* Appl. Phys. Lett. **105,** 021607 (2014).

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