Abstract Submitted
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MoS_2 Field Effect Transistors with different polarity: study of electrode work functions[1] ISHA DUBE, ANTHONY K. BOYD, Georgetown University, MARCIO FONTANA, Federal University of Bahia, Salvador, IGOR GAYDUCHENKO, GEORGY FEDOROV, National Research Centre Kurchatov Institute, Moscow, Russia., AMY LIU, MAKARAND PARANJAPE, PAOLA BARBARA, Georgetown University — The transfer characteristics of Molybdenum disulfide (MoS_2) field effect transistors (FETs) depend on the Schottky barrier formed between the metal electrode and the semiconducting MoS_2. We obtained p-type behavior for Pd-contacted MoS_2 FETs and n-type with both Au and Nb [1] contacts. We study the work function of these electrode metals to understand their effect on the Schottky barrier and therefore the polarity of the MoS_2 FETs. The work function of the above metals is measured using a non-contact Kelvin Probe technique under different ambient conditions. We will discuss the observed n-type and p-type behavior of MoS_2 FETs in relation to the measured metal work functions.

[1] M. Fontana, T. Deppe, A. Boyd, M. Rinzan, A. Liu, M. Paranjape, P. Barbara, Photovoltaic effect in gated MoS2 Schottky junctions, in, arXiv:1206.6125v1 [cond-mat.mtrl-sci]

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