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Transport properties of heterostructures composed of Mo(S,Se)$_2$ on h-BN QIONG ZHOU, NIHAR PRADHAN, SHAHRIAR MERAMAN, DANIEL RHODES, LUIS BALICAS, National High Magnetic Field Laboratory and Florida State University — The thickness-dependent tunable band gap of transition metal dichalcogenides in the visible region has generated a lot of interest on their optoelectronic properties. Our single crystals of molybdenum disulphide (MoS_2) and molybdenum diselenide ($MoSe_2$) were grown though a chemical vapor transport technique. Few-layered flakes of MoS_2 and $MoSe_2$ were mechanically exfoliated and transferred onto h-BN flakes, with this stack subsequently transferred onto pre-evaporated molybdenum bottom gate(s). Here, we report the fabrication and temperature-dependent electrical transport properties of few-layered MoS_2 and $MoSe_2$ field-effect transistors on h-BN.

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