**Emergence of Out-plane Ferroelectricity in Atomically Thin A0.5B0.5X2 (A=W, Mo; B=Re, Tc; X=S, Se, Te) Monolayer**

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Atomically thin out-plane ferroelectricity is rare phenomena because its depolarization field increases as thickness decreases. Using density functional theory, we found out-plane polarization in transition metal dichalcogenides (TMDCs) with 1:1 composition of VIB and VIIB transition metal. The magnitude of the polarization is ~ 0.08 *μ*C/cm2, which is comparable to the other reported atomically thin ferroelectric materials like distorted 1*T*-MoS2 or AgBiP2Se6 [1]. Interestingly, the polarization is in the opposite direction of the point charge (ionic or Bader charge) approximation, implying unique distribution of electron density in these materials, like counterintuitive Born effective charge reported in other TMDCs [2].

[1] Bo Xu *et al*., Nanoscale **9**, 8427 (2017).

[2] Nicholas A. Pike *et al*., Phys. Rev. B **95**, 201106 (2017).