

Abstract Submitted
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Superconductivity in few-layer NbS₂ and TaS₂ prepared by mechanical exfoliation YUESHEN WU, HAILONG LIAN, SHUJIE FAN, MUYAO FAN, HUI XING, SHUN WANG, Shanghai Jiao Tong Univ, YING LIU, Shanghai Jiao Tong Univ; Pennsylvania State Univ — 2D materials with novel physical properties are useful for scientific inquiries and technological applications. The superconducting 2D materials provide an opportunity to explore the superconductivity in the 2D limit. In this work, the superconductivity in few layer 2H-NbS₂ and 2H-TaS₂ are studied. Single crystals are obtained by vapor transport method and flakes are obtained by mechanical exfoliation. In NbS₂ flakes, the superconducting transition temperature (T_c) monotonically decreases with decreasing thickness. On the other hand, T_c of TaS₂ flakes appears to monotonically increase as the flake gets thinner and the signature of CDW transition in R vs. T curves eventually disappear. The electric double layer transistors (EDLTs) of NbS₂ and TaS₂ flakes are also being fabricated to tune superconductivity in these 2D crystals. The results on these experiments will be presented.

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