Negative to Positive Crossover of Magnetoresistance in WS2 nanoflakes with Ohmic Contact

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— We report studies on the transport measurements of WS2 nanoflakes including contact optimization and magnetoresistance measurement. We find that the platinum electrodes deposited by focused ion beam (FIB) technology on WS2 exhibit an ohmic contact, which provides a pathway to solve the dilemma of Shottky barrier for WS2 devices. A temperature-modulated negative-to-positive crossover of magnetoresistance (MR) is also observed, replenishing the existing data which mainly emphasizes field effect transistor (FET) related transport. Our work may stimulate further studies and potential electronic and optoelectronic applications on transition-metal dichalcogenides.

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