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Photoemission study on local phase transition of MoTe₂

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We investigate local phase transition of MoTe₂ using scanning photoemission electron spectroscopy. In spite of many effort of realizing ohmic-contacted heterostructures between 2-dimensional atomic materials, inherent limitation in the transfer method or chemical doping method, such as impurities, inhomogeneous junction and so on, has not allowed true ohmic contact due to a large interface resistance. In this work, phase transition from the 2H to 1T' phase in MoTe₂ was driven by laser-irradiation, where this system allow us clean homogeneous homojunction ohmic contact between semiconducting 2H- and metallic 1T'-MoTe₂ with low interface resistance. Here we verified the laser irradiation induced the phase transition by analyzing the Mo and Te 3d core-level spectrum on each micron-domain area.

Keywords

MoTe₂, homojunction ohmic contact. phase transition. laser-irradiation, SPEM

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