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Ionic liquid gated field effect transistor enhanced superconductivity JIANLI WANG, ICQM, Peking University, CONG WANG, National Center for Nanoscience and Technology, CHI ZHANG, ICQM, Peking University — Motivated by the high doping ability of ionic liquid gated field effect transistors (FET), substantial attempts had been made on the research of material properties which have a close relationship with carrier concentrations. Among these subjects, superconductor-insulator transition attracts the most attention owing to the rich physical properties. Different from chemical doping induced superconductivity, FET surface doping method injects high density carriers without introducing unintentional disorder and is free from deterioration. Based on the ionic liquid gating method, superconductivity has been reported found in materials known to be non-superconducting. Here, we show a transition-metal dichalcogenide thin film transistor which shows a coexistence of CDW phase and superconductivity based on ionic liquid electrolyte.

Jianli Wang
ICQM, Peking University

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