High temperature superconductivity in one unit cell FeSe and superconductivity in two-monolayer Ga

JIAN WANG, Peking University — By direct transport and magnetic measurements, we provide definitive evidence for high temperature superconductivity in the 1-UC FeSe films on insulating STO substrates with the onset Tc and critical current density much higher than those for bulk FeSe. In addition, by both in situ scanning tunneling microscopy/spectroscopy and ex situ transport and magnetization measurements, we find that the two-atomic-layer Ga film with hexagonal structure on wide band-gap semiconductor GaN is superconducting with Tc up to 5.4 K.

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Jian Wang
Peking University

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