

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Current-induced unprecedented metastable phases in two-dimensional 1T-TaS2 crystals MASARO YOSHIDA, TAKASHI GOKUDEN, RYUJI SUZUKI, MASAKI NAKANO, YOSHIHIRO IWASA, Department of Applied Physics, the University of Tokyo — 1T-TaS2 thin crystal is an attracting correlated 2D material with CDW ordering. The 2D 1T-TaS2 crystal was revealed to have extremely slow ordering kinetics [1], providing a platform to realize novel metastable states. Here we discovered unprecedented metastable electronic phases by current injection [2]. The current-induced metastable phases are thermally inaccessible, absent in the energy landscape established in its bulk crystal. The results indicate the existence of multiple unexplored electronic phases accessible only in 2D materials. In this talk, we will show the unique properties of the current-induced phases unveiled through detailed measurements. [1] M. Yoshida et al. Sci. Rep. 4, 7302 (2014); [2] M. Yoshida et al. Sci. Adv. 1, e1500606 (2015).

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Date submitted: 09 Nov 2016

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