Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Observing the magnetic phase transition in a quasi-2D material: Fe_3GeTe_2 ZHENG GAI, QIANG ZOU, CNMS, Oak Ridge National Laboratory, ZHIMING WU, CNMS, Oak Ridge National Laboratory, Xiamen University, JIEYU YI, CNMS, Oak Ridge National Laboratory, University of Tennessee, Knoxville, RAMA VASUDEVAN, CNMS, Oak Ridge National Laboratory, DAVID MANDRUS, University of Tennessee, Knoxville, UNIVERSITY OF TENNESSEE, KNOXVILLE COLLABORATION, XIAMEN UNIVERSITY COLLABORATION, OAK RIDGE NATIONAL LABORATORY COLLABORATION — As a quasi-2D magnetic material, Fe_3GeTe_2 was recently found having an antiferromagnetic ground state at low temperature but showing competition between antiferromagnetic and ferromagnetic states above 152K. The ferromagnetic ab layers of Fe_3GeTe_2 actually order antiferromagnetically along the c-axis below 152 K. The complicated phase transitions, the competition between phases and the evolution of the anitiferromagnetic phase were confirmed using in-situ variable temperature magnetic force microscopy. Fe_3GeTe_2 shares many common features with pnictide superconductors and may be a promising system in which to search f or unconventional superconductivity. This research was conducted at the Center for Nanophase Materials Sciences, which is a DOE Office of Science User Facility.

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Date submitted: 13 Nov 2016 Electronic form version 1.4