Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Fabrication and Transport Properties of FeSe Thin Films on CaF_2 Substrates with Increased T_c[1] FUYUKI NABESHIMA, YOSHINORI IMAI, The University of Tokyo, MASAFUMI HANAWA, ATARU ICHINOSE, ICHIRO TSUKADA, Central Research Institute of Electric Power Industry, ATSUTAKA MAEDA, The University of Tokyo — Fe(Se,Te) has the simplest crystal structure among Fe-based superconductors. Superconducting transition temperature, T_c, is strongly dependent on the applied pressure. Indeed, strained thin films of $FeSe_{0.5}Te_{0.5}$ have higher T_c than that of bulk crystals[1,2]. On the other hand, an end member, FeSe, shows large increase in T_c under pressure compared with Te-doped ones. However there is no report on increased T_c of FeSe thin films except for the interface-induced superconductivity[3]. In the presentation we will report on the first successful introduction of compressive strain in FeSe thin films using CaF_2 substrates. As a result, T_c^{zero} reaches 11.4 K, which is about 1.5 times higher than that of bulk crystals[4]. We will also report on the transport properties of FeSe thin films on CaF_2 in the normal state including the THz conductivity and the Hall resistivity comparing them with the results of $FeSe_{0.5}Te_{0.5}$ films. [1] E. Bellingeri *et al.*, APL **96** (2010) 102512. [2] I. Tsukada *et al.*, APEX **4** (2011) 053101. [3] Q.-Y. Wang *et al.*, Chin. Phys. Lett. **29** (2012) 037402. [4] F. Nabeshima *et al.*, APL **103** (2013) 172602.

[1]Partially supported by Strategic International Collaborative Research Program (SICORP) of Japan Science and Technology Agency.

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Date submitted: 15 Nov 2013 Electronic form version 1.4