

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Local magnetic moment in hydrogen-doped 1111-type iron pnictides probed by Electron Energy Loss Spectroscopy TAKASHI SASAKI, SOSHI IIMURA, Laboratory for Materials and Structures, Tokyo Institute of Technology, MASATO SASASE, Tokodai Institute for Element Strategy, Tokyo Institute of Technology, HIDEO HOSONO, Laboratory for Materials and Structures, Tokyo Institute of Technology — Since superconductivity in Fe pnictides emerges adjacent to the antiferromagnetic phase, the magnetic properties have been intensively investigated by neutron scattering, NMR and μ SR. Since their magnetic moments are strongly screened by itinerant electrons [1], it is needed to be probed in much faster process such as electron dynamics, for measuring the bare moment. Recently, it was proved that Electron Energy Loss Spectroscopy (EELS) is able to capture the bare moment in $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$ [2]. In this study, we performed the EELS measurement on $\text{LaFeAsO}_{1-x}\text{H}_x$ with a double dome structure, and found that the Neel temperature and the critical temperature (T_N , T_c), especially in high-doped region, are related to the bare magnetic moment. In this talk, we also present the results in $\text{SmFeAsO}_{1-x}\text{H}_x$ and $\text{LaFePO}_{1-x}\text{H}_x$, and discuss the effects of the electron-doping and the local structure around Fe on the moment in the hydrogen-doped 1111-type iron pnictides [1] P. Hansmann et al., PRL 104, 197002 (2010). [2] C. Cantoni et al., Adv. Mater. 26, 6193 (2014).

Takashi Sasaki
Laboratory for Materials and Structures, Tokyo Institute of Technology

Date submitted: 29 Nov 2016

Electronic form version 1.4