

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Growth and Properties of SmFeAsO_{1-x}F_x thin films using pulsed laser deposition SANGHAN LEE, CHAD FOLKMAN, SEUNG HYUB BAEK, DAVID FELKER, MARK RZCHOWSKI, CHANG BEOM EOM, UW-Madison, JIANYI JIANG, ERIC HELLSTROM, Florida State University, CHANG-BEOM EOM'G GROUP TEAM, MARK RZCHOWSKI'S GROUP COLLABORATION, ERIC HELLSTROM'S GROUP COLLABORATION — The discovery of iron pnictide superconductors has been gaining interest due to their highest transition temperatures (T_c) among transition metal compound except cuprate systems. In iron pnictide system, T_c has been significantly enhanced by replacing elements. The growth of epitaxial thin film of this interesting compound is desirable for fundamental understanding of superconductivity and potential device applications. So far, there is no report with successful growth of epitaxial thin films with the same T_c of the bulk materials. Although several reports show T_c of thin film, the resistivity does not reach zero down to at 4K. We have employed pulsed laser deposition for the growth of iron pnictides, SmFeAsO_{1-x}F_x, thin films on various single crystal substrates followed by ex-situ post annealing. In this talk, we will discuss the structural and superconducting properties of SmFeAsO_{1-x}F_x thin film including T_c , J_c and H_{c2} .

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Date submitted: 21 Nov 2008

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