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**Growth and Properties of SmFeAsO<sub>1-x</sub>F<sub>x</sub> 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<sub>1-x</sub>F<sub>x</sub>, 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<sub>1-x</sub>F<sub>x</sub> thin film including  $T_c$ ,  $J_c$  and  $H_{c2}$ .

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