

Abstract Submitted  
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**Preparation of epitaxial ScF<sub>3</sub> thin films** AMANI S. JAYAKODY, ZHIWEI ZHANG, Z. H. ZHU, HOPE WHITELOCK, JOSEPH I. BUDNICK, JASON N. HANCOCK, B. O. WELLS, University of Connecticut - Storrs — Scandium trifluoride (ScF<sub>3</sub>) is known for a pronounced negative thermal expansion over a wide range of temperature, from 10 K to 1100 K. The structure of ScF<sub>3</sub> can be described as an ABX<sub>3</sub> perovskite with an empty A-site. Related trifluorides have a cubic-to-rhombohedral structural phase transition above room temperature. In contrast ScF<sub>3</sub> has a cubic structure at all temperatures below its high melting point, 1800 K. We have begun to grow ScF<sub>3</sub> films on oxide substrates using pulsed laser deposition (PLD). There are several unique features to this material that pose challenges for PLD growth: large band gap, non-oxide, poor adhesion under pressure. We have made substantial progress, producing films with a large fraction having very good epitaxy and small mosaic, but remaining regions that are polycrystalline. We update the growth status and initial characterization of ScF<sub>3</sub> films.

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