

Abstract Submitted  
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**Combinational growth and physical properties of possible topological Kondo insulator  $\text{SmxB1-x}$  films**<sup>1</sup> JIE YONG, CNAM, Dept of Physics, University of Maryland, College Park, RICHARD RUCHOSKI, SEAN FACKLER, ICHIRO TAKEUCHI, Dept of Materials Science and Engineering, University of Maryland, College Park, RICHARD GREENE, CNAM, Dept of Physics, University of Maryland, College Park — Kondo insulator Samarium hexboride ( $\text{SmB6}$ ) has caused great interest due to its possible topological surface state and its interplay with correlated physics. Thin films of  $\text{SmB6}$  are highly desirable for surface sensitive measurements and novel device fabrications. Since both PLD and sputtering yield highly boron deficient films, we explored the thin film growth through combinational sputtering of a stoichiometrically  $\text{SmB6}$  target and Boron target. Thin  $\text{SmxB1-x}$  films are fabricated with  $x$  continuously varies from 0 to 1. We found that when  $x > 0.14$ , resistivity measurements show upturns around 50K and saturations below 10K, consistent with the bulk results. Resistance ratios between 300K and 4K are around 1.5, which is consistent with a much larger surface-to-bulk ratio. The films with  $x < 0.14$  are more insulating at room temperature and show insulating behavior. Other details of the characterization of these films will also be presented.

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