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Superconducting Iron-Chalcogenide Thin Films and Coated Conductors QIANG LI, WEIDONG SI, Brookhaven National Laboratory — Superconducting iron-chalcogenide superconducting films have been grown on a variety of substrates, including single crystalline and metallic substrates. In this presentation, we will report transport and structural properties of these films. The superconducting transition temperature of these films is significantly higher than that of the corresponding bulk materials. Analytical electron microscopy analysis indicates substantial structural difference between these films and single crystals at atomistic level. Detailed measurement of the angular dependence of upper critical field and critical current density demonstrated that iron chalcogenide superconductors have lower anisotropy factor in comparison to the high T_c cuprates, that presents the unique opportunity for this class of materials in high field application.

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