

Abstract Submitted
for the SES15 Meeting of
The American Physical Society

Thickness dependence of critical current density in RABiTS coated conductors. A J BRADY, J L BROWNLEE, University of North Georgia, Dahlonega GA 30597, R FEENSTRA, Oak Ridge National Laboratory, Oak Ridge, TN 37831, A O IJADUOLA, University of North Georgia, Dahlonega GA 30597 — The critical current density J_c flowing in thin $YBa_2Cu_3O_{7-\delta}$ (YBCO) films of various thicknesses d has been studied magnetometrically, both as a function of applied field H and temperature T . The films, grown by a BaF2 ex-situ process and deposited on buffered ‘RABiTS’ substrates of Ni-5W, have thicknesses ranging from 28 nm to 1.5 μm . The J_c increases with thickness at first, peaks at about $d \sim 120$ nm, and decreases with thickness thereafter. In intermediate applied magnetic fields, we find a power law falloff $J_c \propto H^{-\beta}$ with $\beta \sim (0.56 - 0.69)$ for all the samples. Temperature dependence of the J_c is also studied.

A O Ijaduola
University of North Georgia, Dahlonega GA 30597

Date submitted: 16 Oct 2015

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