# Recent Progress in Thickness Related Studies to Enhance $I_c$ in ex situ YBCO Coated Conductors

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Ex situ processes based on the incorporation of BaF2 as a component of deposited precursor layers provide an attractive route for producing the YBCO layer in coated conductor technology. These processes enable large values of the critical current density Jc, which translate into large critical currents Ic that increase with the YBCO layer thickness d. Ic values in excess of 250 A/cm (77 K) has been obtained on IBAD and RABiTS templates. Studies to further increase the Ic capacity are directed towards: understanding the origin of the Jc-d dependence, processing driven research to improve the microstructure and flux pinning, and increasing d beyond 1 micrometer with minimal loss in Jc. Here, we review progress on all three fronts. Critical observations include: a liquid-mediated growth mode in the YBCO, varying with d and leading to grain boundary overgrowth effects; thickness dependent trends in the intra-grain Jc; and a divergence between through-thickness Jc-d measurements (after successive ion milling) and the empirical Jc-d dependence.

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