

**Intra-granular  $J_c$  versus grain-boundary  $J_c$  as a function of YBCO thickness**

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For thin films (<0.4  $\mu\text{m}$ ), excellent agreement has been observed between the intra-granular  $J_c$  for YBCO on RABiTS (with medium quality texture) and YBCO on single crystal substrates ( $J_c$  about 4-5 MA/cm<sup>2</sup>). Present experimental observation is that  $J_c$  decreases faster with increasing thickness for YBCO on single crystal substrates than on RABiTS or IBAD-YSZ. This suggests a stronger dependence of the intra-granular  $J_c$  with thickness than the  $J_c$  of grain boundaries. Under investigation is the intra-granular  $J_c$  of thick film (>2  $\mu\text{m}$ ) RABiTS samples, and the  $J_c$  of thick film grain boundaries. Thick film grain boundaries will be studied on both RABiTS and YSZ bicrystal substrates. Magneto-optical imaging, which is sensitive to the ratio of  $J_c(\text{GB})/J_c(\text{intragrain})$ , will also be used to study thick film YBCO on RABiTS.