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Pinning Enhancement on Minute Rare Earth Doped TFA-MOD YBCO Film HUI FANG, GAN LIANG, BRANDON HARRISON, JASON CARPENTER, PAUL BARNES, SAM HOUSTON STATE UNIVERSITY COLLABORATION, AIR FORCE RESEARCH LABORATORY COLLABORATION — Rare earth substitution for yttrium has been proved an efficient method to enhance in-field properties of YBCO coated conductor. Studies have been explored on large amount ($10 \sim 30\%$) substitution as well as small amount ($1 \sim 10\%$) substitution. More recently, successful results have been reported on minute (less than 1 %) rear earth substitution on YBCO film by using pulsed laser deposition (PLD) method. Chemical solution deposition method is an easy scale-up, low cost method to fabricate YBCO film. In this study, minute rare earth (Tb, Nd) doped YBCO films are prepared using Trifluoroacetic acid metalorganic deposition (TFA-MOD) method. The precursor solution is deposited on LAO single crystal substrate by using spinning coating method. The epitaxial YBCO films are obtained via a two-step heat treatment. The characterizations of films including microstructure, Tc, field dependence Jc will be reported. The relationship between dopant amount, Jc-H behavior, and microstructure evalution is being investigated and will be presented.

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