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Evaluation of YBCO to 45T over wide temperature range ZHIJUN CHEN, FUMITAKE KAMETANI, DAVID LARBALESTIER, Florida State University — The ability to tune the vortex pinning of YBCO in coated conductor form is both an enormous benefit to future superconducting materials applications and a challenge to understanding the properties over a broad range on particular samples. We have been doing such characterizations in support of the design of 30 T magnets. In recent work we have mapped the J_c to fields of 33T at temperatures down to 4K and measured the angular dependent J_c in similar fields. We see that it is possible to enhance H_{irr} by about 15% as compared to standard YBCO at 55K, when a high density of RE_2O3 nanoprecipitates is formed in the microstructure These precipitate arrays produce J_c 50 MA/cm^2 almost 20% of the depairing current density.

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