

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Doubling of the Critical Current Density of 2G-YBCO Coated Conductors through proton irradiation ULRICH WELP, YING JIA, WAI-KWONG KWOK, Materials Science Division, Argonne National Laboratory, MARTY RUPICH, STEVEN FLESHLER, American Superconductor Corporation, Devons, MA, ASFGHAR KAYANI, Western Michigan University, Kalamazoo, MI — We report on magnetization and transport measurements of the critical current density of commercial 2G YBCO coated conductors before and after proton irradiation. The samples were irradiated along the c-axis with 4 MeV protons to a fluence of 1.5×10^{16} p/cm². We find that at temperatures below 50 K, proton irradiation increases J_c by a factor of 2 in low fields and increases up to 2.5 in fields of 7 T. At 77 K, proton irradiation is less effective in enhancing the critical current. Doubling of J_c in fields of several Tesla and at temperatures below 50 K will be highly beneficial for applications of coated conductors in rotating machinery, generators and magnet coils. - Work supported by the US DoE-BES funded Energy Frontier Research Center (YJ), and by Department of Energy, Office of Science, Office of Basic Energy Sciences (UW, WKK), under Contract No. DE-AC02-06CH11357.

Ulrich Welp
welp@anl.gov

Date submitted: 09 Nov 2012

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