

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Enhancement of critical current through compound defect with proton irradiation and heavy ion irradiation in YBCO coated conductors and  $\text{FeSe}_x\text{Te}_{1-x}$  crystals**<sup>1</sup> KAREN KIHLMSTROM, Argonne National Lab and University of Illinois at Chicago, MAXIME LEROUX, Argonne National Lab, SIGRID HOLLEIS, Atominstitut TU Wien, DANIELLE HARRIS, Grand Valley State University, ULRICH WELP, HELMUT CLAUS, Argonne National Lab, ASGHAR KAYANI, Western Michigan University, GENDA GU, Brookhaven National Lab, MARTY RUPCH, SRIVATSAN SATHYAMURTHY, STEVEN FLESHLER, American Superconductor Corp, FRANCESCO LAVIANO, LAURA GOZZELINO, ROBERTO GERBALDO, GIANLUCA GHIGO, Politecnico di Torino, WAI-KWONG KWOK, Argonne National Lab — We investigate the enhancement of vortex pinning by both point and columnar defects and compare the results in 2G YBCO coated conductors (CC), with  $T_c$  90K, and in  $\text{FeSe}_x\text{Te}_{1-x}$  single crystals with  $T_c$  14K. Both samples were irradiated with 250 MeV Au ions to a dose-matching field of 1T. The samples were then irradiated with 4 MeV protons to a dose of  $4 \times 10^{16}$  p/cm<sup>2</sup> and  $8 \times 10^{16}$  p/cm<sup>2</sup> in the CC and single crystal, respectively. The major effect of compound particle irradiation in both samples resulted in a synergetic enhancement of the critical current across a wide field range, beyond the enhancement from either individual irradiation type.

<sup>1</sup>This work supported by the Center for Emergent Superconductivity, an Energy Frontier Research Center funded by the U.S. D.O.E., Office of Science, Office of Basic Energy Sciences. The work in Italy was supported by the INFN-TERASPARC project.

Karen Kihlstrom  
Argonne National Lab and University of Illinois at Chicago

Date submitted: 06 Nov 2015

Electronic form version 1.4