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## Effect of heat treatment and test barrel materials on critical current measurements of Ag/Bi2212 round wires using ITER barrel configurations

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Critical current measurement for Ag/Bi-2212 wires has been typically performed by mounting a short sample (4-10 cm long) heat treated standalone at  $\sim 830$  °C on a room temperature G-10 sample holder and cooling them down to cryogenic temperatures. During this process samples experience a huge temperature and strain change. This strain effect has not been carefully considered for critical current measurement, despite that critical current of Ag/Bi-2212 wires is well known to depend on strain. At Fermilab and BNL we began to use a new protocol by reacting meter long samples on 96% pure Al<sub>2</sub>O<sub>3</sub> ITER barrels and transferring them to test barrels made from Ti-6Al-4V alloy. We are extending the study to include tests on barrels made from 304 stainless steel, Inconel 600, and G-10. Samples that will be investigated include wires heat-treated using 1 bar partial melt processing and an overpressure partial melt processing. Initial measurements showed that samples tested on the G-10 barrel reproduce  $I_c$  for short witness samples, while the Ti-alloy barrel results in a 10%  $I_c$  reduction. Fitting these  $I_c$  measurement results into the  $I_c$ -strain curves from previous research, the thermal pre-strain for the samples measured on the Ti-alloy, Stainless Steel, and G-10 will be evaluated.

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**Author:** YE, Liyang (Fermi National Accelerator Laboratory)

**Co-authors:** GHOSH, Arup (Brookhaven National Laboratory); LI, Pei (Fermi National Accelerator Laboratory); SHEN, Tengming (Fermilab)

**Presenter:** SHEN, Tengming (Fermilab)

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