

Magneto-Optical Image Study for Coated Conductors under Applied Field and Electrical Current

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The magnetic flux penetration into coated conductors was studied using Magneto-Optical Image(MOI). The MOI was obtained by using Bi:YIG indicator with polarization microscope. To remove water vapor condensation which causes lowering the resolving power, it was measured in a vacuum chamber. The temperature measured by T.C. near the sample was at 78~80K. The sample was RABiTS-superconductor produced by AMSC(model 344S) and cut 4mm width 30mm length. SUS sheath soldered on silver was removed for obtaining better quality image. The applied magnetic field was varied from -1KOe to 1KOe and perpendicular to sample. The current was varied from -50A to 50A stepwise.

Field penetration aspect was observed as local flux motion. Field front penetration from sample edge had a specific pattern. When the applied field was reversed, the field around sample edge was abruptly reversed too. This was analogous to Brandt's theory. While the transport current flowing, the field profile of sample showed asymmetrically field-trapped region but as adding field to it, fast changing to symmetric one was observed.

keywords : magneto-optical image, RABiTS, coated conductor, magnetization

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