

Enhancement of Low Temperature Critical Current Density of MgB₂ Thin Films by Au Coating

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We measured the superconducting critical current densities (J_c) from the magnetization hysteresis ($M-H$) loop while depositing the gold on top of the MgB₂ thin film. The purpose of this experiment is whether the vortex avalanche phenomena which suppress the J_c for low temperature ($T < 15$ K) and low field ($H = 1000$ Oe) can be cured by gold deposition. This avalanche called flux noise has been headache for the application of the MgB₂ thin films. As increasing the thickness of Au film, fortunately, the flux noise in the $M-H$ loop is suppressed and finally disappears when thickness of the gold becomes 2.55 μm . From this experiment, the obstacles of the application of MgB₂ thin film are completely overcome.

keywords : Critical Current Density, Thin Film, Vortex