

Magnetic Characterization of Superconducting MgB₂

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It has been reported that polycrystalline MgB₂ does not show weak link behavior. In this study, this observation was checked by measuring the critical current density (J_c) of MgB₂ pellet prepared by pressing without sintering. The result from a DC magnetization using a SQUID magnetometer and that from Campbell's method are compared. The two J_c 's are coincident and this result confirms that the intergrain J_c is not deteriorated by grain boundaries. The upper and lower critical fields (H_{c1} and H_{c2}) of the specimen are also measured. In terms of the thermodynamic critical field estimated from H_{c1} and H_{c2} , the condensation energy density is estimated and the potential of application of this material is discussed.