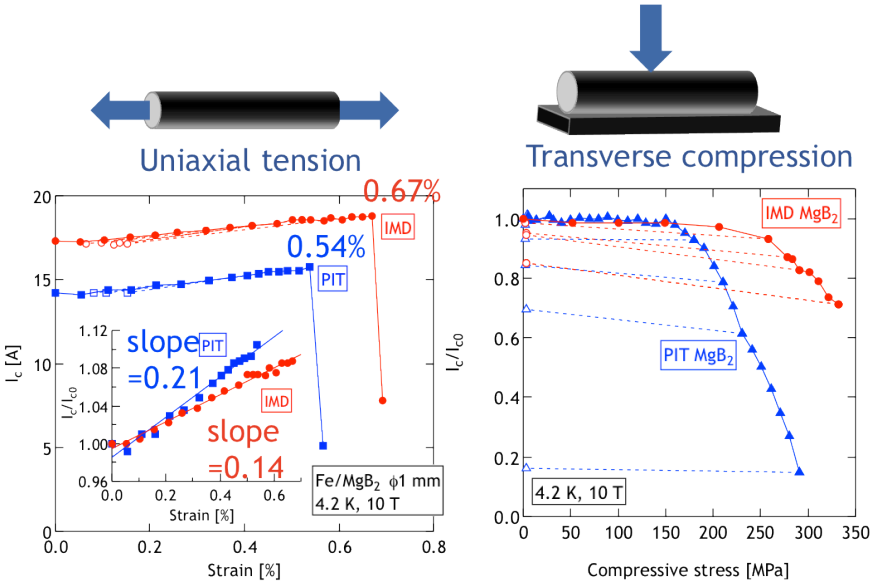
Mechanical Properties of IMD processed MgB_2 Superconducting Wire

Mg 拡散法で作製した二硼化マグネシウム超伝導線材の機械特性



The internal Mg diffusion (IMD) process Mechanical properties of MgB_2 superconducting wires fabricated by an internal Mg Diffusion (IMD) process and a pwder-in-tube (PIT) process were investigated. The uniaxial tensile strain and the transverse compressive stress dependence of critical current (I_c) at 4.2 K and 10 T were compared. The IMD-processed MgB_2 wire showed a larger irreversibility tensile strain limit (ε_{irr}=0.67%) and a larger transverse stress tolerance (σ_t=206 MPa) than the PIT-processed one. In addition, the tensile strain sensitivity of I_c for IMD-MgB_2 wire was smaller than that for the PIT-MgB_2 wire.

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内部マグネシウム拡散法 (IMD: Internal Mg Diffusion process) によって作製した二硼化マグネシウム線材における I_c の軸方向歪依存性および横圧縮応力依存性を，パウダー・イン・チューブ法 (PIT: Powder in Tube process) による線材のそれと比較した。IMD 法線材は軸方向可逆歪限界，横圧縮応力限界ともに PIT 法線材に比べて大きく，優れた機械特性を有することを見出した。

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