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Magnetic Anisotropy of Fe-Al Alloys*

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Abstract

Magnetocrystalline anisotropy K_1 and induced magnetic anisotropy K_u of Fe-Al single crystals containing about 20 at.% Al were measured with a torque meter. The K_1 of the 21.0 at.% Al alloy showed a maximum at 360 K. The behavior of K_1 is explained on the basis that a specimen is in a two-phase state, one of which is disordered matrix having positive K_1 and the other is precipitated Fe_3Al phase having negative K_1 . The deviation of K_u from directional order theory is explained by assuming that the shape anisotropy of Fe_3Al particles plays an important role.

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