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Magnetic Properties of the Intermetallic Compound with the Cu_3Au -Type Structure in Cobalt-Titanium Alloy System*

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Abstract

X-ray and magnetic studies have been made on the intermetallic compound $\text{Co}_{3+x}\text{Ti}_{1-x}$. X-ray study indicates that $\text{Co}_{3+x}\text{Ti}_{1-x}$ with the Cu_3Au -type structure has the phase field ranging from about 20.5 to 25.0 at. % Ti ($x=0.180\sim 0$) below $1,000^\circ\text{C}$. According to magnetic measurements, Co_3Ti ($x=0$) is a paramagnetic substance with a practically temperature independent magnetic susceptibility, whereas $\text{Co}_{3+x}\text{Ti}_{1-x}$ ($x>0$) is ferromagnetic with Curie points lower than 80°K and saturation magnetizations less than 20.8 emu/g.

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