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Authors: Zongyu Xie, Xiaoqin Ou, Song Ni, Min Song

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Phase transition and hardness evolution of a Ti-5Al-5Mo-1Fe-1Cr alloy subjected to isothermal aging

Zongyu Xie, Xiaoqin Ou*, Song Ni, Min Song*

State Key Laboratory of Powder Metallurgy, Central South University, Changsha 410083, P.R. China

*Corresponding authors. msong@csu.edu.cn (M.S.), xiaoqin.ouyang@csu.edu.cn (X.O.)

Highlights

- Aging time affects the contents and morphologies of α , β and ω phases in the alloy.
- The ORs between three phases are $[110]\beta//[112(_)0]\omega//[0001]\alpha$ and $(1(_)12)\beta//(11(_)00)\omega//(011(_)0)\alpha$.
- The hardness of the alloy is closely related to the fraction of ω phase.

Abstract

In this paper, a Ti-5Al-5Mo-1Fe-1Cr alloy was isothermally aged at 500 °C for different periods. Phase transformation took place during the aging treatment. The phase transformation was studied by X-ray diffraction spectroscopy and transmission electron microscopy. The as-quenched sample was composed of matrix β (body-centered cubic structure) phase, ω_{ath} (hexagonal structure) phase and minor α

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