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论文

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TC11钛合金在疲劳-蠕变交互作用下的形变特征及位错结构

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CYCLIC DEFORMATION AND DISLOCATION OF TC11 TITANIUM ALLOY UNDER FATIGUE-CREEP INTERACTION

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摘要

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摘要 研究了经常规,近 β 和 β 锻造工艺所获得的具有等轴、双态和网篮3种显微组织的TC11钛合金在疲劳-蠕变交互作用下的形变特性及位错结构。发现不同显微组织或同一组织内部的初生 α 和条状 α 具有的层错能不同是形成不同位错亚结构的根本原因。

关键词: 疲劳试验-蠕变分析 循环-变形 位错

Abstract: The characteristics of cyclic deformation and dislocation of TC11 titanium with e-quiaxed, duplex and basketweaver microstructures are studied. It is found that different microstructures have different dislocations and the curves of $\lg(1/\epsilon)-N$ of equiaxed and basketweaver microstructures have a zigzag shape. Analyses show that the nature of microstructures' effect on the characteristics of deformation and dislocation of TC11 titanium alloy under fatigue-creep interaction is that different microstructures or primary and platelet α phases in the same microstructure have different fault energy; the higher the fault energy, the easier the dislocation's recovery, and that dislocation recovery and pile-up again at the same process make the curves of $\lg(1/\epsilon)-N$ become zigzag.

Keywords: fatigue tests-creep analysis cycles-deformation dislocation (materials)

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