

化学

## U-Ti合金的动态力学性能

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收稿日期 修回日期 网络版发布日期:

**摘要** 采用分段式霍普金森杆 (SHPB) 及材料试验机测试了3种时效状态的U-Ti合金在室温下的静动态力学曲线, 采用扫描电镜分析了U-Ti合金动态压缩后的剪切断裂特征, 采用XRD分析了动态压缩前后的结构变化。

结果表明, 3种状态的U-Ti合金都产生了应变速率强化效应; 当应变速率约为 $2\ 500\ \text{s}^{-1}$ 时, U-Ti合金发生了剪切断裂; 断口出现取向性的韧窝且在局部区域的韧窝非常细小, 以及烧蚀变形。动态压缩使3种状态的U-Ti合金的晶粒取向改变。

**关键词** [动态力学](#) [分段式霍普金森杆](#) [剪切](#)

分类号

## Dynamic Mechanical Properties of U-Ti Alloy

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### Abstract

The quasi-static and dynamic stress-strain curves of the three aged U-Ti alloys were tested respectively by mechanical equipment and split Hopkinson pressure bar at room temperature, the tensile fractures and microstructure were analyzed by SEM and XRD. The results show that the three aged U-Ti alloys are sensitive of the strain rate. Shear fractures yield in the U-Ti alloys under the strain rate about  $2\ 500\ \text{s}^{-1}$ . Orientated dimples and distorted deformation are found on the fractures. Dynamic compression changes the grain orientations of the aged U-Ti alloys at three different states.

**Key words** [dynamic](#) [mechanics](#) [split](#) [Hopkinson](#) [pressure](#) [bar](#) [shearing](#)

DOI

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