

### 论文摘要

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### TiAl基合金的氧化分层

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**摘要:** 用SEM及EDS研究了5种TiAl基合金经800~1 000 °C, 100 h 断续氧化及循环氧化后氧化剖面的结构、组成。结果显示, TiAl氧化表面存在分层现象。首先形成(TiO<sub>2</sub>+Al<sub>2</sub>O<sub>3</sub>)混合层, 其次是新相过渡层; 较少观察到连续的Al<sub>2</sub>O<sub>3</sub>层。因应力作用, 氧化层开裂乃至剥离后, 化学分层转入物理分层阶段, 氧化层保护性恶化。

**关键字:** TiAl; 氧化; 分层; 生长应力; 热应力

### Oxidation stratification of TiAl based alloy

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**Abstract:** Interrupted or cyclic oxidation of five TiAl based alloys at 800~1 000 °C, 100 h were carried out, cross section microstructure and oxides constitution were investigated by SEM, EDS equipments. The results show that stratification is one of the characteristics of oxidation of TiAl. Mixture layer of TiO<sub>2</sub>+Al<sub>2</sub>O<sub>3</sub> is formed firstly, after that there is the formation of diffusion zone inside and pure TiO<sub>2</sub> scale outside. Continuous Al<sub>2</sub>O<sub>3</sub> film is observed scarcel. Chemical stratification is transformed into physical stratification once delamination occurs due to the effect of growth stress and thermal stress, and the protection of oxide layers is destroyed consequently.

**Key words:** TiAl; oxidation; stratification; growth stress; thermal stress

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