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### 采用XD工艺合成TiAl合金及TiC / TiAl复合材料的研究

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### XD SYNTHESIS AND REACTIVE MECHANISM OF TiAl INTERMETALLICS AND TiC/TiAl COMPOSITE

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摘要

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**摘要** 研究了用XD(热爆)工艺合成TiAl合金及TiC/TiAl复合材料,并探讨了其合成反应机制。结果表明,可在Al的熔点附近用XD工艺制备TiAl合金及其TiC颗粒增强的TiC/TiAl复合材料,Ti-Al粉末间的放热反应促进了TiC的合成。TiAl合金由TiAl+Ti3Al相组成,而TiC/TiAl复合材料由TiC+TiAl+Ti3Al相组成。

**关键词:** 合成金属 复合材料 组分

**Abstract:** D(exothermic dispersion)synthesis and its reactive mechanism for the TiAl intermetallics and TiAl based composite reinforced with TiC particles are investigated.The experimental results show that TiAl intermetallics and TiC/TiAl composite can be achieved by the XD process at higher temperature than the melting point of aluminium and that the thermopositive reaction between Ti powder and Al powder,  $3Ti \pm Al \rightarrow Ti_3Al$  and  $Ti + Al \rightarrow TiAl$ , promotes the synthesis of TiC. TiAl intermetallics is composed of  $\gamma$  TiAl +  $\alpha_2$  Ti3Al and TiC/TiAl composite is composed of TiAl + Ti3Al + TiC phases.

**Keywords:** synthetic metals composite materials constitution

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