

## BN与TiNi系合金熔体的界面反应

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## Interaction between Boron Nitride and the Melted TiNi Alloy

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**摘要** 以高纯氮化硼(BN)作为坩埚材料, 对其应用于TiNi系合金熔炼时的界面反应进行研究. 研究BN在不同温度下(1 450 °C, 1 520 °C), 保持一定时间(90s, 180 s, 270 s, 360 s)与TiNi系合金熔体的相互作用情况, 得到了不同反应时间、反应温度下的界面层, 并用扫描电子显微镜(scanning electron microscopy, SEM)、X射线衍射(X ray diffraction, XRD)和电子探针显微分析(electron probe microanalysis, EPMA)对界面进行形貌、物相和成分的分析, 对反应机理作了讨论. 研究表明, BN与熔体作用的产物在试验条件下不与熔体继续反应, 从而保护了熔体不受到进一步污染.

**关键词:** TiNi合金熔体 氮化硼 界面反应 坩埚材料

**Abstract:** Interaction between high-purity boron nitride (BN) and melted TiNi alloy was studied to determine if BN could be used as crucible material for melting TiNi alloy. A series of interface actions between them were performed for different melt temperatures (1 450 °C, 1 520 °C) and different holding times (90 s, 180 s, 270 s, 360 s). These interfaces were then investigated with scanning electron microscopy (SEM), X-ray diffraction, and electron probe microanalysis. The results showed that TiNi melt was slightly contaminated due to the limited reaction between BN and Ti under the conditions.

**Keywords:** TiNi melt, boron nitride, interfaces, crucibles and refractory

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