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### 轧制变形对TiNiFe形状记忆合金组织结构及力学性能的影响

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### Influence of Rolling Deformation on the Structural and Mechanical Properties of TiNiFe Shape Memory Alloys

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摘要

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**摘要** 对不同变形量轧制和不同温度热处理的Ti<sub>50</sub>Ni<sub>47</sub>Fe<sub>3</sub>合金的组织结构、力学性能进行了研究。X射线衍射结果表明,随着轧制变形量的增加,Ti<sub>50</sub>Ni<sub>47</sub>Fe<sub>3</sub>合金在轧制方向上出现了择优取向;Ti<sub>50</sub>Ni<sub>47</sub>Fe<sub>3</sub>合金的晶粒尺寸随着轧制变形量的增加而减小,随着热处理温度的升高而增大;Ti<sub>50</sub>Ni<sub>47</sub>Fe<sub>3</sub>合金的抗拉强度和屈服强度随着轧制变形量的增加而增大,随热处理温度的升高而降低。

**关键词:** Ti<sub>50</sub>Ni<sub>47</sub>Fe<sub>3</sub>形状记忆合金 轧制变形 择优取向 晶粒度 力学性能

**Abstract:** The influence of rolling deformation and heat treatment temperature on structures, mechanical properties is studied. The results of X-ray diffraction(XRD) show that preferred orientation is found in the direction of rolling in Ti<sub>50</sub>Ni<sub>47</sub>Fe<sub>3</sub> alloy. The grain size of Ti<sub>50</sub>Ni<sub>47</sub>Fe<sub>3</sub> alloy becomes smaller as deformation of rolling increases, but grows bigger while temperature of heat treatment rises. The fracture strength becomes higher while the deformation of Ti<sub>50</sub>Ni<sub>47</sub>Fe<sub>3</sub> alloy increases or the temperature of heat treatment lowers.

**Keywords:** Ti<sub>50</sub>Ni<sub>47</sub>Fe<sub>3</sub> shape memory alloy rolling deformation preferred orientation grain size mechanical properties

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