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γ相的变形行为及其对Ni－Al－Fe－B合金形状记忆效应的影响

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DEFORMATION OF THE γ-PHASE AND ITS EFFECT ON THE SHAPE MEMORY EFFECT OF A Ni-Al-Fe-B ALLOR

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摘要 通过显微组织分析和宏观力学,研究了Ｎｉ－Ａｌ－Ｆｅ－Ｂ合金中γ相的变形行为及其对合金形状记忆效应（ＳＭＥ）的影响。结果表明：在低应力作用下,Ｎｉ－Ａｌ－Ｆｅ－Ｂ合金发生应力诱发马氏体相变时,有少量γ相以滑移方式参与协调变形,以至合金在较小的应变量下也得不到完全的ＳＭＥ。合金的形状记忆恢复率随应变量增加呈现阶段性衰减趋势。当应变量为４％时,形状记忆恢复率可达７５％。

关键词： 相 变形 记忆 合金 效应

Abstract: The deformation of the γ-phase and its effect on the shape memory effect of a Ni-Al-Fe-B alloy were studied by means of optical and SEM metallographic exanllnations,microhardness measurement and compression test.It was found that a few γ-phases deformed coordinatedly in a slip manner when the stress induced martensitic transfonnation took plaee in the matrix at a low stress.The shape recovery ratio decreased by stages,with the increase of the strain.When the strain was 4%,the shape recovery ratio retained 75%.

Keywords: phases deformation memory alloys effects

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