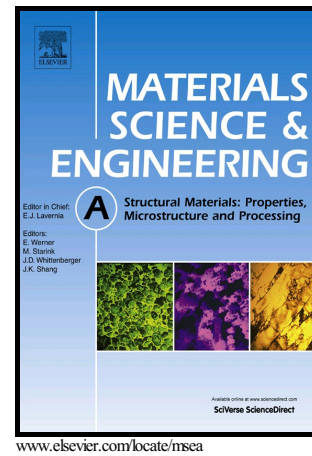


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Microstructure evolution of titanium after tensile and recrystallisation

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Abstract

The qualitative and quantitative behaviour of titanium Ti40 during tensile deformation was investigated along with the effect of deformation and twins on the subsequent recrystallisation process. For this purpose, the examined material was subjected to stretching in mutually perpendicular directions. Tensile tests were performed up to 8 and 16% deformation. Subsequently, the material was examined using the electron backscatter diffraction technique. Analysis of microstructure and misorientation profiles showed that the material stretched in the transverse direction was characterised by the creation of numerous twin structures. A large number of twins $\{1\ 0\ 1\ 2\}\langle -1\ 0\ 1\ 1\rangle$ was observed, whereas in the sample stretched in the rolling direction $\{1\ 1\ -2\ 2\}\langle -1\ -1\ 2\ 3\rangle$ twin structures were rarely observed. Twin structures obtained during deformation have an impact on the process of recrystallisation, mainly on recrystallisation

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