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Low-temperature Superplasticity of Dual-phase Ti₃Al Based Alloy KAI-LIN YANG, CHIH-CHING HUANG — To date, the Ti₃Al based alloys have been widely reported their admirable superplasticity within the temperature ranges of 900-1000°C. However, the superplastic behavior of temperature lower than 900°C was seldom reported. The current paper will be aimed on the superplastic behavior at lower temperatures (700-900°C). The phase transformation of $\beta \rightarrow \alpha_2$ in the two-phase ($\alpha_2 + \beta$) region during static annealing and superplastic straining at 700-1000°C was occurred in this ($\alpha_2 + \beta$) dual-phase alloy. In addition, the misorientation angle distributions and texture characteristics of the β and α_2 phases were examined by the electron backscattered diffraction (EBSD) to complete the deformation behavior. Under the optimum LTSP condition at 850°C and the strain rate of $5 \times 10^{-4} \text{ s}^{-1}$, texture evolution is also investigated. From the texture characteristics associated with microstructure, the transformation behavior related to the deformation behavior could be demonstrated more clearly. In this current study, the texture characteristics, phase transformation phenomena, and the deformation mechanism at lower temperatures (below 900°C) will be related and discussed.

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