Materialwissenschaft und Werkstofftechnik

Investigation and optimization of heat treatment process on tensile behaviour of Ti6Al4V alloy

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Abstract
This article examines the microstructure and tensile strength of annealed Ti6Al4V alloy at different temperatures and times. Taguchi based L9 (32) design was used for the experimental design matrix and optimization of the tensile strength of heat treated samples. The optimum parameter combination was at the temperature of 950 °C and soaking time of 1 hour. ANOVA results show that temperature is the most influencing parameter and a regression equation of degree two was developed to predict tensile strength. Results of the microstructure show lamellar structure development within the samples heat-treated at 1000 °C.