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Crystallization kinetics of $Fe_{78}Si_9B_{13}$ metallic glass

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Keywords

metallic glass, non-isothermal crystallization, activation energy, kinetics exponent

Abstract

The investigation of $Fe_{78}Si_9B_{13}$ metallic glass was carried out by means of non-isothermal DSC and X-ray diffraction methods. Two crystalline phases: α-Fe(Si) and $(Fe, Si)_2B$ were identified during the crystallization process. Based on the Kissinger equation the activation energies for both phases were calculated. Using the Gao equation the Avrami kinetics exponent was determined. TEM studies proved the creation of these phases and also showed the presence of the FeB_{49} phase in the remaining amorphous phase.