

Phase morphology effect on elevated temperature mechanical behavior of nanostructures

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ABSTRACT

A devitrification procedure by annealing was applied to a multicomponent Fe-based metallic glass in order to obtain nanocrystalline materials. Phase composition and phase morphology were strongly dependent on the annealing conditions. An elevated temperature mechanical behavior of nanostructures was evaluated by tensile testing. A strong effect of phase morphology on the mechanical response of the material was revealed. A most attractive combination of strength and plasticity was observed in the nanostructure with approximately equal grain sizes of crystallized phases.