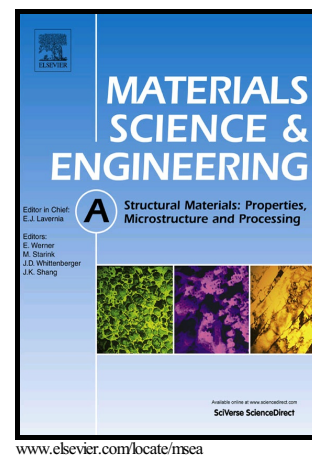


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Investigation by mechanical spectroscopy at different frequencies of the nucleation processes in amorphous Cu-Zr-Al alloys

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Abstract

The anelastic spectra of $\text{Cu}_{39.5}\text{Zr}_{51}\text{Al}_{9.5}$, $\text{Cu}_{54}\text{Zr}_{40}\text{Al}_6$ and $\text{Cu}_{47.75}\text{Zr}_{47.75}\text{Al}_{4.5}$ bulk metallic glasses were obtained by Mechanical Spectroscopy Technique at different frequencies. Studies below room temperature show two principal mechanisms: one broad peak, similar to β relaxation, and another sharp peak, similar to α relaxation. This observation suggests that the interaction between amorphous structure and mechanical waves demonstrates that β' relaxation can be decomposed in two principal peaks, one due to the movement of flow units and another owing to the growth of molecular-like structures. The behaviour of hybridization among Al-Cu atoms tends to decrease the free

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