

Local structural order and single-particle dynamics in metallic glass

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Abstract

The atomic dynamics of the amorphous metallic alloy Al₅₀Cu₅₀ is investigated in this work. The critical glass-forming temperature is defined from the behavior change of the Wendt-Abraham parameter and the pair-correlation entropy, and is $T_c \approx 500$ K. It is shown that the power-fractional memory function allows us to describe in the framework of the mode-coupling theory the time dependences of the incoherent scattering functions obtained from the atomic dynamic simulations for the wide region of temperatures ($T = 100$ - 2000 K). © Allerton Press, Inc., 2010.

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