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Abstract

Crowding phenomenon of scattered probe atoms in a Supercooled binary Lennard-Jones mixture

The crowding effect phenomena have been investigated by performing a molecular dynamics simulation on a three dimensional Lennard-Jones binary mixture. When coupling a small randomly chosen fraction of particles to an external field we observed that these particles tend to form strings. Their sizes strongly depend on the external driving force as well as on the simulation time. This behaviour reflects a crowding effect which resembles an induced effective attraction force acts on the probe atoms and drives them to create a string like structures. The formation of these strings as a collective cooperative motion leads to a significant modification of the non-linear behavior of the velocity-force relation.