

Abstract Submitted
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Variation of the glass transition temperature with rigidity and chemical composition GERARDO NAUMIS, UNAM — The effects of flexibility and chemical composition in the variation of the glass transition temperature are obtained by using the Lindemann criteria, that relates melting temperature with atomic vibrations, and rigidity theory. Using this criteria and that floppy modes at low frequencies enhance in a considerable way the average quadratic displacement, we show that the consequence is a modified glass transition temperature. This approach allows to obtain in a simple way the empirically modified Gibbs-DiMarzio law, which has been widely used in chalcogenide glasses to fit the changes in the glass transition temperature with the chemical composition . The method predicts that the constant that appears in the law depends upon the ratio of two characteristic frequencies (or temperatures). This constant is estimated for the Se-Ge-As glass by using the experimental density of vibrational states, and the result shows a very good agreement with the experimental fit from glass transition temperature variation.

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