Oral Presentation

Glass Transition and Material Characterization

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Abstract

When a liquid is cooled two distinct solid structures can be obtained. The first one is the well-known crystalline structure meaning, periodicity of the atomic or molecule organization, ordered structure, lowest entropy and lowest volume occupancy. The second one is in reality not so well known, it is the glassy structure meaning, no periodicity of the atomic or molecule organization, disordered structure, excess of entropy, excess of volume leading to have time-dependent physical properties. A crystal is characterized by its temperature of crystallization during cooling and by the temperature of melting during heating. A glass is characterized only by its glass transition temperature.

I propose to discuss the state of the art concerning the actual knowledge of the glass transition temperature determination and I will focus on the classical traps often done by scientists. Then I will show how it is possible to have information about the molecular dynamics occurring around the glass transition domain and how these molecular dynamics can be correlated to local modifications of the glass structures.