

Advanced Physical Metallurgy “Amorphous Materials”

Class # _____ Name _____

1. Fill in the blank.

When a liquid is cooled sufficiently below the () of its crystalline phase, the relaxation time for structural rearrangement dramatically (). If () can be avoided by sufficiently rapid cooling, most () will enter a metastable glassy state. The liquid-to-glass transition can be characterized experimentally by a temperature called the () at which the viscosity of the supercooled liquid is typically (). This viscosity corresponds to () of the order of minutes to hours. Upon cooling a liquid toward T_g , various physical and thermodynamic properties change with ().

relaxation times / crystallization / supercooled liquids / increase / temperature / 10^{13} poise / melting point / glass transition temperature /

2. Draw schematic diagrams for the relationship between G (Gibb's free energy) (or S (Entropy), C_p (heat capacity)) and T (temperature) in liquid to glass transition and liquid to crystal transition.