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## **Chapter 8:                   Basics of Melting and Glass Formation**

by

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### **Abstract:**

The energy/enthalpy functions of solids and melts are investigated as a function of temperature. Several thermal effects can be understood on an atomic scale surprisingly well by energy levels and wave functions of the bonding electrons and their interaction with the oscillating atoms. Among these effects are the melting transition, the glass transformation, the thermal expansion, structural phase transitions and relaxation effects occurring near the glass transition temperature,  $T_g$ . Glass formation is favored if sufficient strong directed bonds are present between the constituents and the melting entropy per particle is sufficiently small.

**Key words:** Melting, glass formation, enthalpy function, entropy function, thermal properties of solids and melts, thermal expansion coefficient