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Heat Capacity of Solids

Homework – Computational Experimental Science

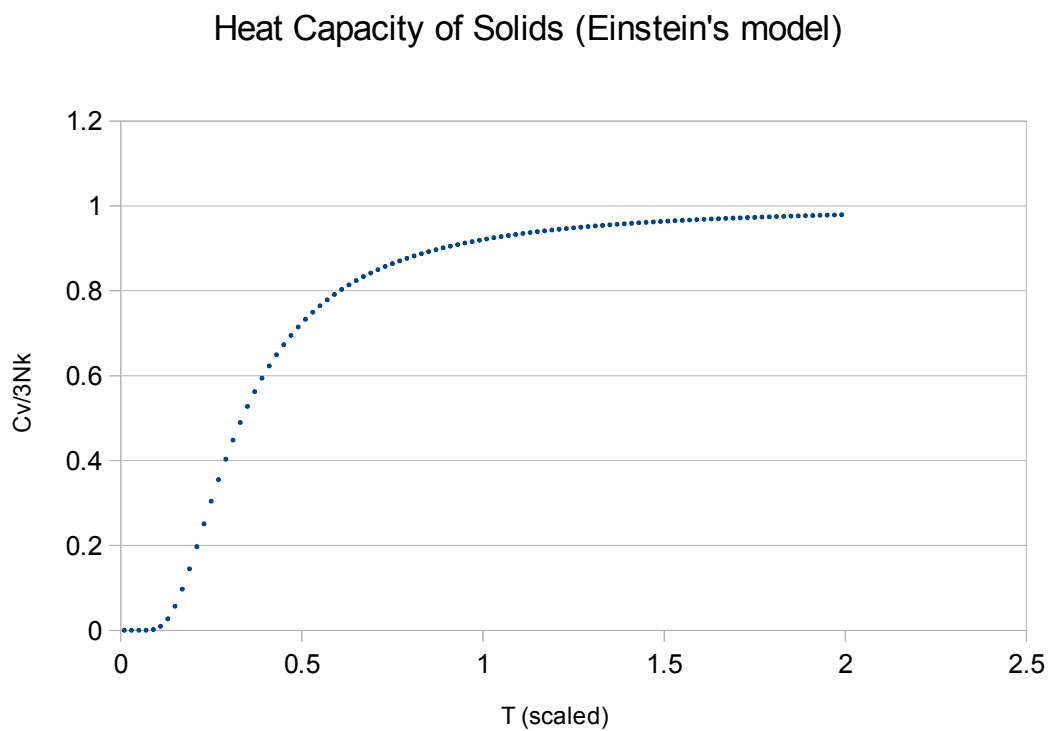
Draw graph of C_V vs T using Einstein model.

Answer:

$$C_V = 3Nk \left(\frac{\varepsilon}{kT} \right)^2 \frac{e^{\varepsilon/kT}}{(e^{\varepsilon/kT} - 1)^2}.$$

$$\varepsilon = \hbar\omega$$

with Einstein model: all atom oscillate with the same angular frequency, we can draw graph of C_V vs T .



The result show Dulong-Petit law (classical heat capacities) that the value of heat-capacity of a number of substance will converge to a constant value.