



**MATERIALS SCIENCE  
& ENGINEERING**  
TEXAS A&M UNIVERSITY

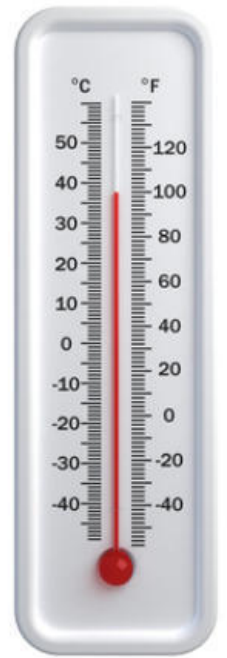
# Introduction to Materials Science & Engineering

## Heat Capacity

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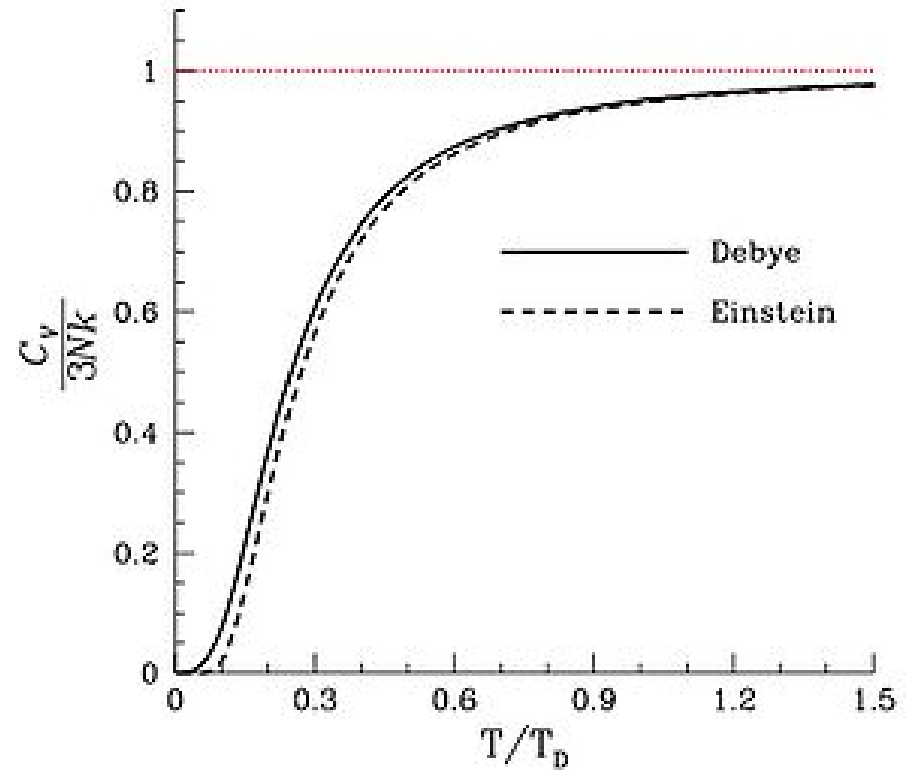
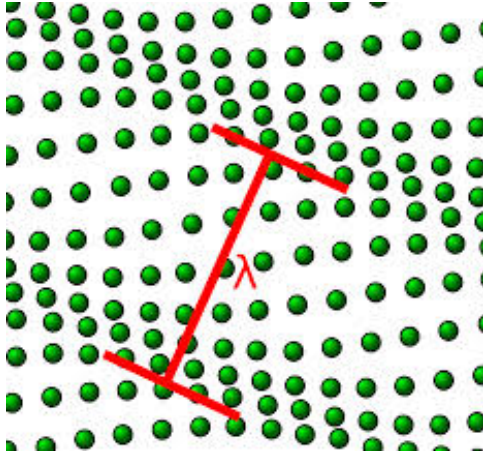


# Heat Capacity

$$C \equiv \frac{Q}{\Delta T},$$



# Heat Capacity of Solids



# Summary

- Definition of Heat Capacity
- Heat is stored primarily through lattice vibrations
- Heat capacity goes to zero as  $T \rightarrow 0$ 
  - Not enough energy to excite vibrations
- Heat capacity goes to  $3Nk$  as  $T \rightarrow \infty$ 
  - At high enough temperature, ALL vibrations excited