

# Specific heat of diatomic molecule

$$\frac{2C(T)}{N} = \begin{cases} \frac{3}{2}k_B + 3k_B \left(\frac{\theta_{rot}}{T}\right)^2 e^{-\theta_{rot}/T} & T_c \ll T \ll \theta_{rot} \\ \frac{3}{2}k_B + k_B + \frac{k_B}{180} \left(\frac{\theta_{rot}}{T}\right)^2 + k_B \left(\frac{\theta_{vib}}{2T}\right)^2 e^{-\theta_{vib}/T} & \theta_{rot} \ll T \ll \theta_{vib} \\ \frac{3}{2}k_B + k_B + k_B & \theta_{vib} \ll T \ll T_{dis} \\ 3k_B & T_{dis} \ll T \end{cases}$$

