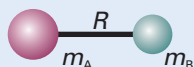


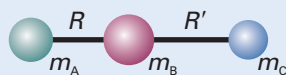
Table 13.1 Moments of inertia*

1. Diatomic molecules



$$I = \mu R^2 \quad \mu = \frac{m_A m_B}{m}$$

2. Triatomic linear rotors

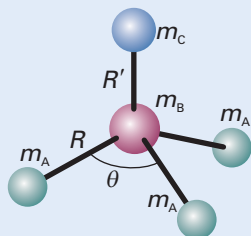


$$I = m_A R^2 + m_C R'^2 - \frac{(m_A R - m_C R')^2}{m}$$



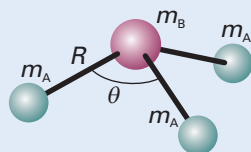
$$I = 2m_A R^2$$

3. Symmetric rotors



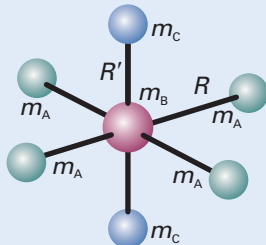
$$I_{\parallel} = 2m_A(1 - \cos \theta)R^2$$

$$I_{\perp} = m_A(1 - \cos \theta)R^2 + \frac{m_A}{m}(m_B + m_C)(1 + 2\cos \theta)R^2 + \frac{m_C}{m}\{(3m_A + m_B)R' + 6m_A R[\frac{1}{3}(1 + 2\cos \theta)]^{1/2}\}R'$$



$$I_{\parallel} = 2m_A(1 - \cos \theta)R^2$$

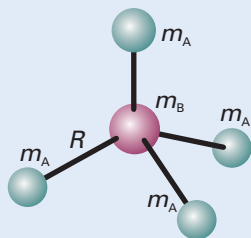
$$I_{\perp} = m_A(1 - \cos \theta)R^2 + \frac{m_A m_B}{m}(1 + 2\cos \theta)R^2$$



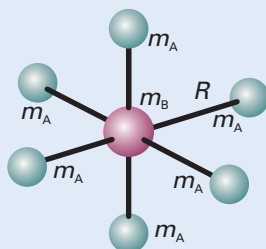
$$I_{\parallel} = 4m_A R^2$$

$$I_{\perp} = 2m_A R^2 + 2m_C R'^2$$

4. Spherical rotors



$$I = \frac{8}{3}m_A R^2$$



$$I = 4m_A R^2$$

* In each case, m is the total mass of the molecule.