

16.2 Activation energy

Understandings:

- The Arrhenius equation uses the temperature dependence of the rate constant to determine the activation energy.
- A graph of $1/T$ against $\ln k$ is a linear plot with gradient $-E_a / R$ and intercept, $\ln A$.
- The frequency factor (or pre-exponential factor) (A) takes into account the frequency of collisions with proper orientations.

Applications and skills:

- Analysing graphical representation of the Arrhenius equation in its linear form
$$\ln k = \frac{-E_a}{RT} + \ln A.$$
- Using the Arrhenius equation $k = A e^{\frac{-E_a}{RT}}$.
- Describing the relationships between temperature and rate constant; frequency factor and complexity of molecules colliding.
- Determining and evaluating values of activation energy and frequency factors from data.