OCR B Physics A Level

5.2.2 - Thermal Physics

Flashcards

What is the internal energy of a gas?

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Internal energy is the sum of the kinetic and potential energies of all the particles in a substance.

What can be said about the internal energy of an ideal gas?

What can be said about the internal energy of an ideal gas?

Ideal gases have no intermolecular forces and so the particles have no potential energy. This means that the internal energy is equal to the kinetic energy of the particles.

What is specific heat capacity?

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Specific heat capacity is the amount of energy required to raise the temperature of 1 kg of a substance by 1°C, without changing its state.

What equation is used to calculate the amount of energy required to raise the temperature of a substance by a given amount?

What equation is used to calculate the amount of energy required to raise the temperature of a substance by a given amount?

$$E = mc\Delta\theta$$

Where m is the mass of the substance, c is the specific heat capacity and $\Delta\theta$ is the change in temperature.

What is the unit for specific heat capacity?

What is the unit for specific heat capacity?

$Jkg^{-1}°C^{-1}$

What does the gradient of a temperature-energy graph for 1 kg of a substance represent?

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1 / Specific Heat Capacity

What is activation energy?

What is activation energy?

Activation energy is the minimum energy required for a chemical process to take place.

How do particles transfer energy between themselves?

How do particles transfer energy between themselves?

Through random collisions with each other.

What equation is used to calculate the Boltzmann factor?

What equation is used to calculate the Boltzmann factor?

$$Bf = e^{\frac{-\varepsilon}{kT}}$$

Where ε is the activation energy, k is the Boltzmann constant, and T is the temperature.