OCR A Physics GCSE

1.1 - The Particle Model

Flashcards

How did the plum-pudding model describe the atom?

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A ball of positive charge, with negatively charged electrons distributed evenly throughout it.

Prior to the discovery of the electron what was believed about the atom?

Prior to the discovery of the electron, what was believed about the atom?

The atom was believed to be indivisible.

Which experiment led to the plum-pudding model being discarded?

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Rutherford's alpha-scattering experiment.

What is the name given to the currently accepted model of the atom?

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The Bohr nuclear model.

What are the three subatomic constituents of an atom?

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1. Proton
2. Neutron
3. Electron

Describe the arrangement of protons, neutrons and electrons in an atom.

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- The protons and neutrons are found in the atom's nucleus
- The electrons are found in discrete energy levels around the nucleus

What type of charge does the nucleus of an atom have? Why?

What type of charge does the nucleus of an atom have? Why?

- **Positive charge**
- The nucleus contains protons and neutrons
- Protons have a positive charge
- Neutrons have no charge

Where is most of the mass of an atom concentrated?

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In the nucleus.

Approximately what proportion of the total radius of an atom is the radius of the nucleus?

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1/10,000

This equals 0.01%. The nucleus is very small compared to the whole atom.

Give an approximation for the radius of an atom.

Give an approximation for the radius of an atom.

1×10^{-10} metres

What is the definition of density? State the relevant equation with units.

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- The mass per unit volume of a material
- $\rho = m/v$
- Density (kg/m^3), Mass (kg), Volume (m^3)

Describe the particle arrangement of a solid.

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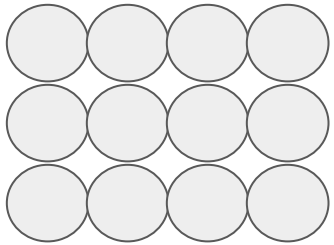
Tightly packed in a regular arrangement.

Particles can only vibrate on the spot.



Describe the particle arrangement of a liquid.

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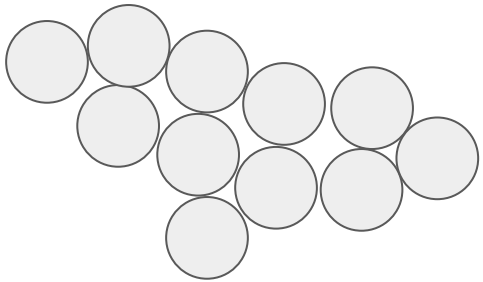
Close together, but irregular arrangement. They can flow past each other.

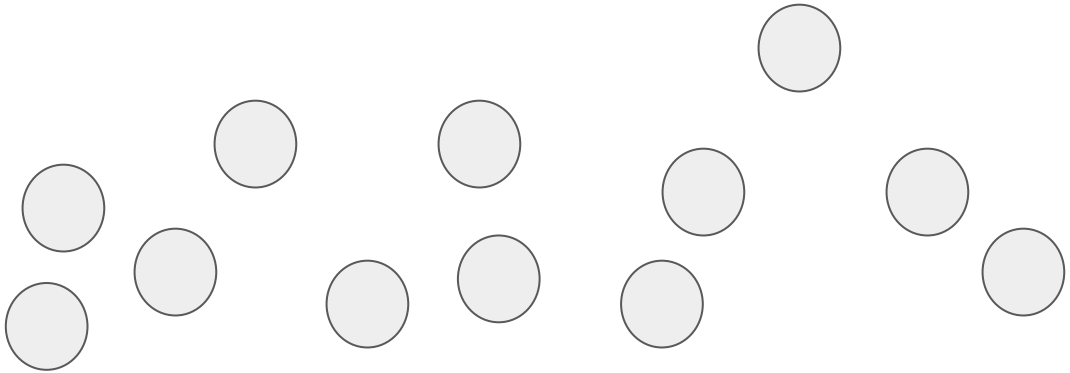


Describe the particle arrangement of a gas.

Describe the particle arrangement of a gas.

Separated, with no regular arrangement.

Particles can move freely.



Give the different states of matter in order (least to most) of density of atoms.

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- Least dense: Gas
- Liquid
- Most dense: Solid

What is always conserved when a substance undergoes a change of state?

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Mass