

Ionic bonding

Learning objectives

- 1 Describe ion formation.
- 2 Draw dot and cross diagrams of ionic bonding and explain how an ionic lattice is held together.
- 3 State the limitations of a range of models used to represent ionic bonding.

Introduction

Ionic bonding occurs when atoms lose and gain electrons to form ions and then the positively and negatively charged ions are attracted to each other. In this activity, you will gain an understanding of the models and diagrams used to represent this type of bonding and their limitations.

Instructions

1. Stick the structure strip in the margin of your exercise book/paper.
2. Follow the prompts to write a summary of ionic structure and bonding. You might need to use a textbook, revision guide or website to help you. Take care to write in full sentences, describing the question within your answer and using appropriate keywords.
3. When you have finished the structure strip you should have a good knowledge of ionic structures and bonding. Now, tackle the question below to apply your knowledge to a new context.

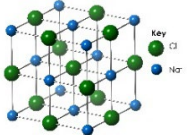
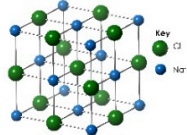
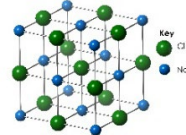
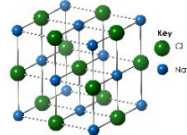
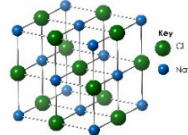
Keywords

You may wish to use some of the following words in your responses:

Bonding, dot and cross diagram, electron, ionic, ions, lattice, limitation, negative, positive.

Follow-up question

Draw a dot and cross diagram to show what happens when atoms of sodium and oxygen react to produce sodium oxide. Discuss the advantages and limitations of the dot and cross diagram for this compound.

Structure strip Ionic bonding	Structure strip Ionic bonding	Structure strip Ionic bonding	Structure strip Ionic bonding	Structure strip Ionic bonding
Explain how and why metals form positive ions.	Explain how and why metals form positive ions.	Explain how and why metals form positive ions.	Explain how and why metals form positive ions.	Explain how and why metals form positive ions.
Explain how and why non-metals form negative ions.	Explain how and why non-metals form negative ions.	Explain how and why non-metals form negative ions.	Explain how and why non-metals form negative ions.	Explain how and why non-metals form negative ions.
Draw dot and cross diagrams to show how electrons are transferred between the following pairs of atoms: <ul style="list-style-type: none"> • Na and F • Mg and O • Mg and Cl Give the formulas of the salts formed.	Draw dot and cross diagrams to show how electrons are transferred between the following pairs of atoms: <ul style="list-style-type: none"> • Na and F • Mg and O • Mg and Cl Give the formulas of the salts formed.	Draw dot and cross diagrams to show how electrons are transferred between the following pairs of atoms: <ul style="list-style-type: none"> • Na and F • Mg and O • Mg and Cl Give the formulas of the salts formed.	Draw dot and cross diagrams to show how electrons are transferred between the following pairs of atoms: <ul style="list-style-type: none"> • Na and F • Mg and O • Mg and Cl Give the formulas of the salts formed.	Draw dot and cross diagrams to show how electrons are transferred between the following pairs of atoms: <ul style="list-style-type: none"> • Na and F • Mg and O • Mg and Cl Give the formulas of the salts formed.
 <p>Describe how an ionic lattice is held together using the diagram to help you write your answer.</p>	 <p>Describe how an ionic lattice is held together using the diagram to help you write your answer.</p>	 <p>Describe how an ionic lattice is held together using the diagram to help you write your answer.</p>	 <p>Describe how an ionic lattice is held together using the diagram to help you write your answer.</p>	 <p>Describe how an ionic lattice is held together using the diagram to help you write your answer.</p>
Describe the limitations of using the following models to represent a giant ionic structure: <ul style="list-style-type: none"> • Dot and cross • Ball and stick • 2D and 3D diagrams 	Describe the limitations of using the following models to represent a giant ionic structure: <ul style="list-style-type: none"> • Dot and cross • Ball and stick • 2D and 3D diagrams 	Describe the limitations of using the following models to represent a giant ionic structure: <ul style="list-style-type: none"> • Dot and cross • Ball and stick • 2D and 3D diagrams 	Describe the limitations of using the following models to represent a giant ionic structure: <ul style="list-style-type: none"> • Dot and cross • Ball and stick • 2D and 3D diagrams 	Describe the limitations of using the following models to represent a giant ionic structure: <ul style="list-style-type: none"> • Dot and cross • Ball and stick • 2D and 3D diagrams