Edexcel International GCSE Chemistry 4CH1 Learning Plan

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| **Unit: 1. Principles of Chemistry** | | **Chapter: 8. Covalent Bonding** | | **Hours: 4** |
| Content coverage | Learning outcomes | Resources | Assessment | |
| **Section 1: Principles of chemistry**  (g) Covalent bonding | 1.44 know that a covalent bond is formed between atoms by the sharing of a pair of electrons  1.45 understand covalent bonds in terms of electrostatic attractions  1.46 understand how to use dot-and-cross diagrams to represent covalent bonds in:   * diatomic molecules, including hydrogen, oxygen, nitrogen, halogens and hydrogen halides * inorganic molecules including water, ammonia and carbon dioxide   organic molecules containing up to two carbon atoms, including methane, ethane, ethene and those containing halogen atoms  1.47 explain why substances with a simple molecular structures are gases or liquids, or solids with low melting and boiling points *the term intermolecular forces of attraction can be used to represent all forces between molecules*  1.48 explain why the melting and boiling points of substances with simple molecular structures increase, in general, with increasing relative molecular mass  1.49 explain why substances with giant covalent structures are solids with high melting and boiling points  1.50 explain how the structures of diamond, graphite and C60 fullerene influence their physical properties, including electrical conductivity and hardness.  1.51 know that covalent compounds do not usually conduct electricity | Video: Section 1 – Lesson 4 – Reacting Masses, Ionic and Covalent Bonding  Powerpoint: Section A3 –Bonding (from slide 42 to end)  Textbook pages:  Page 85 – Covalent bonding  Page 86 – Covalent bonding in a hydrogen molecule  Page 86 – The significance of noble gas structures in covalent bonding  Page 87 – Why does hydrogen form molecules?  Page 87 – Covalent bonding in a hydrogen chloride molecule  Page 87 - Covalent bonding in a chlorine molecule  Page 87 – Covalent bonding in methane, ammonia and water  Page 89 – Covalent bonding in a slightly more complicated molecule: ethane  Page 89 – Multiple covalent bonding  Page 90 – organic molecules containing halogen atoms  Page 91 – Some more difficult molecules where the central atom does not have 8 electrons in its outer shell  Page 92 – Melting and boiling points increase as relative molecular mass increases  Page 93 – Some other physical properties of covalent compounds  Page 93 – Giant covalent structures | Pages (96) to (97) Qs (1) to (9)  Chapter 8 Answers to textbook questions  Unit 1-8 Bonding exam question - pdf  Unit 1-8 Bonding exam question mark scheme – pdf  Section A3 - Talking paper video | |

Videos – [www.igcsesciencecourses.com](http://www.igcsesciencecourses.com)

Textbook Ref: Edexcel International GCSE (9-1) Chemistry Student Book - Pearson (Clark, Owen and Yu)