



Unit: Bonding	<ol style="list-style-type: none"> 1. Ionic Bonding 2. Ionic Compounds 3. Covalent Bonding 4. Metallic Bonding 	<ol style="list-style-type: none"> 5. States of Matter 6. Properties of Ionic Compounds 7. Properties of Small Molecules 8. Polymers 	<ol style="list-style-type: none"> 9. Giant Covalent Structures 10. Properties of Metals and Alloys 11. Diamond and Graphite 12. Graphene and Fullerenes 13. Nanoparticles
LESSONS			
Knowledge & Skills Development	<ul style="list-style-type: none"> • Description of the process of ionic bonding in terms of electron transfer • Description of the limitations of different types of diagrams of to represent ionic compounds • Description of how non-metal atoms bond • Description of the bonding of metal atoms • Knowledge of how particles behave in solids, liquids and gases and what happens to these particles when changes of state occur • Explanation of the properties of ionic compounds, small molecules and metals 	<ul style="list-style-type: none"> • Description of the structure of polymers and explanation of how this links to their properties • Structure and how this links to properties in diamond and graphite • Structure, properties and uses of fullerenes including carbon nanotubes and Buckminsterfullerene • Evaluate the use of nanoparticles for specific purposes and explain the possible risks associated with their use 	
Assessment / Feedback Opportunities	Formative Assessment Teacher questioning Quizzes Exam style questions	Summative assessment End of topic assessment Exam questions in future end of topic assessments to assess recall	
Key Vocabulary	Independent Variable, Dependent Variable, Control Variables, Method, Conclusion, Precaution, Evaluation, Reliable, Precision, Valid, Anomaly, Describe, Explain, Compare, Analyse, Calculate, Suggest Atom, Particle, Electron, Bond, Ion, Covalent, Metallic, Property, Charge, State, Matter, Polymer, Boiling Point, Melting Point, Conduct, Intermolecular, Structure, Alloy, Diamond, Graphite, Nanoparticle, Molecule		
Literacy/Reading Opportunities	Subject specific vocabulary introduced before reading of related texts Word etymology from Latin and Greek roots Reading of simple and complex sentences, paragraphs, articles Scientific writing including structuring methods, comparisons and evaluations		
Cross Curricular Themes	Numeracy/Maths – averages (means), reading scales, graph plotting, lines of best fit, using and rearranging equations, using scientific calculators Engineering – properties of materials		

Personal Development (Including British Values, RSE, Citizenship)	None
Career Opportunities	Product design (materials scientist), Pharmacist (drug development), Engineering professions