

Year 11 C11: Polymers. Chemistry – Science Faculty

Rationale and Context of Unit:	Core curriculum content:	Tier 2 & Tier 3 vocabulary explicitly taught:
<p>In this chapter, students will learn about different types of manufactured polymers, including addition polymers and condensation polymers (separate science only). This builds on concepts from the previous unit, C10 (specifically the structure of alkenes). Students will learn how to identify an addition polymer from polymer and monomer diagrams – drawing the monomer from the polymer and the polymer from the monomer. Students will be introduced explicitly to poly(ethene) and identify and draw other addition polymers and associated monomers. Higher-tier students will be introduced to the basic principles of condensation polymerisation.</p> <p>Separate science students will study natural polymers, including polysaccharides, proteins, and DNA. Higher-tier students will look at how amino acids react together to form proteins.</p>	<ul style="list-style-type: none"> • Addition polymerisation • Condensation polymerisation (separate science only) • Natural polymers (separate science only) • DNA (separate science only) 	<p>Condensation Polymerisation Polymer Monomer Saccharide Polysaccharide Deoxyribonucleic acid</p>
Challenge and Support:	World wide learning/ links to 21 st century:	Cultural capital/ Industry/ Enrichment:
<ul style="list-style-type: none"> • <i>Guided examples of polymerisation reactions will be given for the different examples.</i> • <i>Scaffolding will be provided to help pupils complete their own representations of polymerisation reactions using chemical nomenclature.</i> • <i>Challenge provided with the use of more</i> 	<ul style="list-style-type: none"> • Scientists are currently developing new polymerisation methods to make new plastics, often from biological sources that are biodegradable. • The study of the structure of biological polymers in biochemistry allows us to understand how different enzymes function, as 	<ul style="list-style-type: none"> • The UK plastics industry employs approximately 182,000 people. • There are numerous jobs in the field of biochemistry.

<p><i>complex monomers and linking skills of naming hydrocarbons from the previous topic.</i></p>	<p>well as what happens when they go wrong. This leads to a better understanding of some non-communicable diseases and how they can be treated.</p>	
<p>Historical, Social, Moral, Spiritual, Cultural context:</p>	<p>Cross curricular links/ literacy/numeracy:</p>	<p>Common misconceptions:</p>
<ul style="list-style-type: none"> • Polymerisation reactions have allowed us to make numerous new products, including plastics which now cause great environmental harm (as well as improving our daily life). 	<ul style="list-style-type: none"> • Links to year 8 Geography unit on plastics in the ocean. • Numerous links to GCSE biology: cell division, digestion, DNA transcription. 	<ul style="list-style-type: none"> • Crude oil is just used to make fuels.
<p>Assessment timeline:</p>		
<ul style="list-style-type: none"> • <i>regular EPPQs</i> • <i>end of unit test (separate science only)</i> • <i>EPPQ homework task</i> • <i>in lesson questioning and other progress checks</i> 		
<p>Home learning</p>		
<ul style="list-style-type: none"> • <i>EPPQ homework booklet</i> 		
<p>Feedback</p>		
<ul style="list-style-type: none"> • <i>Students self/peer mark homework booklets and set revision goals based on understanding.</i> • <i>Feedback based on the end of the unit test (separate science only).</i> 		

Length of unit (duration indicated in lessons)

C11.1	C11.2	C11.3	C11.4	C11 test (separate science only)
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Unit: C11 polymers, Chemistry