

| Lessons TBAT   | Key Knowledge   | Practical   | Assessment   |
|--|---|---|--|
| <p>TBAT: Discuss the different types of chromatography and the methods behind each one.</p> <p>TBAT: Analyse data from chromatograms and explain how the data is obtained.</p> | <p><b>3.3.16 Chromatography (A-level only)</b></p> <p>Chromatography can be used to separate and identify the components in a mixture.</p> <p>Types of chromatography include:</p> <ul style="list-style-type: none"> <li>• thin-layer chromatography (TLC) – a plate is coated with a solid and a solvent moves up the plate</li> <li>• column chromatography (CC) – a column is packed with a solid and a solvent moves down the column</li> <li>• gas chromatography (GC) – a column is packed with a solid or with a solid coated by a liquid, and a gas is passed through the column under pressure at high temperature.</li> </ul> <p>Separation depends on the balance between solubility in the moving phase and retention by the stationary phase.</p> <p>Retention times and R<sub>f</sub> values are used to identify different substances. The use of mass spectrometry to analyse the components separated by GC.</p> <p>Students should be able to:</p> <ul style="list-style-type: none"> <li>• calculate R<sub>f</sub> values from a chromatogram</li> <li>• compare retention times and R<sub>f</sub> values with standards to identify different substances.</li> </ul> | <p>Required practical 12<br/>Separation of species by thin-layer chromatography</p> | <p>End of topic test</p> <hr/> <p><b>Maths focus</b></p> <p>R<sub>f</sub> calculations</p> <hr/> <p>Prior knowledge:</p> <p><b>AS level Chemistry</b></p> <p>- 3.3.13 Amino acids, proteins and DNA (this section requires use of thin-layer chromatography for analysis of amino acids – it could be taught before or after this section)</p> |

