

Analytical Techniques



The key areas of study in this topic are:

- Infrared spectroscopy
- Mass spectrometry

By the end of this topic I should be able to:

	Start	End
Explain that infrared (IR) radiation causes covalent bonds to vibrate more and absorb energy		
Explain that absorption of infrared radiation by atmospheric gases containing C=O, O–H and C–H bonds (e.g. H ₂ O, CO ₂ and CH ₄) is the suspected link to global warming and resulting changes to energy usage		
Use an infrared spectrum of an organic compound to identify: <ul style="list-style-type: none"> • an alcohol from an absorption peak of the O–H bond • an aldehyde or ketone from an absorption peak of the C=O bond • a carboxylic acid from an absorption peak of the C=O bond and a broad absorption peak of the O–H bond 		
Interpret and predict infrared spectrum of familiar or unfamiliar substances using supplied data		
Explain the use of infrared spectroscopy to monitor gases causing air pollution (e.g. CO and NO from car emissions) and in modern breathalysers to measure ethanol in the breath		
Explain the use of a mass spectrum of an organic compound to identify the molecular ion peak and hence to determine molecular mass		
Analyse fragmentation peaks in a mass spectrum to identify parts of structures.		

In all topic areas you should be able to demonstrate and apply your knowledge and understanding.

