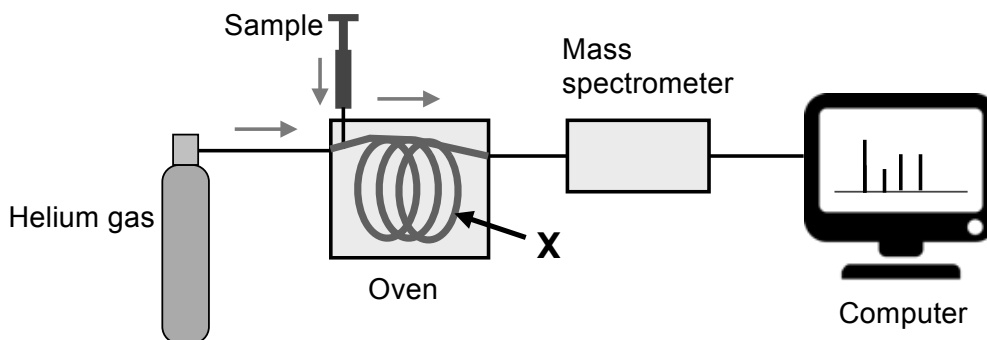


Gas Chromatography linked to mass spectrometry

1 The diagram represents the apparatus required for an instrumental method called gas chromatography linked to mass spectrometry.



1 (a) (i) The sample to be analysed is to injected into the system as shown. Part X separates out the substances in the sample.

Name part X

Column/separating column [1 mark]

(1 mark)

1 (a) (ii) Explain the role of the helium gas **and** part X in separating out the substances.

Helium gas carries the sample/compounds in the sample [1 mark]

Part X/column contains inert substance/polymer resin [1 mark]

Part X/column heated (by oven) [1 mark]

Sample separated in the column because the different substances travel at different speeds or have different retention times. [1 mark]

Substances that travel fastest/have shortest retention time come out first. [1 mark]

(3 marks)

1 (a) (iii) How many compounds are present in the sample, based on the reading on the computer screen in the diagram?

4 [1 mark]

(1 mark)

1 (b) What information is given by the molecular ion peaks on the read out?

Molecular mass [1 mark]

(1 mark)

1 (b) (i) Give two advantages of using gas chromatography linked to mass spectrometry over paper chromatography.

Smaller samples detected [1 mark], quicker [1 mark], more accurate [1 mark]

(2 marks)

**(Total 8 marks)**