Video « Gas chromatography – detection »

Time	Text
00 :09	The chromatographic column is located inside an oven. It is composed of a narrow tube with a very small internal diameter around 0.32 mm. The carrier gas flows inside this tube and drives the volatile constituents of the sample which will be separated.
00 :33	The chromatographic oven allows to warm the volatile components. Generally, the temperature goes from the room temperature around 40°C, to a relatively high temperature, around 250-300°C, which allows to volatilise even the components with a high boiling point, for them to be driven by the carrier gas.
01 :02	The separation along the chromatographic column is due to two different effects: - The interaction with the stationary phase - The relative volatilisation of a component compared to the others, so almost their boiling point.
01 :18	The separated components will then enter in the detector, at the end of the column. The flame ionization detector is a universal detector often used in gas chromatography in reason of its high sensitivity and its capacity to detect all the organic compounds.
01 :36	This detector will produce a signal proportional to the quantity of component which goes through the detection cell.
01 :45	In the recording of this signal called chromatogram, the components are represented by the chromatographic peaks. The surface of these peaks allows to know the quantity of each component in the injected sample.
02 :08	As you can learn in this website, there are different techniques for the calibration, external or internal. For gas chromatography, in reason of the poor repeatability of the injections, technique of internal calibration is preferred.
02 :20	If a more informative detector as the mass spectrometer is used as a detector, it is then possible to obtain the spectrum of the different components of the analysed solution. For example, here, if I click on a chromatographic peak, which represents a component, I will get the mass spectrum of the component. It is then possible to identify its related compound by looking in the spectrum library for the spectrum which is closest to the spectrum I got.
03 :02	Thanks to that, it is possible to know all the components of a solution, as well as their quantity. It is then possible to know the complete composition of a solution.