Video « Gas chromatography – sampling »

Time	Text
00 :09	In this video I will present how to correctly introduce a liquid sample into the injector for a separation by gas chromatography.
00 :23	To perform this injection, I will first sample some of my solution which is in a tightly closed vial. I will pierce the rubber membrane of the vial and sample a certain volume of liquid. Then, I will expel it away in order to rinse the syringe and the needle with the sample.
00 :41	This step allows to obtain a content of the syringe which is perfectly identical in composition to the sample.
00 :56	Once the rinsing of the needle is done, I will take two or three volumes of liquid in order to expel any bubbles. Then, I will rise the piston until the wanted volume and I will let a certain volume of air enters in the needle in order to block the liquid between the top of the piston and the air.
01 :20	After that, I will delicately clean the needle with neat paper and I will introduce the sample into the injector by piercing its rubber membrane and pressing quickly on the piston.
01 :35	Then, I take off the needle. In fact, when I performed the injection, I pierced a rubber membrane which is represented here. This membrane is called septum and is thick enough to ensure a good sealing during the injection.
01 :48	Once the septum pierced, the needle enters in the injection chamber, also called liner or insert. The volume of this chamber is chosen according to the injected volume of liquid. Indeed, the expansion coefficient between the liquid volume and the gaseous volume generated during the warming has to be considered.
02 :06	Therefore, the needle will be in the middle of the chamber and will warm at a temperature around 250°C. That's why, in the split mode, the injection has to be very quick in order to introduce all the sample directly into the injector.
02 :22	Here are two liners that I previously mentioned and which constitute the injection chamber of the injector. The liner is made of glass and can be easily cleaned. It can even be deactivated in certain case.
02 :36	Here is a liner with a relatively high diameter which allows to inject a relatively high volume of sample. On the opposite, there are some liners with a very small diameter, like this one, which allow to inject very small volume in a short time. So, this type of liner is more used for "headspace" injection or for solid phase micro-extraction.
03 :10	So, the sample is now vaporised in the injector and will be driven by the carrier gas into the chromatographic column where the separation will take place.
03 :22	For automatic devices, instead of doing the injection manually which could lead to errors from the operator, there are automatic injectors like this one. Again, you can see the injection syringe which is here in the automatic injector.
03 :39	The automatic injector will sample the solution from the vials as I explained earlier for the manual injection. It will take automatically a certain volume and then will introduce it in the injector, as in the manual operation.