

Free and easy-to-use internet tools for GC - Method development

There are generally two types of challenges in GC method development.

1: Optimize an existing method with the goal to save costs on carrier gas, columns, maintenance and analysis time. Here we are happy with the separation, so we want to make sure that in the new method we still have similar separations. If the costs have to be reduced, a cheaper or faster carrier gas can be considered. Also a shorter analysis time can be obtained by using a higher gas velocity, move to Hydrogen or using shorter, smaller diameter columns. Our goal is, to get exact the same chromatogram with the new method. To achieve this, the oven temperature program must be adjusted in such a way, that the elution temperatures of the components in the new method, will be the same as in the original method. To realize this, calculation programs are available on the internet which can be used. In this course we will discuss the impact of the parameters listed above and how the calculations are done. We also will do several exercises, so please bring your laptop.

2: If the separation needs to be significantly improved or a new method must be developed, the most selective stationary phase must be found first and then we optimize the operational parameters. To find the optimal phase, application databases from GC vendors will help. There is also a GC modeler available which can save you a lot of time. The GC modeler allows you to simulate the separation of the components you are interested in by showing the separation on different stationary phases. Column dimensions, carrier gases, flows and oven programs can be changed manually. With this free accessible software, you have basically a GC in your laptop and you can do hundreds of experiments in just a few hours.