

Discover the Advantage of Variable Resolution Within One Scan



Extrel's Merlin Automation software platform is unique in being able to deliver custom tune capability, allowing specific mass filter tune settings at individual mass points across the entire mass range.

In many applications, it would be convenient to measure the various components of a gas mixture, or the different molecules and ions evolving from a surface, at different combinations of sensitivity and resolution. For example, in secondary ion mass spectrometry (SIMS) studies, one might wish to perform a wide mass range survey scan with high resolution for low mass species, which may be in lower abundance. This is especially useful when the amount of sample is limited and/or the survey time short.

When using the Merlin Automation software platform, individual tune parameters can be set and stored in custom tune files for instant recall to match a particular experiment. The screen shots below illustrate the range of tune parameters and simplicity of set-up when addressing a very demanding high resolution measurement application. The Extrel HRQ (High Resolution Quadrupole) and easy-to-use Merlin Automation software make the task straightforward.

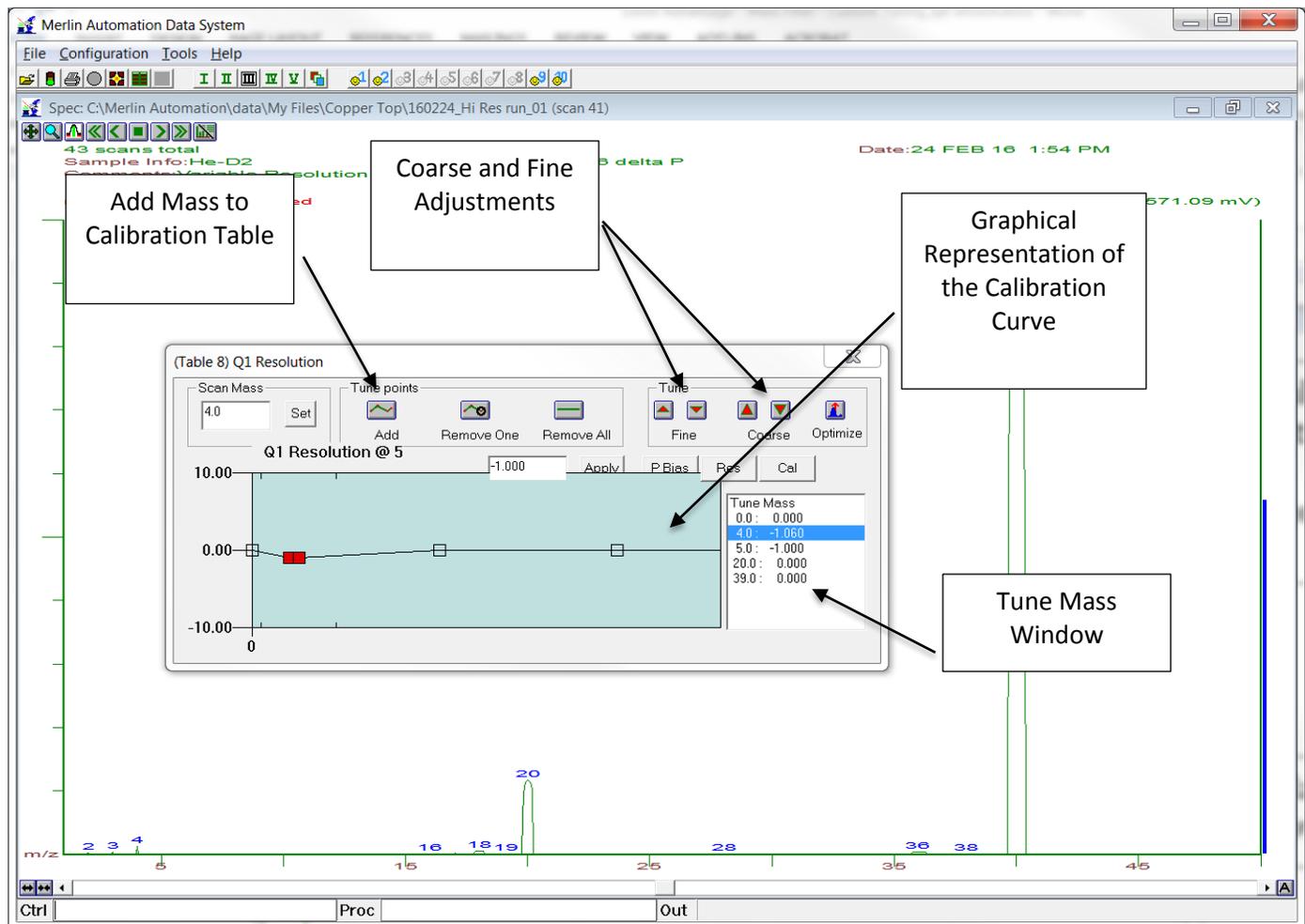


Figure 1: Graphical interface for the calibration curve in Merlin software. The high resolution settings are applied to mass 4, showing baseline resolution of Helium and Deuterium, while the rest of the scan is performed at nominal resolution.

Figure 2 shows the wide range scan obtained using Figure 1's tune settings. The spectrum illustrates perfect baseline resolution over the entire range. It is important to note that the spectrum shown is one single survey scan across the entire mass range.

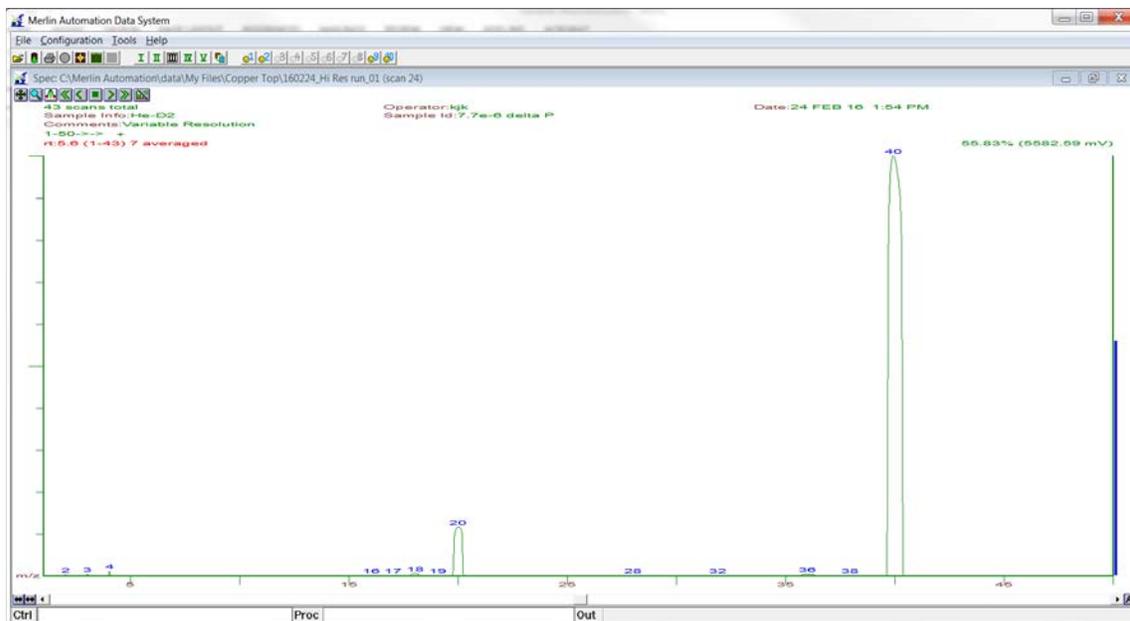


Figure 2: Scan from m/z = 1 to 50. The scan illustrates perfect base line resolution over the wide mass range.

Figure 3 below shows the zoomed-in detail in the region around 4 amu from the above scan. The high resolution setting applied to just this user defined area of the spectrum allows clear discrimination between Helium and Deuterium, which are separated by just 0.008 amu!

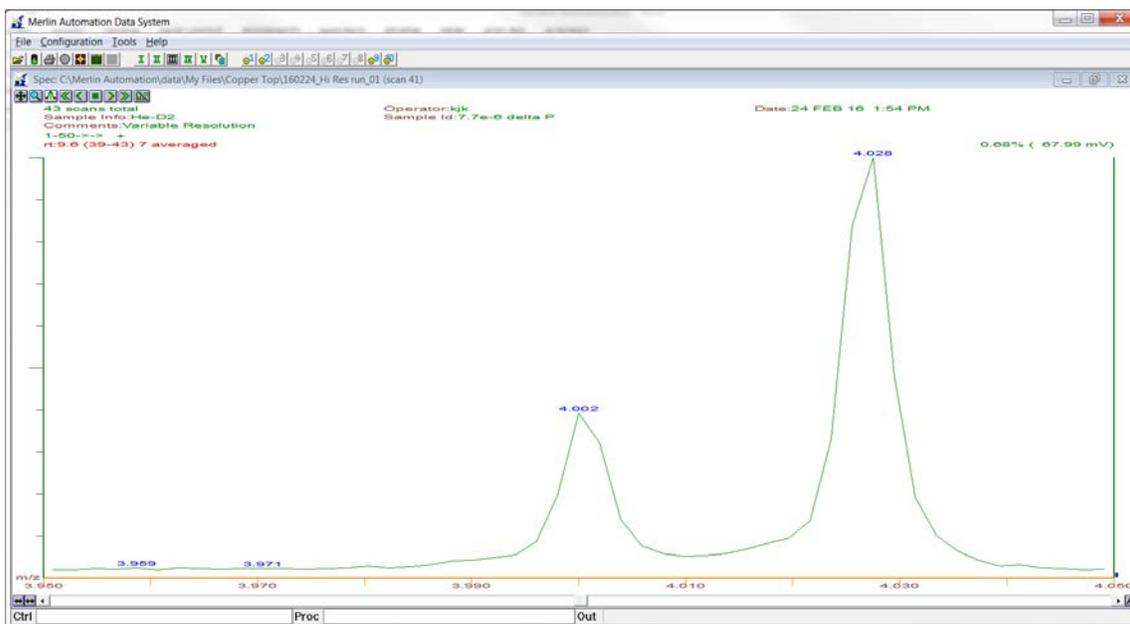


Figure 3: Increased resolution applied to m/z 4 to separate Helium and Deuterium, a separation of just 0.0008 amu.

Researchers are no longer limited by lengthy or repeat data gathering exercises in order to record key data, when using mass filter tuning. It is a powerful tool that can both significantly reduce the time required to make a wide assessment of the sample under study, and can also help to target the important aspects of each measurement to individual species.