

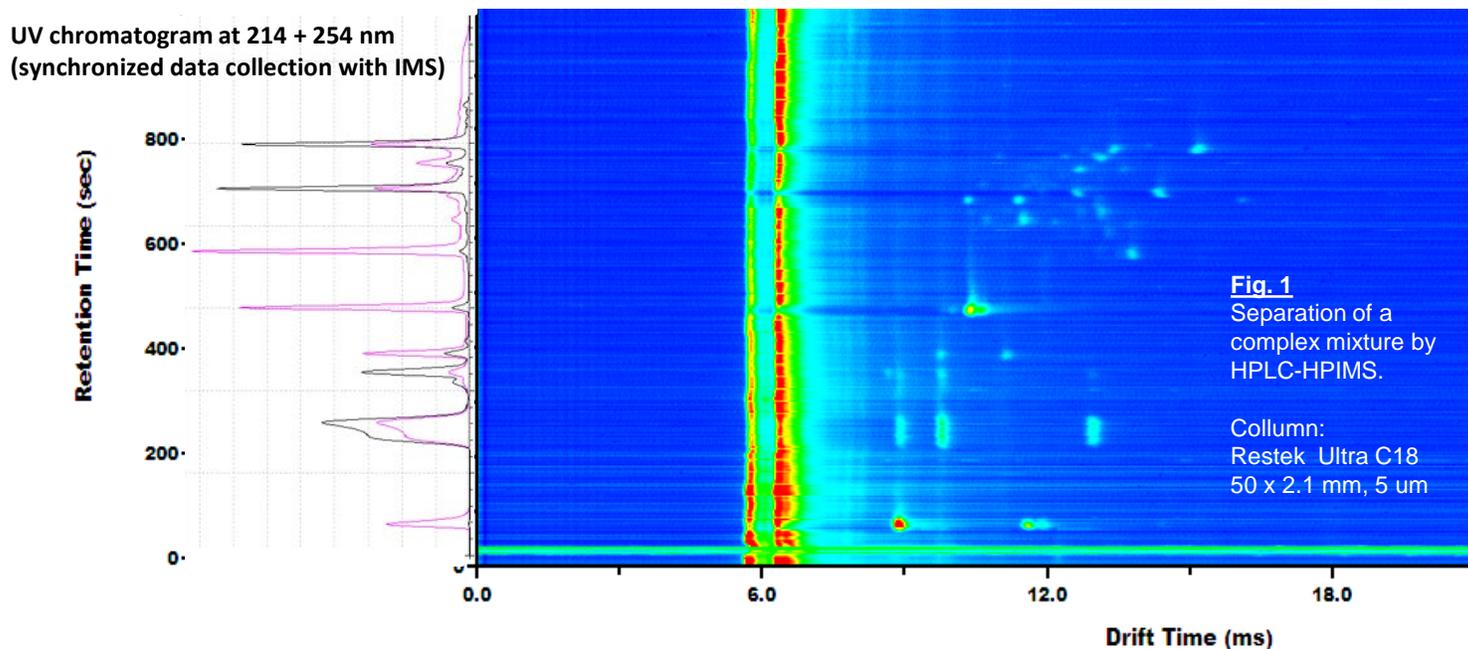
EXCELLIMS

Innovation for Excellence in Detection Technology

The New HPIMS Detector for HPLC Applications

An integrated high performance liquid chromatography (HPLC)-high performance ion mobility spectrometry (HPIMS) system facilitates complete separation and detection of complex mixtures. Separation of a sample with co-eluting peaks, those containing isomers, or compounds lacking UV chromophores can all be great challenges for HPLC when utilized independently. However, when combined with IMS, these two orthogonal techniques create a powerful tool for multi-dimensional separations.

The Excellims IA3100 consists of a post column HPIMS detector in-line with the user's choice of HPLC instrumentation. A sample is injected and the first dimension of separation occurs in the selected LC column, chosen for the application. The flow rate of the eluted components is then reduced, via a built-in splitter valve, yielding a constant and reliable split ratio which is maintained regardless of the initial mobile phase flow rate. This reduced flow (approximately 2–10 $\mu\text{L}/\text{min}$) leads to smaller initial droplet sizes and enhanced ionization efficiency as the analytes are ionized with our newly developed coaxial sheath liquid electrospray ionization (ESI) source, compatible with a full range of gradient elution conditions. With reduced signal suppression due to the removal of strongly ionizing compounds in the first dimension, our IA3100 provides subsequent second dimension mobility separation in the drift tube resulting in a comprehensive two-dimensional plot, with LC retention time on the y-axis and HPIMS drift time on the x-axis (**Fig. 1**).



Amenable to Existing HPLC Instrumentation and Methods

The concern and challenge for any analyst considering adopting new technology for their application, involves the effort required to adapt, transfer, or recreate an already established method in a way that it preserves the utility of the original method. Our HPIMS detector can function to compliment or even serve as a replacement for the end user's present LC detector. With no risks of time-consuming modifications to an existing LC method, the IA3100 offers the advantage of collecting supplementary information unattainable by any previously available commercial LC detector. Moreover, many HPLC methods are often times complex, necessitating a careful selection of the column, mobile phases, elution profile, and additives. The rapid, high resolution second dimensional separation mechanism afforded by the IA3100 should prove invaluable for users wishing to pursue simplified or abbreviated LC methods, greatly reducing costly method development time.