



**Axel Semrau®**

## **CHRONECT** Multiplexing



**Product Information**

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## **Increase the productivity of costly LC-MS systems**

### **4-fold sample throughput**

A maximum occupancy of expensive mass spectrometers results in high productivity and saves costs. In reality, idle times of the MS in laboratories are significant.

In liquid chromatography the target analytes, e.g. active compounds in pharmaceutical applications, often elute in a small time frame. Substances that elute subsequently are rather originating from the matrix and therefore irrelevant for the analysis.

These substances must be waited for, as well as the time required for reconditioning of the column after each separation. During that period of time, no further samples can be measured. Here, CHRONECT Multiplexing is the solution to increase sample throughput 4-fold and improve the occupancy of the LC-MS.

### **Better LC-MS occupancy by targeted fractionation**

With Multiplexing the target compounds are fractionated over several upstream LC systems into a LC-MS. Up to four LC columns and pumps are installed in parallel. Through intelligent valve control only fractions containing the target analytes are sent to the mass spectrometer.

Analysis of the remaining matrix and reconditioning of the column must not be waited for. The next measurement can be started directly on the next column. Thus, in a tight sequence, fractions are transferred to the mass spectrometer (Figure 1) making it better occupied.

For CHRONECT Multiplexing, Axel Semrau® recommends using the HPLC pump SPH1299 by Spark or the Azura P6.1.L by Knauer. Also, the 1260 HPLC pumps by Agilent, combined with the software Clarity by DataApex, are suitable for Multiplexing.

One further advantage of the configuration: For each HPLC column, the user can set an individual method, depending on the sample to be measured. Therefore, the Axel Semrau® software CHRONOS offers highest flexibility.

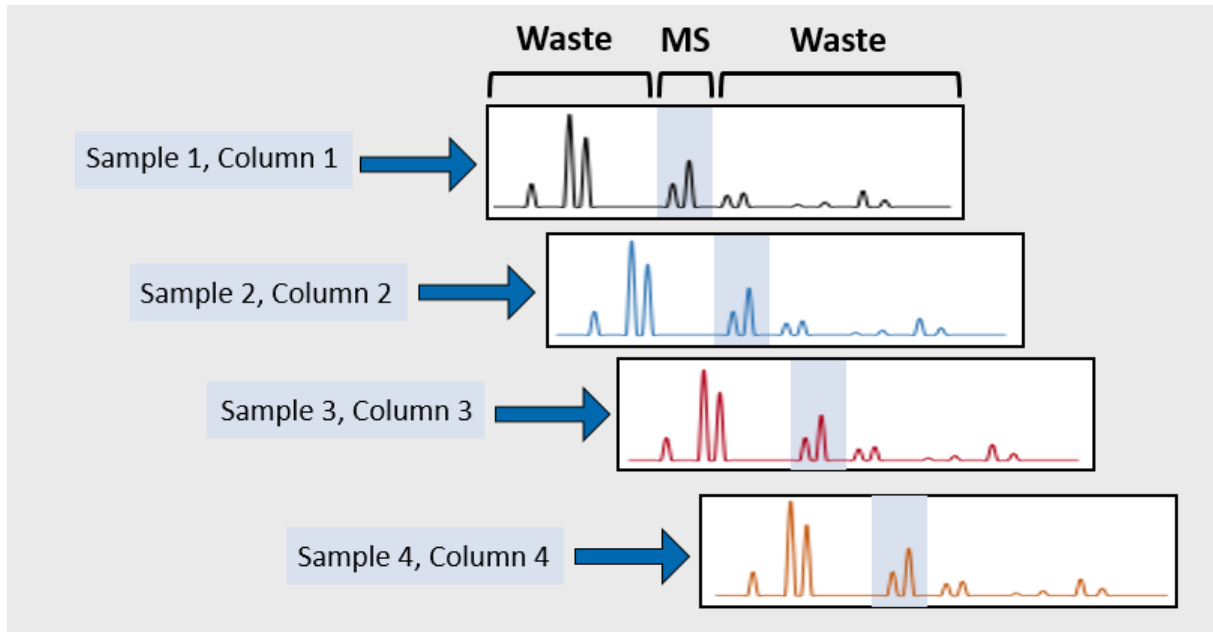
### **Optimized schedule through CHRONOS**

CHRONECT Multiplexing, consisting of the PAL3 sampler by CTC Analytics and CHRONOS, allows for a complex valve setting in a way that handling is made clear and easy. CHRONOS generates a schedule for optimal occupancy of the detector system based on previous methods (Figure 2).

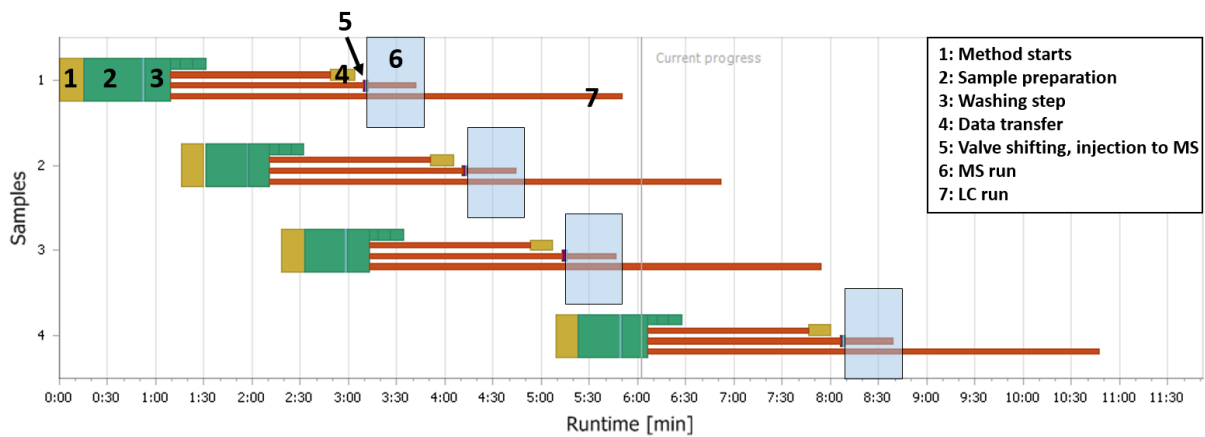
Additional requirements as for example online SPE and periodic backflush and washing steps are implemented easily. The Axel Semrau® software supports multiple MS data systems and therefore is flexibly applicable.

### **Improved lifetime of the LC-MS**

CHRONECT Multiplexing not only enhances productivity of costly mass spectrometers. The fractionation additionally leads to a protection concerning matrix exposure of the LC-MS. Only a small fraction of the sample is transferred to the LC-MS. Substances that are irrelevant do not pollute the LC-MS.



**Figure 1:** Example of a CHRONECT Multiplexing LC-MS configuration. The blue areas (samples) are sent to the mass spectrometer whereas the white parts of the fractions are directly transferred to the waste container.



**Figure 2:** CHRONECT Multiplexing MS schedule for four samples using three HPLC pumps. Determined by CHRONOS.

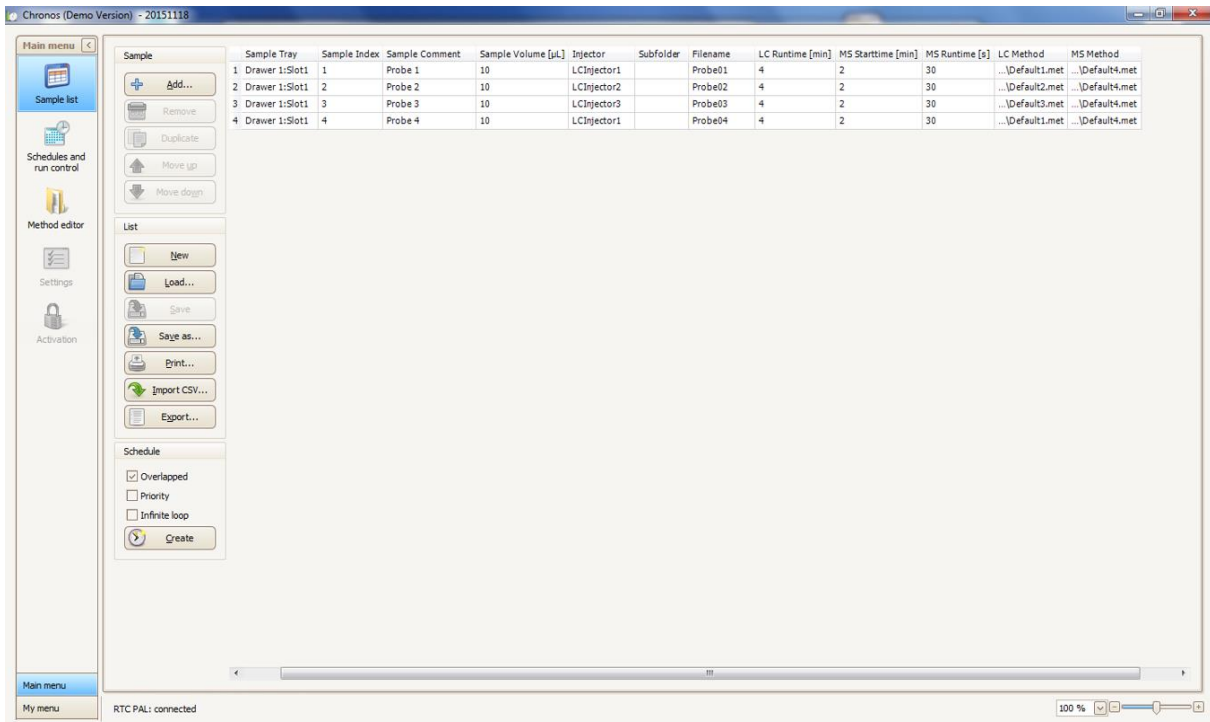


Figure 3: Assistant for the generation of sample lists.

## Device Setup

- CHRONECT Multiplexing consisting of:
  - CTC PAL3 with LC-MS option
  - Software CHRONOS
- MS data software (Analyst, MassHunter, Masslynx, MS Workstation or Xcalibur)
- up to four HPLC pumps
  - Spark SPH1299
  - or Knauer Azura P6.1L
  - or Agilent Infinity 1260 HPLC pumps with Clarity by Data Apex

**CHRONECT** Multiplexing is a development by Axel Semrau®

## Conclusion

Up to four LC pumps are run in parallel and controlled by a complex yet easy to handle system. This quadruples the sample throughput in the LC-MS without losing quality or sensitivity. Simultaneously, the load on the LC-MS is reduced as only target compounds are analyzed.

Subject to technical changes

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