

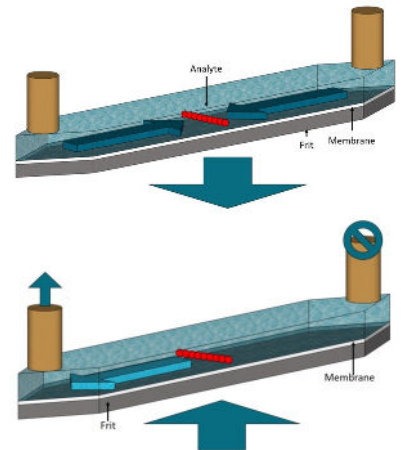
SampleStream™ — a platform for robust automated biologics sample preparation before MS

The IPT SampleStream is the ideal sample prep tool for those who need to handle a large number of biologics samples and need to desalt or re-buffer them before mass spectrometry. It can concentrate diluted samples, exchange incompatible buffers, reduce and digest. All in one device, on-line and with >95%!



Step 1: concentration and/or buffer exchange as well as focussing of the analytes

Step 2: Elution, either into micro titreplates or on-line into the mass spectrometer for denatured or native mass spectrometry

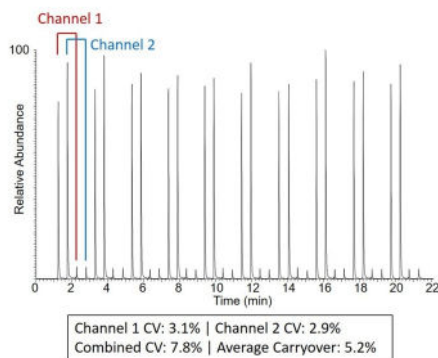


The IPT SampleStream uses a molecular weight cutoff membrane to retain your precious biologics and enable high recovery. The membrane can be re-used for ~500-1000 times and is available with different cut-offs. This makes it a dramatically more economic solution than single preparations with comparable MWCO products which are single use and create ~20x higher costs per sample.

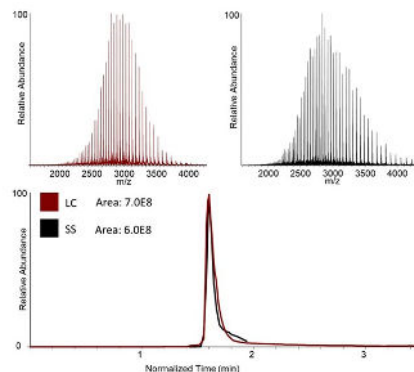
Due to its design, unlike capillary electrophoresis or SEC, it is able to handle large sample volumes of up to 100 µL. This allows to also concentrate very diluted samples such as injectables for stability studies.

The MWCO membrane is also much less sensitive to hydrophobicity/hydropilicity issues than e.g. SEC or HPLC materials. While SEC and HPLC have problems with very hydrophilic samples, these are uncritical on SampleStream.

The SampleStream has been designed from the beginning for robust, automated sample preparation. It is easy to maintain and has no high pressure pumps in the system. All the technologies inside are established since 20years or more. It's the combination which makes the system unique!



High-throughput operation with speed comparable to fast LC-based methods



Comparison between SampleStream and conventional 2.1mm HPLC

Desalting/sample prep of proteins (e.g. antibodies) prior to analysis.

- QC of biologics
- Characterization, analysis of bispecific antibodies, analysis of AAV capsid proteins, etc
- Reduction
- Sample prep for top-down or middle-down analysis for biologics characterization

Digestion

- Treatment with PNGase F for automated deglycosylation prior to analysis
- Enzymatic cleavage of proteins for middle-down analysis e.g. using IdeS

Rebuffering

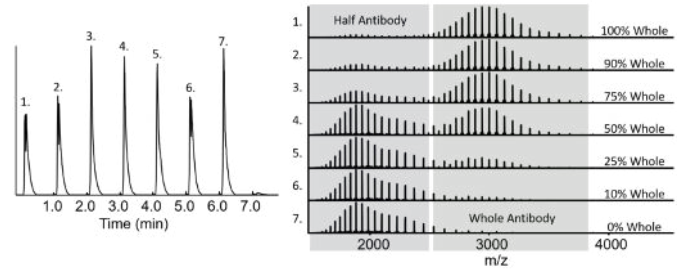
- Buffer exchange prior to mass spec analysis to get more MS-friendly buffers (usually AmAc buffers). Here it is important that the samples see the buffer only for about 1 min as each sample is exchanged one after the other and not batchwise. Sensitive samples might degrade when stored for a longer time in unsuitable buffers.
- Desalting of oligonucleotides prior to MS analysis
- Buffer exchange before fluorescence assays in HTS

Easy integration via CTC PAL scripting

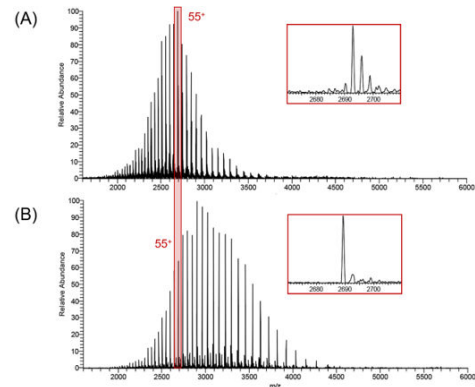
The SampleStream Platform's plug-in exposes the activities of the SampleStream module to the PAL 3 robot, enabling control through the PAL's scripting language. If you have ever used a PAL 3, you already know how to use the SampleStream Platform.

The SampleStream platform has a full-featured user interface and integrates seamlessly with all major mass spectrometer vendors' software through existing PAL 3 drivers.

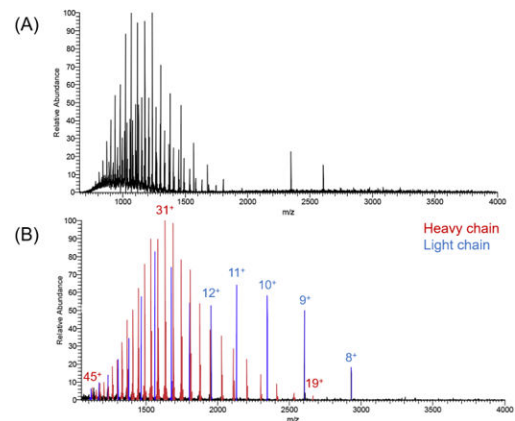
Rapid Bispecific Screening



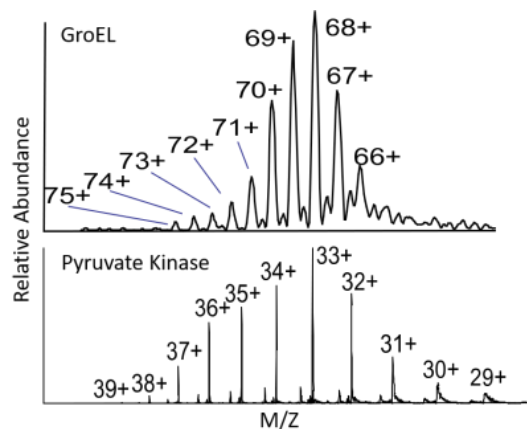
Screening of bispecific antibodies to determine the ratio of correct connections to full antibodies.



On-line deglycosylation with PNGase F prior to MS analysis.



On-line reduction prior to MS analysis for top-down/middle-down analysis



Rebuffering of non-covalent complexes for native MS analysis