



Automated sample preparation for mass spectrometry

Solid phase extraction, liquid-liquid extraction and protein purification solutions

Had enough of tedious manual sample preparation?

Although there have been monumental advances in mass spectrometry (MS) instrumentation in recent years, its unglamorous counterpart, sample preparation, has not enjoyed the same rate of development. Sample preparation has become a major bottleneck, and the issues associated with manual processing have hindered

Tecan brings you end-to-end process automation

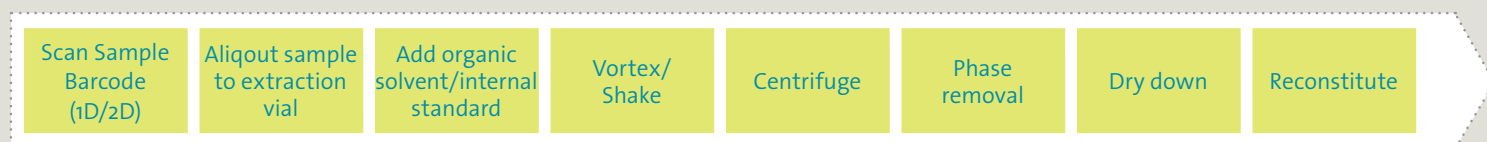
Solid phase extraction (SPE)

- Despite its widespread use for sample purification prior to liquid chromatography-mass spectrometry (LC-MS), manual SPE is cumbersome, time consuming and prone to manual errors, thus lowering overall productivity. Tecan's automated SPE workstation alleviates these problems, allowing you to focus on more important issues – your results.



Liquid-liquid extraction (LLE)

- Tecan's LLE workstation offers a versatile and totally automated solution for purification of diverse chemistries such as 25-Hydroxy vitamin D, pesticides etc. With unparalleled precision and unmatched configurability, Tecan has a solution for your most challenging solvent extractions for downstream LC- MS analysis.



Protein purification

- Biomarker research and the pharmaceutical industry's growing interest in biologics have made protein analysis routine in many laboratories. Tecan, with its extensive partnership agreements, offers a broad portfolio of protein purification solutions, allowing you to focus on downstream LC-MS analysis while your workstation seamlessly performs the most cumbersome digestion and/or purification tasks.



the uptake of MS innovation in the life science industry. To help overcome this, Tecan offers Freedom EVO®-based end-to-end process automation for even the most challenging protocols, liberating you from the bottleneck of manual sample preparation.



Solid phase extraction (SPE)

Automated SPE is a major requirement across all segments of the pharma, forensics, food, clinical and bioanalysis industries.

- **Flexibility:** a unique choice of both air and liquid displacement technology
- **Productivity:** perform parallel SPE extractions in 96-well plates. Independent arm movements allow parallel processing and maximum speed
- **Quality by design:** built-in process security features meet the most stringent quality requirements



Liquid-liquid extraction (LLE)

Automated LLE for fast, robust and safe analyte purification and quantification.

- **Safety:** automation reduces operator exposure to organic solvents
- **Reliability:** high precision liquid handling enables consistent results, irrespective of the operator
- **Cost Reduction:** lower solvent use offers a 'green' and economical solution



Protein digestion

Automated protein digestion for maximum peptide recovery and assay throughput.

- **Contamination-free:** silicone-covered labware, piercing tips and unique gel-digest sandwich prevent contamination
 - **Robust:** with end-to-end process automation you achieve the same results, first time, every time
 - **Freely configurable:** special heating/cooling devices and various workflow options mean that your every need is met
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Affinity purify proteins in your preferred formats prior to LC-MS or MALDI-MS (matrix-assisted laser desorption ionization-MS).

Miniaturized column chromatography (Figure 1)

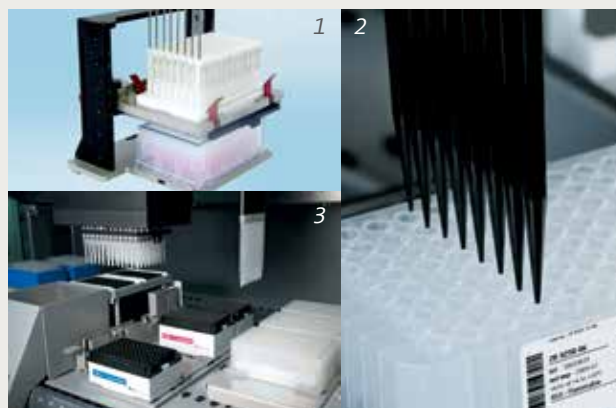
- **Atoll MediaScout® RoboColumn** (50-600 µl media) – standard and customized media
- **GE PreDictor™ RoboColumn** (50-600 µl media) – GE standard media

Parallel screening in batch format (Figure 2)

- **GE PreDictor™ filter plates** (2-20 µl media) – GE standard media
- **Other SBS format filter plates** for vacuum or centrifuge extraction

High throughput with resin filled tips (Figure 3)

- **PhyNexus PhyTip® column** (5-320 µl media) – standard and customized media
- Operate with 8-channel Liquid Handling Arm or MultiChannel Arm™ 96



Selected citations

- David Andersen, Brian Rasmussen, Kristian Linnet. Validation of a fully automated robotic setup for preparation of whole blood samples for LC-MS toxicology analysis. *J Anal Toxicol* (2012) 36 (4): 280-287.
- Olaf Jahn, Dörte Hesse, Marina Reinelt, Hartmut D. Kratzin. Technical innovations for the automated identification of gel-separated proteins by MALDI-TOF mass spectrometry. *Anal Bioanal Chem* (2006) 386 (1): 92-103.
- Pierre Schulze Wierling, Ralf Bogumil, Esther Knieps-Grünhagen, Jürgen Hubbuch. High-throughput screening of packed-bed chromatography coupled with SELDI-TOF MS analysis: monoclonal antibodies versus host cell protein. *Biotechnol Bioeng* (2007) 98 (2): 440-450.

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