Spark HOLLAND

Spark Holland introduces ACE™

Absolutely unique: on-line SPE with Automated Cartridge Exchange

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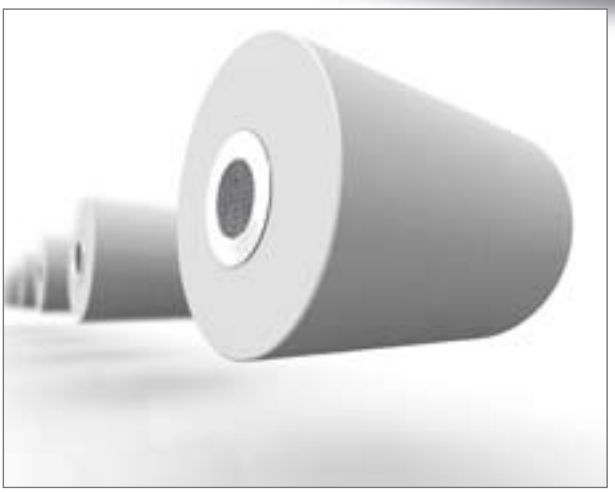


Combining the best of the on-line and off-line SPE worlds

Off-line SPE (Solid Phase Extraction) provides cartridge refreshment for every sample, avoiding the risk of retention change and carryover. However, limited pressure resistance prohibits the use of small sorbent particles. Off-line elution of the sample requires collection and reformatting (often including evaporation and reconstitution) into autosampler vials or wells. And finally... injection into the LC system! It also requires at least one manual transfer of collected samples from the SPE robot to the LC system.

On-line SPE (or column switching, or 2D LC) permits use of small sorbent particles for efficient SPE plus elution of the sample directly into the LC system by the mobile phase. Maximum SPE efficiency plus maximum SPE-LC automation. But... column switching does not allow frequent automated refreshment of the SPE column or cartridge.

The Spark ACE™ eliminates this shortcoming. It selects a fresh cartridge as often as you want and seals it against the pressure of your LC system for on-line elution. ACE™ combines the flexibility of off-line SPE with the performance and automation of on-line SPE.

Dual cartridge clamps and extra valves for unlimited SPE capability

ACE™ can be equipped with an extra cartridge clamp and as many as three extra high pressure switching valves. Such a fully loaded system enables sophisticated SPE applications like parallel SPE for high throughput or 2D SPE for enhanced clean-up. For high-throughput applications, extended cartridge tray capacity is provided with the tray feeder, which brings the total SPE cartridge capacity to 960!

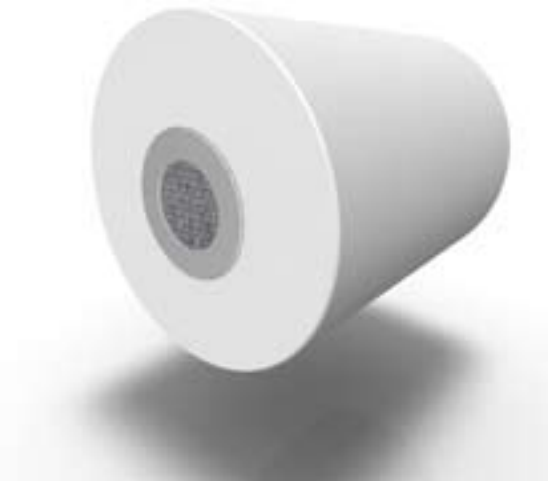
TASPE™ – Temperature Assisted SPE

ACE™ provides the option to use temperature as a parameter to enhance and control your SPE method! This unique and patented feature helps to reduce organic content in SPE solvents, enables on-cartridge protein precipitation, provides extra options to optimize selectivity and clean up, etc. It also helps to maintain constant temperature for SPE, improving reproducibility of the assay. And it is such an easy parameter to use! Just program the temperature for any of the solvent delivery steps in the SPE procedure. Find out what temperature control can do for your application.

- Disposable SPE cartridges sealed up to 300 bar
- Single use or re-use of SPE cartridge – your choice
- Wide range of SPE chemistries
- Standard two trays of 96 cartridges each
- Optional tray feeder for 10 trays
- TASPE™ Temperature controlled SPE
- Dual clamp option for parallel SPE and 2D-SPE

SPE Cartridges: optimized dimensions and unlimited sorbent range

ACE™ on-line SPE cartridges have been designed to combine the option of single use with highly efficient extraction. With 10 mm length and 2 or 1 mm internal diameter, the cartridge contains only 5-25 mg of sorbent. Particle size is typically under 10 µm for regular sorbents, providing chromatography-like separation efficiency. While off-line SPE is typically an on-off mechanism with less than 10 theoretical plates, plate numbers up to 250 are not unusual for our C18 cartridges. This allows for small elution volumes and "heart-cut" type of SPE, washing away both early and late eluting matrix components from the SPE cartridge. All common sorbent chemistries are available in our cartridge format. And if you need your own material packed into our cartridges: ask us about the options! We can even provide immuno-affinity chemistries on pressure stable supports with low non-specific binding.



Tailor the on-line SPE system to your application

ACE™ is the heart of an on-line SPE system, but it cannot provide on-line SPE on its own. An autosampler is required to introduce the untreated samples into the system and an additional solvent pump is needed to load the samples on the SPE cartridges and deliver solvents for conditioning, and washing of the SPE cartridge.

Spark provides a high pressure solvent dispenser (HPD™), designed especially for accurate flow and volume based delivery of SPE solvents up to 4300 psi. It can select multiple solvents and can even mix solvents for automated SPE method development. See the Spark Holland HPD™ brochure for more information.

SparkLink™ PC control software

After configuring a system, you need full control of every component to obtain maximum flexibility in assay development. Our SparkLink™ software provides just that. That does not mean that you can't use any third party instruments for your on-line SPE system; you may select a different autosampler or SPE pump. Just be aware that it will provide limited control options as compared to Spark instruments. A special "Easy Access" control level allows for rapid start-up of method development with pre-programmed system parameters.

No worry OEM partnering

Spark is recognized for its OEM service and capabilities and for ACE™ we make no exception! We are open to discuss any customization of hard- and software. We provide a range of communication interfaces and comprehensive software integration support. Test us!

Reassuring reliability

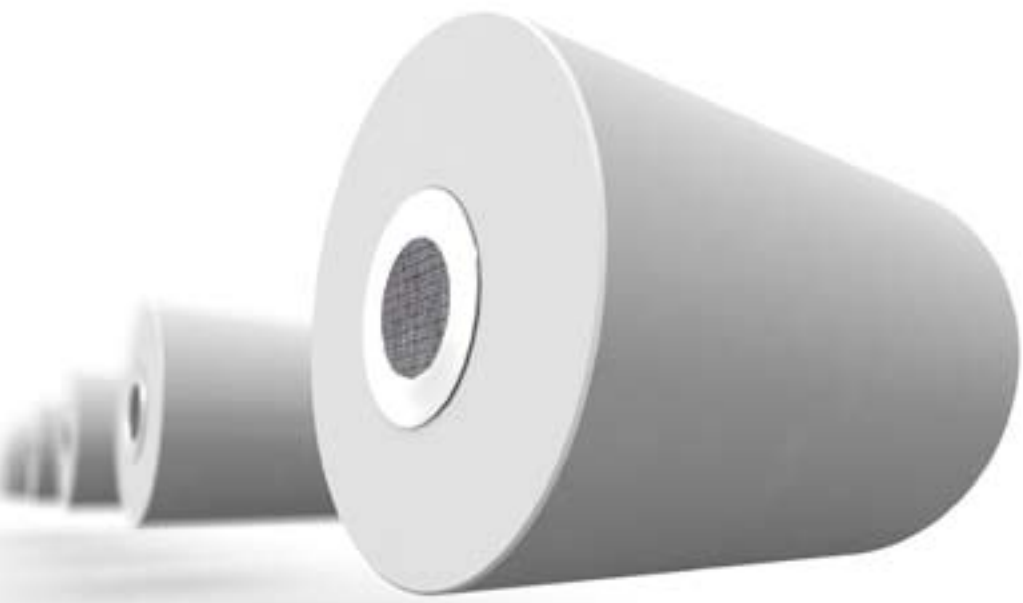
Spark has more than 27 years of experience in development and innovation of sample handling technology. The robustness of our instruments has been proven in more than 25,000 autosamplers and over 1,000 systems for on-line SPE: reassuring numbers if you demand a reliable partner in HPLC.

Specifications

Automated Cartridge Exchange (ACE™):		
Cartridge capacity	2 cartridge trays of 96 SPE cartridges each	192 SPE cartridges
Cartridge capacity ACE™ with tray feeder	10 cartridge trays of 96 SPE cartridges each	960 SPE cartridges
Cartridge tray	8 x 12 well plate format (96 x 128 mm)	with built-in RF-transponder for: cartridge ID and usage cartridge type, batch number, production number (unique), expiry date
Cartridge clamp	Leak-tight up to max. 300 bar	~4300 psi
High-pressure valves	Valco 6 port valve (C2-2006)	Removable with bayonet fitting. One valve is standard, three additional valves are optional (SSM).
Cycle time	Parallel mode: cartridge exchange ‹ 13 seconds	
Communication	**Inputs:** 4 programmable TTL conditional digital inputs **Outputs:** 4 programmable contact closures max. 28 V – 1A).	
PC interface	RS 232C is standard	
Control software	SparkLink™ 4.0 PC control	
Power requirements	115/230 Vac	-20%/+15%. 50/60 Hz, max. 200 VA
Dimensions	300x470x240 mm (WxDxH)	Size top cover area: 300x280 mm (WxD) ACE™-dual 300x640x360 mm (WxDxH)
Weight	ACE™ 14 kg	ACE™-dual 19 kg (2 cartridge clamps and 2 valves) ACE™-dual with tray feeder 24 kg
Working environment	5 - 40°C, 20-80% RH	Storage temperature: -25 - 60°C
Option	TASPE™ – Temperature Assisted Solid Phase Extraction	Temperature range: 20°C - 80°C

Specifications

Compliances	
Safety	CE; CSA (UL) EN61010-1 Machine safety: 2006/42/EC EMC requirements: 2004/108/EC Low voltage safety: 2006/95/EC
Installation category	II (according to IEC-1010)
Pollution degree	2 (according IEC-664)
Quality	ISO 9001 certified



Specifications

SPE Cartridge		
Cartridge dimensions	10 x 2 mm (l x ID) - 8 mm OD	Option: 10 x 1 mm (l x ID).
Internal volume	31 µL	Option: 8 µL
Maximum pressure	300 bar	~4300 psi
Sieve pore size	1 µm	
Wetted materials	PVDF (body) and stainless steel sieve	
SPE sorbents	HySphere™ BondElute™ range (Trademark of Varian SPP) OASIS™ (Trademark of Waters)	Custom packing and proprietary range of sorbents on special order. Bio-affinity sorbents: contact us to discuss options.

Ordering information

ACE™ versions	
ACE™	SP725.300
ACE™ 2 x ISS	SP725.320
ACE™ dual 2 x ISS	SP725.520
ACE™ dual with tray feeder, 2 x ISS	SP725.523
ACE™ with TASPE™	SP725.301
ACE™ 2 x ISS with TASPE™	SP725.321
ACE™ dual 2 x ISS with TASPE™	SP725.521
ACE™ dual with tray feeder, 2 x ISS with TASPE™	SP725.524

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