

SPME Fast Fit Assemblies (FFA) & Multi-Fiber Exchanger (MFX)

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The success of SPME over the past two decades can be attributed to a long list of reasons. Some key points are listed here: SPME is easily automated; a wide range of high-quality fibers are available covering a broad selectivity range; SPME covers analytes ranging from VOCs to SVOCs; additional selectivity in terms of volatility range and matrix interference elimination can be applied by extracting either from the headspace or directly from the liquid sample phase (which can easily be modified to release the maximum amount of VOCs); and last, but not least, the extraction is solvent-free, eliminating dilution and offering a substantial concentration effect along with a reduction in solvent background in the laboratory air.

One thing that many users have sought for quite some time has been the ability to automatically change SPME fibers during the analysis sequence. New SPME Fast Fit Assemblies and the Multi-Fiber Exchanger for the GERSTEL® MultiPurpose Sampler (MPS) now make this possible, adding extra power to SPME automation.

Why Would Anyone Want or Need Automation Power?

There are many benefits to having the ability to automatically exchange SPME fibers. For example, SPME analysis can be automatically performed using fibers with different polarities, covering a wider range of analytes and extracting

Figure 1. Fast Fit Assembly versus a Standard SPME Fiber



Figure 2. FFA Barcode Guide



Figure 3. Multi-Fiber Exchanger on the GERSTEL MPS



the maximum amount of information from a sample without manual intervention. MFX enables faster method development by allowing the analyst to modify both method parameters and fiber polarity during an automated sequence. Routine analysis of large batches of difficult samples or samples with a high matrix load can now be performed overnight or through the weekend since fibers can be replaced at regular intervals as the fiber performance deteriorates.

The key to automating fiber exchange is the new SPME Fast Fit Assemblies, which are modified SPME fiber assemblies that allow the MFX system to pick up and operate the fiber assembly without manual intervention. Eliminating the threaded hub and adding certain features (Figure 1) allows the fiber exchanger to readily pick up, expose and retract the fiber, and exchange it with other fiber assemblies.

Special FFA barcoding (Figure 2) provides the user and the autosampler with a variety of information about the properties of the fiber assembly:

- A. The color code indicates the phase type. The coding is the same for the colored screw hub of the traditional SPME fiber assemblies
- B. The first 2 digits of the barcode is the fiber type identity incorporating the phase type & the needle gauge size.
- C. The remaining digits represent a unique tracking number for sample traceability.

The MFX system is available with a three-fiber tray or a 25-fiber tray, in which conditioned SPME FFA's are kept in sealed compartments ready for use. Well-conditioned SPME fibers provide the best possible analytical results and lowest limits of detection. A bake-out station or the GC inlet can be specified for conditioning. If derivatization is needed, pre- or post-extraction derivatization can also be specified.

Stirred, Not Shaken, Sample Extraction

Sample agitation accelerates the SPME process and improves overall throughput, but agitation can lead to mechanical stress on the fiber causing breakage. Sample stirring in the MPS 007 Agitator/Stirrer is based on magnetic stir bars, which do not cause fiber stress and therefore lead to longer fiber life expectancy and improved instrument up-time. The PrepAhead function of the MAESTRO software allows samples to be prepared in advance while the GC run is ongoing for improved throughput and system utilization. In addition, samples can be heated or cooled during storage and extraction, which is highly useful, for example, for fresh food samples.

Summary

The new SPME fast fit assemblies and Multi-Fiber Exchanger were developed in partnership with Chromline srl in Prato, Italy. They offer a unique automated fiber exchange option for the GERSTEL MPS. Currently installed MPS systems, with the MPS L model as the only exception, can be updated to MFX productivity.

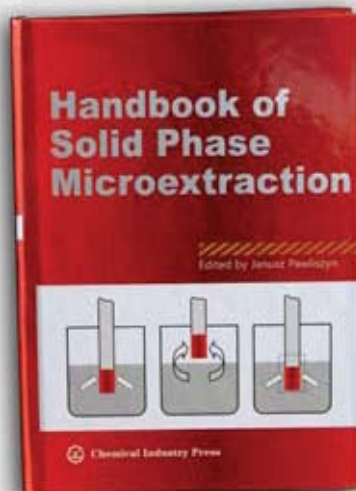
For more information about MFX and other GERSTEL solutions, please contact GERSTEL: gerstel@gerstel.com or visit their website: www.gerstel.com

Featured Products (Contd.)

SPME FFA Assortment Kits

StableFlex™ Kit, 23 ga 65 µm PDMS/DVB, 50/30 µm DVB/Carboxen/PDMS, 85 µm Carboxen/PDMS, and 85 µm polyacrylate coated fibers	4	FFA57284-U
Kit 1 (Fused silica), 23 ga For Volatiles and Semi-volatiles: 85 µm polyacrylate, 100 µm PDMS, and 7 µm PDMS coated fibers.	3	FFA57285-U
Kit 2 (Fused silica), 23 ga For Volatile or Polar Organics in Water: 75 µm Carboxen/PDMS, 65 µm PDMS/DVB, and 85 µm polyacrylate coated fibers.	3	FFA57286-U
Kit 4 (Fused silica), 23 ga For Flavors and Odors: 100 µm PDMS, 65 µm PDMS/DVB, and 75 µm Carboxen/PDMS coated fibers.	3	FFA57287-U
Kit 5 (Fused silica), 23 ga For Flavors and Odors: 100 µm PDMS, 65 µm PDMS/DVB, 85 µm Carboxen/PDMS, and 50/30 µm DVB/PDMS coated fibers.	4	FFA57362-U

NEW! Handbook of SPME by Janusz Pawliszyn



This new 400-page book contains comprehensive descriptions of the fundamental principles of solid phase microextraction (SPME), recent applications, SPME devices and procedures published to date. SPME protocols are presented in a step-by-step fashion,

providing useful tips and potential pitfalls. The important steps in SPME method development and optimization including calibration are clearly discussed to assist new users of the technology. This handbook enables researchers at all stages of their careers to effectively apply this convenient and solvent free sample preparation technique to solve their analytical challenges in an effective way. This up-to date handbook contains 13 chapters with topics including: Theory of SPME, SPME devices and fiber coatings, commercial devices and coatings, automated SPME systems, calibration of extraction step, SPME method development, ligand-receptor binding, in-vivo SPME, review of different application areas including: environmental, food and fragrance, forensic and drug analysis as well as SPME protocols.

Description	Cat. No.
Handbook of SPME	Z569046

Featured Products

Description	Qty.	Cat. No.
SPME Fast Fit Assembly		
100 µm PDMS (Fused silica), 23 ga	3	FFA57341-U
100 µm PDMS (Fused silica), 24 ga	3	FFA57301
30 µm PDMS (Fused silica), 23 ga	3	FFA57289-U
30 µm PDMS (Fused silica), 24 ga	3	FFA57309
7 µm PDMS (Fused silica), 23 ga	3	FFA57291-U
7 µm PDMS (Fused silica), 24 ga	3	FFA57302
85 µm Polyacrylate (Fused silica), 23 ga	3	FFA57294-U
85 µm Polyacrylate (Fused silica), 24 ga	3	FFA57305
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65 µm PDMS-DVB, 24 ga	3	FFA57327-U
85 µm CAR/PDMS, 23 ga	3	FFA57295-U
85 µm CAR/PDMS, 24 ga	3	FFA57335-U
50/30 µm DVB/CAR/PDMS, 23 ga	3	FFA57298-U
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