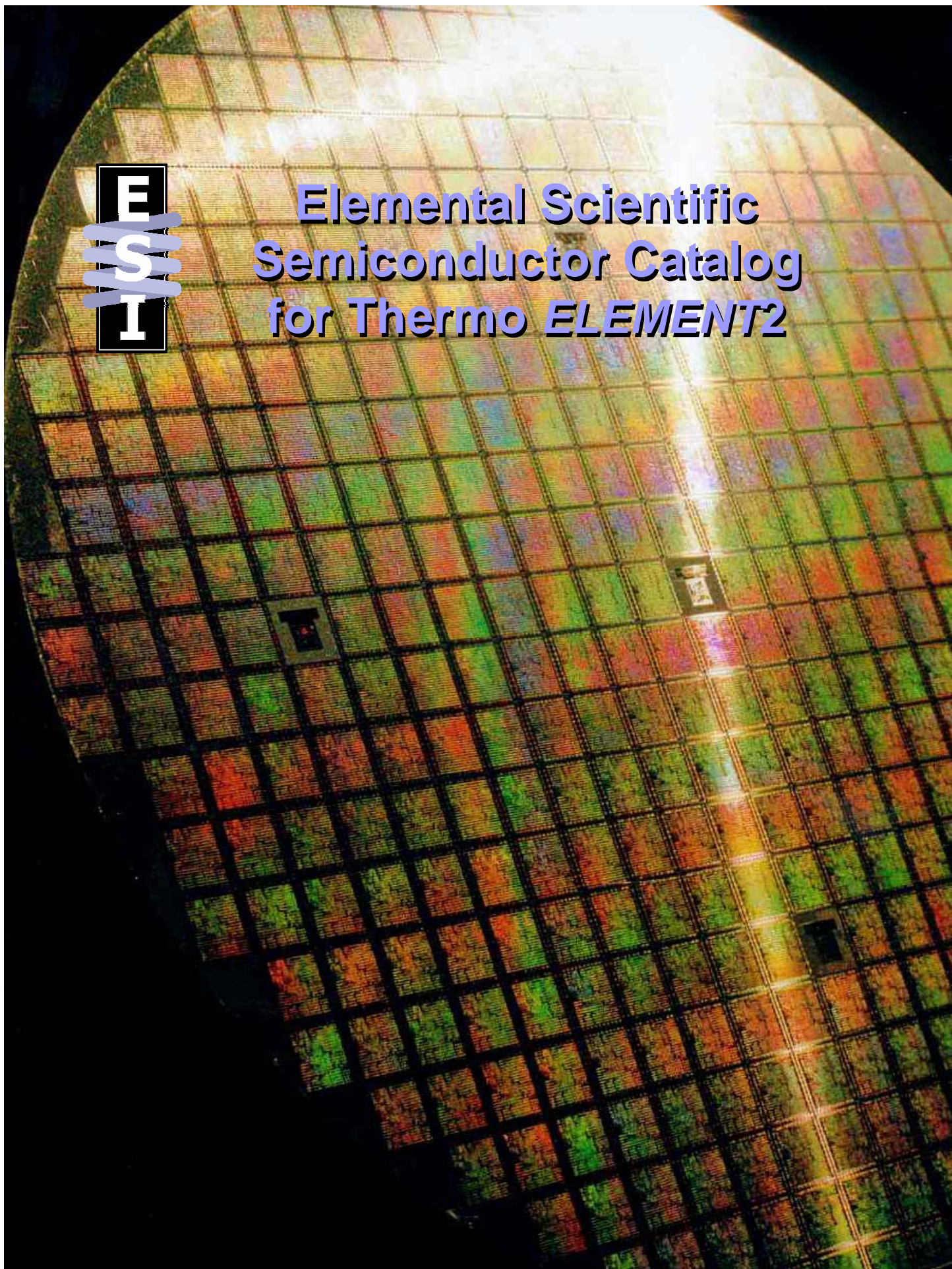




**Elemental Scientific
Semiconductor Catalog
for Thermo *ELEMENT2***



Ordering Information

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PFA-Pt kit for Element2

All PFA and Pt contact surfaces for high purity samples. Used by the majority of Element2 labs worldwide for high purity sample analysis.

O-ring free PFA-Pt Kit: **ES-2181-1471**
Standard PFA-Pt Kit: **ES-2181-0471**



47mm PFA Endcap and Spraychamber

Secure, o-ring free connection between the endcap and spray chamber. Second orthogonal gas port for adding an additional or mixed gas to spray chamber. Interfaces with any 6mm nebulizer. Includes addition gas line and drain line.

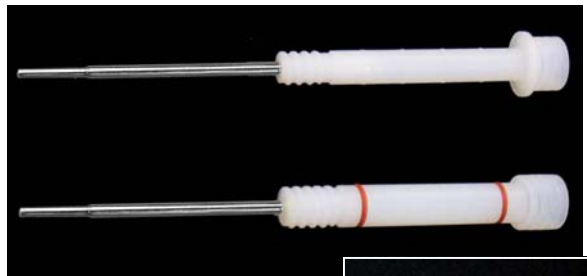
Part Number: **ES-2180-5471**



Platinum injector

Precision injector mounted in a PFA base which provides precise alignment of torch and injector eliminating injector wobble and off-axis deflection.

Injector for O-ring free torch: **ES-1013-1200**
Injector for standard torch: **ES-1013-0200**



O-ring-free seal for reduced contamination and easy maintenance



Quartz torch

Precision alignment of torch and injector eliminates injector wobble and off-axis deflection. Direct replacement for the standard Finnigan *ELEMENT* CD torch.



O-ring free torch: **ES-1002-1100**
Standard torch: **ES-1002**

Standard vs. O-ring free injectors



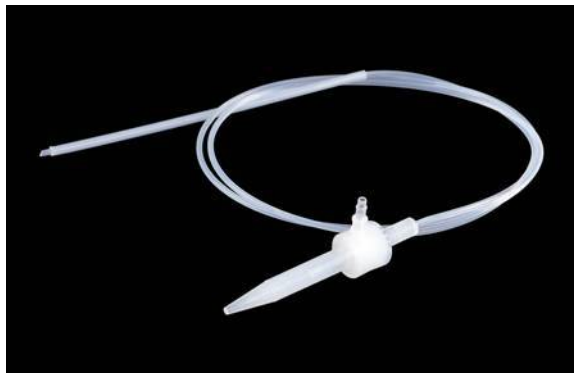
High Efficiency PFA MicroFlow Nebulizers

PFA MicroFlow nebulizers are constructed entirely from chemically resistant fluoropolymers, ideal for strong acids, alkalis, organics, high salt solutions, and high solid concentrations. They are resistant to clogging, are reliably self-aspirated or pumped, and produce a fine aerosol for high transport efficiency and high sensitivity.

PFA Nebulizers with Integrated Capillaries

These nebulizers allow self-aspiration at low sample consumption rates. The unique design eliminates connectors between the sample and the nebulizer, minimizing contamination and dead volume. Since the sample contacts only Teflon®, the PFA MicroFlow nebulizer is the cleanest, most chemically resistant nebulizer available.

Model	Part Number	Measured self- aspiration rate (@ 1L/m Ar)
PFA-20	ES-2020-0002	20-35 µL/min
PFA-50	ES-2000-0002	45-65 µL/min
PFA-100	ES-2002-0002	90-150 µL/min
PFA-200	ES-2003-0002	150-250 µL/min
PFA-400	ES-2005-0002	300-400 µL/min



PFA ST Nebulizer

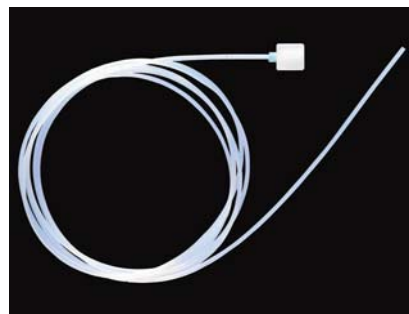
High purity, HF-resistant, high performance self-aspirating nebulizer with detachable sample capillary. May be pumped from 0.1 to 2.0 ml/min. Alternate Teflon sample capillaries and autosampler probes are also available for the PFA ST Nebulizer. (see page ##)

Part Number: **ES-2040-28**



Sample Capillaries for ST Nebulizers

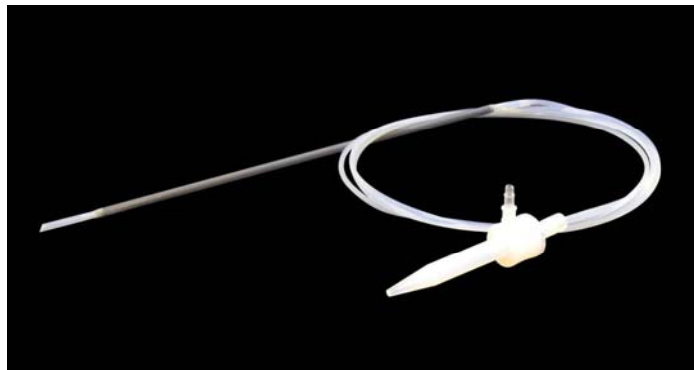
i.d.	Part Number	Measured self-aspiration rate (@1L/m Ar)
0.15 mm	ES-2045	20 µL/min ■
0.2 mm	ES-2043	50 µL/min ■
0.25 mm	ES-2042	100 µL/min ■
0.5 mm	ES-2041	400 µL/min ■
0.8 mm	ES-2044	700 µL/min ■



High Efficiency PFA MicroFlow Nebulizers

PFA Nebulizers with Integrated Sampling Probes

These nebulizers allow self-aspiration at low sample consumption rates with any autosampler while providing the same benefits of the PFA MicroFlow nebulizer. The integrated sampling probe is constructed by encapsulating a rigid support material between layers of Teflon to provide a chemically resistant probe that is mechanically stable and resilient.



LLL = distance from nebulizer to the probe support (cm). Standard lengths are 80 cm (-080), 100 cm (-100), 120 cm (-120), 150 cm (-150). Probes can be custom-made to your specifications of length and materials at no extra charge.

Carbon Fiber support

Model	ESI SC-series	ASX-100	ASX-500	Manual probes
PFA-20	ES-2020-3503-LLL	ES-2020-0103-LLL		ES-2020-0203-LLL
PFA-50	ES-2000-3503-LLL	ES-2000-0103-LLL		ES-2000-0203-LLL
PFA-75	ES-2001-3503-LLL	ES-2001-0103-LLL		ES-2001-0203-LLL
PFA-100	ES-2002-3503-LLL	ES-2002-0103-LLL	ES-2002-0503-LLL	ES-2002-0203-LLL
PFA-200	ES-2003-3503-LLL		ES-2003-0503-LLL	ES-2003-0203-LLL
PFA-400	ES-2005-3503-LLL		ES-2005-0503-LLL	ES-2005-0203-LLL

PEEK support

Model	ESI SC-series	ASX-100	ASX-500	Manual probes
PFA-20	ES-2020-3500-LLL	ES-2020-0100-LLL		ES-2020-0200-LLL
PFA-50	ES-2000-3500-LLL	ES-2000-0100-LLL		ES-2000-0200-LLL
PFA-75	ES-2001-3500-LLL	ES-2001-0100-LLL		ES-2001-0200-LLL
PFA-100	ES-2002-3500-LLL	ES-2002-0100-LLL	ES-2002-0500-LLL	ES-2002-0200-LLL
PFA-200	ES-2003-3500-LLL		ES-2003-0500-LLL	ES-2003-0200-LLL
PFA-400	ES-2005-3500-LLL		ES-2005-0500-LLL	ES-2005-0200-LLL

Ultem support

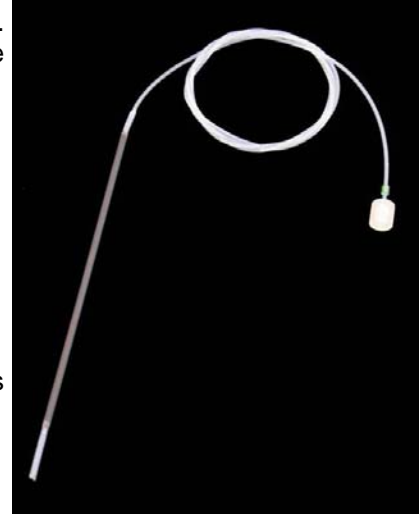
Model	ESI SC-series	ASX-100	ASX-500	Manual probes
PFA-20	ES-2020-3505-LLL	ES-2020-0105-LLL		ES-2020-0205-LLL
PFA-50	ES-2000-3505-LLL	ES-2000-0105-LLL		ES-2000-0205-LLL
PFA-75	ES-2001-3505-LLL	ES-2001-0105-LLL		ES-2001-0205-LLL
PFA-100	ES-2002-3505-LLL	ES-2002-0105-LLL	ES-2002-0505-LLL	ES-2002-0205-LLL
PFA-200	ES-2003-3505-LLL		ES-2003-0505-LLL	ES-2003-0205-LLL
PFA-400	ES-2005-3505-LLL		ES-2005-0505-LLL	ES-2005-0205-LLL

Stainless Steel support

Model	ESI SC-series	ASX-100	ASX-500	Manual probes
PFA-20	ES-2020-3509-LLL	ES-2020-0109-LLL		ES-2020-0209-LLL
PFA-50	ES-2000-3509-LLL	ES-2000-0109-LLL		ES-2000-0209-LLL
PFA-75	ES-2001-3509-LLL	ES-2001-0109-LLL		ES-2001-0209-LLL
PFA-100	ES-2002-3509-LLL	ES-2002-0109-LLL	ES-2002-0509-LLL	ES-2002-0209-LLL
PFA-200	ES-2003-3509-LLL		ES-2003-0509-LLL	ES-2003-0209-LLL
PFA-400	ES-2005-3509-LLL		ES-2005-0509-LLL	ES-2005-0209-LLL

Autosampler Probes for ST Nebulizers

ST Nebulizer probes connect directly to any ST-type nebulizer. The 1/4-28 threaded fitting provides a secure, zero-dead-volume connection with no additional fittings required.



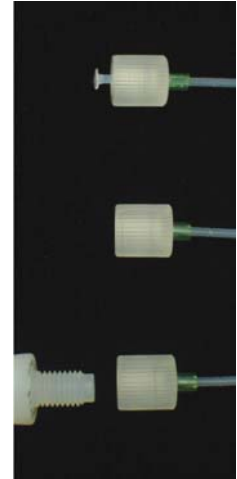
LLL = distance from flanged fitting to the probe support (cm).

- 80 cm (-080)
- 100 cm (-100)
- 120 cm (-120)
- 150 cm (-150)

Probes can be custom-made to your specifications of length and materials at no extra charge.

Carbon Fiber Support

Probe I.D.	ESI-SC	ASX-100	ASX-500	Manual probes
0.15mm	ES-5037-3150-LLL	ES-5036-0150-LLL	ES-5037-0150-LLL	ES-5036-2150-LLL
0.20mm	ES-5037-3200-LLL	ES-5036-0200-LLL	ES-5037-0200-LLL	ES-5036-2200-LLL
0.25mm	ES-5037-3250-LLL	ES-5036-0250-LLL	ES-5037-0250-LLL	ES-5036-2250-LLL
0.30mm	ES-5037-3300-LLL	ES-5036-0300-LLL	ES-5037-0300-LLL	ES-5036-2300-LLL
0.50mm	ES-5037-3500-LLL		ES-5037-0500-LLL	ES-5036-2500-LLL
0.80mm	ES-5037-3750-LLL		ES-5037-0750-LLL	ES-5036-2750-LLL



PEEK Support

Probe I.D.	ESI-SC	ASX-100	ASX-500	Manual probes
0.15mm	ES-5017-3150-LLL	ES-5036-0150-LLL	ES-5017-0150-LLL	ES-5016-2150-LLL
0.20mm	ES-5017-3200-LLL	ES-5036-0200-LLL	ES-5017-0200-LLL	ES-5016-2200-LLL
0.25mm	ES-5017-3250-LLL	ES-5036-0250-LLL	ES-5017-0250-LLL	ES-5016-2250-LLL
0.30mm	ES-5017-3300-LLL	ES-5036-0300-LLL	ES-5017-0300-LLL	ES-5016-2300-LLL
0.50mm	ES-5017-3500-LLL		ES-5017-0500-LLL	ES-5016-2500-LLL
0.80mm	ES-5017-3750-LLL		ES-5017-0750-LLL	ES-5016-2750-LLL

Ultem Support

Probe I.D.	ESI-SC	ASX-100	ASX-500	Manual probes
0.15mm	ES-5057-3150-LLL	ES-5056-0150-LLL	ES-5057-0150-LLL	ES-5056-2150-LLL
0.20mm	ES-5057-3200-LLL	ES-5056-0200-LLL	ES-5057-0200-LLL	ES-5056-2200-LLL
0.25mm	ES-5057-3250-LLL	ES-5056-0250-LLL	ES-5057-0250-LLL	ES-5056-2250-LLL
0.30mm	ES-5057-3300-LLL	ES-5056-0300-LLL	ES-5057-0300-LLL	ES-5056-2300-LLL
0.50mm	ES-5057-3500-LLL		ES-5057-0500-LLL	ES-5056-2500-LLL
0.80mm	ES-5057-3750-LLL		ES-5057-0750-LLL	ES-5056-2750-LLL

Stainless Steel Support

Probe I.D.	ESI-SC	ASX-100	ASX-500	Manual probes
0.15mm	ES-5097-3150-LLL	ES-5096-0150-LLL	ES-5097-9150-LLL	ES-5096-2150-LLL
0.20mm	ES-5097-3200-LLL	ES-5096-0200-LLL	ES-5097-9200-LLL	ES-5096-2200-LLL
0.25mm	ES-5097-3250-LLL	ES-5096-0250-LLL	ES-5097-9250-LLL	ES-5096-2250-LLL
0.30mm	ES-5097-3300-LLL	ES-5096-0300-LLL	ES-5097-9300-LLL	ES-5096-2300-LLL
0.50mm	ES-5097-3500-LLL		ES-5097-9500-LLL	ES-5096-2500-LLL
0.80mm	ES-5097-3750-LLL		ES-5097-9750-LLL	ES-5096-2750-LLL

Apex High Sensitivity Inlet System

Fully integrated, high sensitivity inlet system sample introduction systems for ICP spectroscopy. Designed to increase signal intensity while reducing relative background contamination for ICPMS and ICPAES analyses. When combined with a self-aspirating MicroFlow PFA nebulizer even aggressive and concentrated chemicals may be analyzed at very high sensitivity and very low contamination.

Apex Q for Element2

High-sensitivity, low-flow sample introduction system for ICPMS. Improves sample transport efficiency while maintaining low blanks. Recommended to be used with either the E2-3 sample tray or SC-E2 autosampler. Includes PFA-100 and PFA-ST nebulizers, integrated peristaltic drain pump, and connectors to adapt to the ELEMENT2.

Part Number: **ES-4352**



Apex HF for Element2

All PFA sample flow path. High-sensitivity, low-flow HF-resistant sample introduction system for ICPMS. Recommended to be used with either the E2-3 sample tray or the SC-E2 autosampler. Includes PFA-100 and PFA-ST nebulizers, integrated peristaltic drain pump, and connectors to adapt to the ELEMENT2.

Part Number: **ES-4452**



Spiro Teflon Membrane Desolvator

Designed for use with or without the Apex system. Innovative design allows for direct analysis of a variety of samples, including high concentration Si samples and volatile organic solvents. The Spiro is an extremely stable membrane desolvator compatible with many types of high dissolved solids samples. The Spiro removes Si on-line as SiF₆ after addition of HF to the sample, allowing the determination of trace metal impurities in Si matrices without ICPMS cone clogging or off-line sample preparation. The Spiro combined with the Apex system is useful for direct analysis of neat organic chemicals, such as methanol, acetone and other solvents. Since the Spiro removes volatile species from the sample aerosol stream, it is not recommended for the determination of volatile analytes, including boron.

Part Number: **4599-3000**



The Spiro attaches directly to the Apex.



SC-E2 Integrated Optically Encoded Autosampler for Element 2

Integrated directly to the Element2 HR-ICP-MS. Facilitates cone and ICPMS interface maintenance. Improved control of self-aspiration, reducing "vapor-locks" and particularly useful for low flow applications and organic solvents analysis. Demonstrably improves rinse-out and background over any other autosampler available for the Element2. Recently improved for chemical resistance to high acid concentrations in enclosed environments.

Part Number: **SC-8103**



SC-FAST high purity sample injection

The SC-FAST integrates fully with the SC-E2 autosampler to ensure the fastest sample throughput of any commercial sample introduction system. Through use of an injection valve system, most of the uptake and rinse time can be eliminated, increasing throughput up to 2—3 fold without loss of analytical performance.

Part Number: **SC-0500-03**



SC-FAST can be integrated to the bottom of the SC-E2 for *ELEMENT2* ICPMS.

Semiconductor rinse station and delivery

Semiconductor PFA rinse station upgrade and dual PFA rinse delivery system for SC autosampler. Completely eliminates contact between peristaltic pump tubing and the rinse solutions.

Rinse Station : **SC-0301-03**

Rinse Delivery System: **SC-0304**



Sample enclosure for SC-E2 autosampler

Controls evaporation and environmental contamination. Only the sample area is enclosed allowing free access to the rest of the instrument.

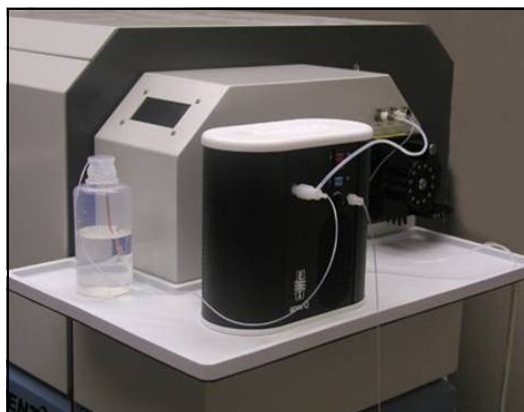
Part Number: **SC-1307**



E2-3 Sample Tray for Element2

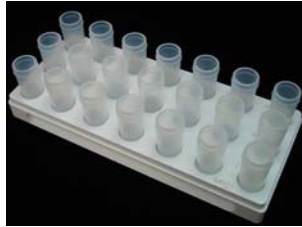
Increase the front end work area and make the use of sample introduction systems more convenient with these add-on shelves for ICP units. Directly and easily replaces standard Element2 tray to increase the sample inlet work area by nearly 3x. Ideal for use with the Apex inlet system.

Part Number: **ES-2999-5223**



Sample Racks for SC-E2

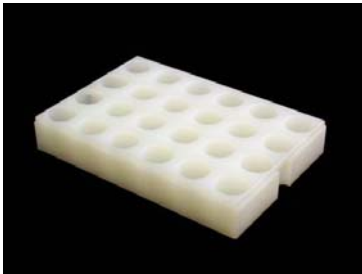
Part Number	Description
MR-21-14	21 position 3x7 mini rack. For "GFAA" style vials.



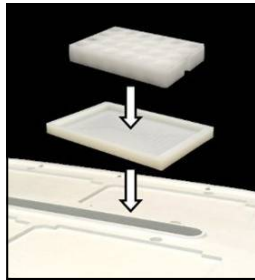
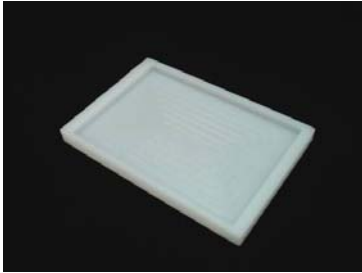
MR-00-01	Cover for Micro Racks.
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MT-24G	24 position 4x6 GeMeTec rack. Compatible with GeMeTec automated VPD system.
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MT-24G-AP	GeMeTec adapter plate. Adapts GeMeTec rack to microtiter plate locations on the SC-E2 autosampler.
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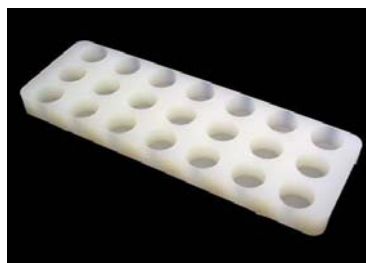
The SC autosampler readily accommodates a wide variety of sample racks for both small and large volume sample analysis. Many other sizes and types of racks are available. Please contact ESI for racks compatible with vials that you prefer to use.

Sample Racks for SC-E2

Part Number	Description
ST10-28	10 position standards rack. For 25 mL PFA bottles.



SR2-21-22	21 position 3x7 super rack. For 25 ml PFA bottles
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SR2-12-50	12 position 2x6 super rack. For 125 ml PFA bottles
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The SC autosampler readily accommodates a wide variety of sample racks for both small and large volume sample analysis. Many other sizes and types of racks are available. Please contact ESI for racks compatible with vials that you prefer to use.

Sample Vials and Bottles for SC-E2



V-14-0311C 1.5mL PFA "GFAA" style vial
(press-on cap not included)



V-14-0312C 2mL PFA "GFAA" style vial
(press-on cap not included)



V-14-0314C 4mL PFA "GFAA" style vial,
(press-on cap not included)



V-14-0310 PFA push on cap for "GFAA" style vials.



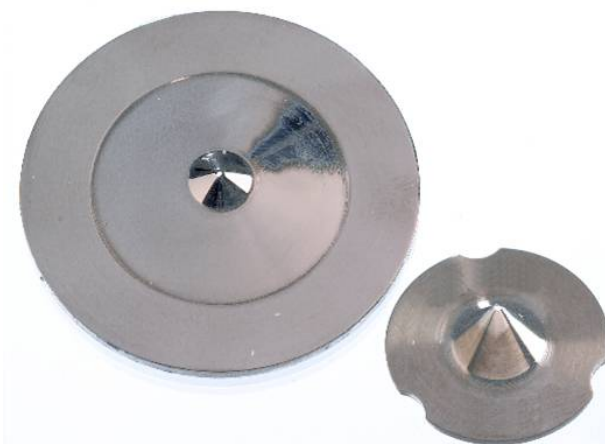
V-28-0360 25mL PFA bottle with PFA seal and PFA screw cap



V-50-0360 125mL high purity PFA bottle with seal and screw cap.
Recommended for DI water and high purity semiconductor-grade chemicals due to favorable sample volume to surface area ratio.

ICPMS Cones for ThermoFinnigan

Part Number	Description
ES-3000-1806	Platinum Sampler Cu base 15.2mm Pt/10% Rh insert
ES-3000-1808	Platinum Sampler Ni base 15.2mm Pt/10% Rh insert
ES-3000-1807	Platinum Sampler Cu core 6.35mm Pt insert
ES-3000-1810	Platinum Skimmer Cone Cu base 7.6mm Pt/10%Rh insert
ES-3000-1811	Platinum Skimmer Cone Ni base 7.62mm Pt/10%Rh insert
ES-3000-1809	Platinum Skimmer Cone Ni base 6mm Pt insert



PFA Pipette Tips for Eppendorf type Pipettors

100 μ l PFA Pipette Tips

Quantity of 10, pre-cleaned: **ES-7000-0101**

Quantity of 96, pre-cleaned: **ES-7000-0111**



1000 μ l PFA Pipette Tips

Quantity of 10, pre-cleaned: **ES-7000-1001**

Quantity of 60, pre-cleaned: **ES-7000-1011**





If a standard part doesn't meet your requirements, EPOND has the resources to develop a customized solution ... the '**SEDNA**' uptake meter – shown above – is an example of a novel EPOND device that solves a frequently-encountered problem in a simple and cost-effective package – *fast and volumetric flow measurements*.

Most of the parts in this booklet can be used with other ICP-MS and optical ICP instruments that are made by leading manufacturers such as Agilent, Finnigan, GBC, Jobin-Yvon, Leeman, Shimadzu, Sieko, Spectro, Thermo, Varian and VG.

Complete lists of accessories for every ICP-OES or ICP-MS instrument, with their prices, are available from EPOND - **email us** with the names of the instrument types for which you want information.

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