

Thermo Scientific Nanospray Flex Ion Source



Simple, Flexible Ion Generation for Nano-Electrospray

Achieving the Highest Sensitivity

Mass spectrometry (MS) based discovery and characterization of biomolecules, such as proteins and peptides, has revolutionized biological research. Modern instrumentation provides high mass accuracy, resolution and sensitivity.

Thermo Fisher Scientific supplies researchers with reliable, high performance nanoelectrospray ion sources for nanoflow electrospray ionization – the method of choice for MS analysis of proteins and peptides.

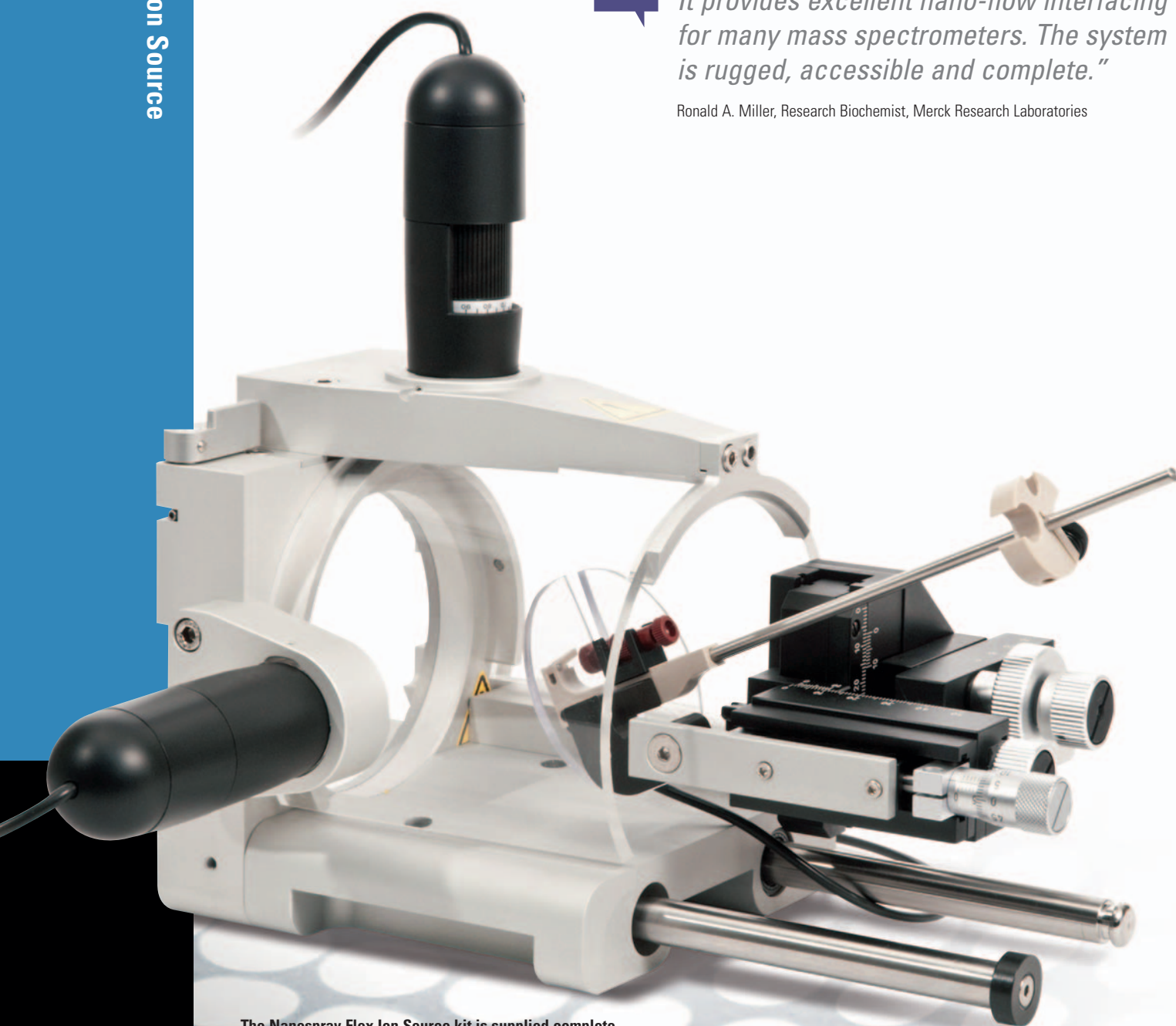
Developed with feedback from hundreds of valued customers, the Thermo Scientific Nanospray Flex Ion Source enables the use of nanoscale flow rates and maintains excellent spray stability to ensure efficient evaporation and ionization of liquid samples.

Together with our leading MS systems, the Nanospray Flex™ Ion Source will help to achieve the highest possible sensitivity.

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"It provides excellent nano-flow interfacing for many mass spectrometers. The system is rugged, accessible and complete."

Ronald A. Miller, Research Biochemist, Merck Research Laboratories



The Nanospray Flex Ion Source kit is supplied complete with all necessary accessories and is ready to install.

Designed for Simplicity and Ease of Use

Cameras, monitor and light source to visualize emitter

Easy access to knobs and emitter/column adaptors

Sturdy X-Y-Z manipulator for accurate positioning

Sliding rails for quick retraction of emitter



■ Fast and Flexible Route for Ion Generation

The Nanospray Flex Ion Source kit is optimized for use with the following Thermo Scientific MS instruments:

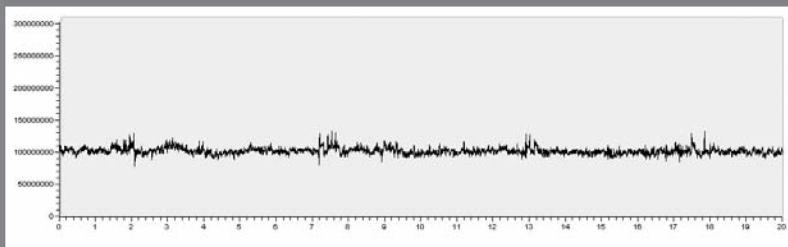
- LTQ Orbitrap™, LTQ FT™, LTQ™, and LTQ Velos™ Mass Spectrometers
- Exactive™ High Performance Benchtop LC-MS Mass Spectrometer
- TSQ Quantum™, TSQ Quantum Access, TSQ Quantum Discovery MAX™, TSQ Quantum Ultra, and TSQ Vantage™ Mass Spectrometers
- LCQ™ DECA XP Max Mass Spectrometer

Each kit contains all accessories and tools needed for immediate installation.

- Single set-up for all online nanoflow applications
- Easily interfaced with online nanoscale LC separation techniques
- Switched in seconds to offline borosilicate emitters in a classical nano ES workflow

Excellent Spray Stability

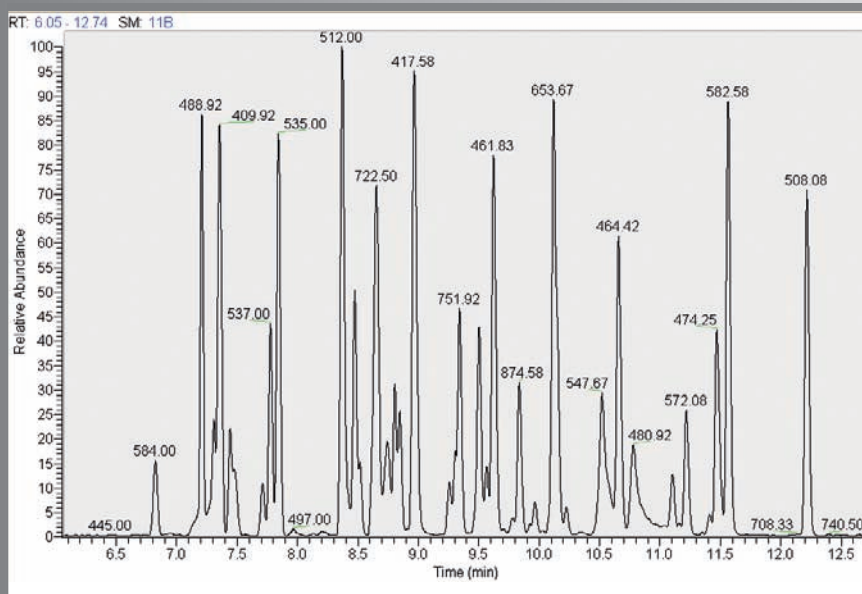
The Nanospray Flex Ion Source delivers a highly stable spray over a long run time, contributing significantly to the overall performance of a mass spectrometer. The figure below clearly demonstrates the ability of the ion source to provide a continuously stable spray which prevents adverse effects on signal intensity and peak shape to ensure the highest sensitivity along with precise RSD values and calibration curves.



Raw data, no smoothing applied!

Sample: A singly charged peptide (N-ALILTVS-C)
 MS: LTQ Velos Mass Spectrometer
 Source setup: Nanospray Flex Ion Source, Thermo Scientific DirectJunction adaptor, stainless steel emitter
 Experiment: Direct infusion at 300 nL/min

Yielding Excellent High Resolution Results



With LTQ Mass Spectrometer

System: Thermo Scientific EASY-nLC
 Sample: 100 fmol tryptic BSA digest
 Analytical Column: Thermo Scientific EASY-Column, 10 cm, ID75 μ m, 3 μ m, C18-A2
 Gradient: 300 nL/min, 5-35% B in 10 min
 Solvent A: 0.1% formic acid
 Solvent B: acetonitrile, 0.1% formic acid
 FWHM ~3.5 sec

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"It gives a beautifully stable spray and we have suffered just a single blocked emitter in 5 months continual running! If I hadn't seen it myself I would not believe it either."

Dr. Duncan Smith, Head of Mass Spectrometry, Paterson Institute for Cancer Research, UK

Total Flexibility with the DirectJunction Adaptor

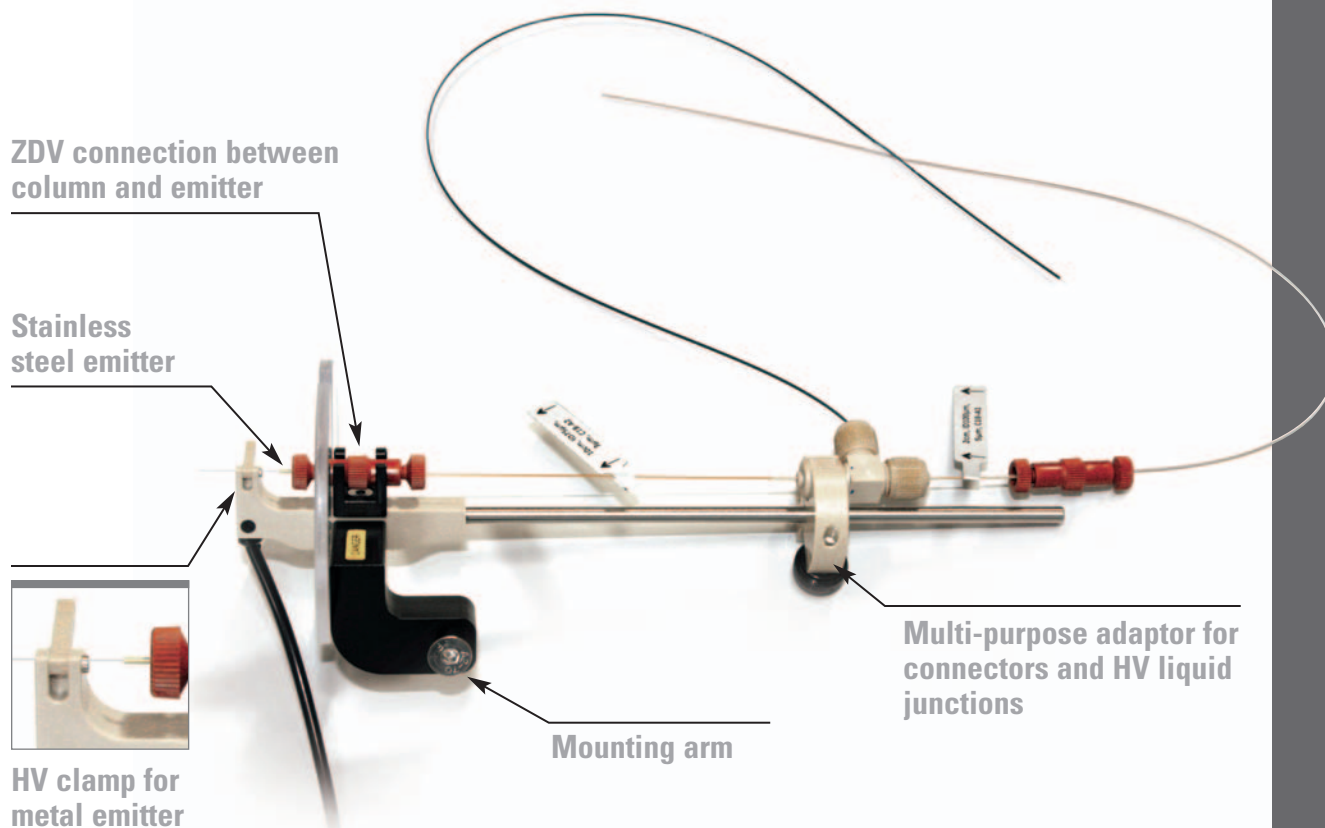


Figure shows a DirectJunction™ adaptor fitted with a pre-column and an EASY-Column™ analytical column and a stainless steel emitter. Every ion source kit contains a DirectJunction.

Single Set-up for All Online Nanoflow Applications



- Optimized for easy handling and perfect, zero dead volume (ZDV) connections
- Built-in options for direct HV connection to stainless steel emitters
- Mounting system equipped with an adaptor for HV liquid junction connectors and ZDV unions when using glass emitters

Excellent spray stability with HV connections to stainless steel and glass emitters

Supplied with All Accessories, Ready to Install

Ordering Information

Main Product

Product Name	Description	Contents	Part Number
Nanospray Flex Ion Source 	Ion source housing with XYZ-manipulator and fittings, DirectJunction adaptor for online analysis, LiquidJunction Cross for one column set-up with long packed emitters, camera set-up including one LCD monitor, nanobore stainless steel emitters fitting the DirectJunction adaptor, all necessary cables and connectors, installation and operation manual.	1 kit	ES071

Accessories and Spare Parts

Product Name	Description	Contents	Part Number
Video Camera 	Video camera for Nanospray Flex Ion Source ES071	1 pc.	ES216
8" LCD Monitor 	Monitor for Nanospray Flex Ion Source ES071	1 pc.	ES217
DirectJunction 	Universal sprayer and column mounting system for Nanospray Flex Ion Source (ES071), providing an easy to use, sturdy and reliable connection between transfer tubing, columns and emitters. Includes a zero dead-volume connector (SC600) for connection between emitter and columns.	1 kit	ES256
LiquidJunction Cross 1/32" 	Connects LC transfer line and column. Modified MicroCross Union, integrated platinum electrode with LEMO cable. Includes 10 microtight tubing sleeves fitting for OD 375 µm capillaries. Use online with DirectJunction (ES256).	1 pc.	ES257
LiquidJunction Tee 1/32" 	Connects LC transfer line and column. Modified MicroTee Union, integrated platinum electrode with LEMO cable. Includes 10 microtight tubing sleeves fitting for OD 375 µm capillaries. Use online with DirectJunction (ES256).	1 pc.	ES258
Offline Nano ES Kit 	Everything needed for offline analysis using borosilicate emitters on Nanospray Flex Ion Source. ES071. Includes: Nano ES ion source head, offline (ES260), static air pressure device (ES242), 100 borosilicate emitters, medium (ES380), pair of needle/emitter holders (ES286), precision tweezers and ceramic glass cutter (ES250), instructions for use.	1 kit	ES259
Nano ES Ion Source Head Offline 	For use offline with 1.2 mm OD borosilicate emitters (ES380-ES388). Includes: conducting and soft ferrules, safety cover to shield from spray potential, special purpose nut for fastening and pressurizing a plastic test tube if sample liquid is to be forced into a short silica emitter and sprayed directly from the tube. Compatible with Nanospray Flex Ion Source ES071.	1 kit	ES260

Conserve Sample and Retain a Strong Signal Using Narrow Bore Emitters

Optimal performance generally requires flow rates from 10 nL/min to 500 nL/min. The very narrow orifices of these emitters (1 – 30 µm) ensure that such low flow rates are achievable.

High quality emitters together with the Nanospray Flex Ion Source ensure a strong signal while using the lowest possible flow rate and conserving sample. Their design takes advantage of the fact that the signal intensity observed in ES-MS is concentration dependent and not a function of total sample consumption.

Stainless Steel Online Emitters

- **Maintain stable spray over a wide flow rate range – from less than 50 nL/min to more than 1500 nL/min**
- **Easily re-initiated after intermissions**
- **Exceptional durability – reliable performance in excess of 1000 hours**
- **Low risk of blockage since the tip is not tapered inside**



Borosilicate Offline Emitters

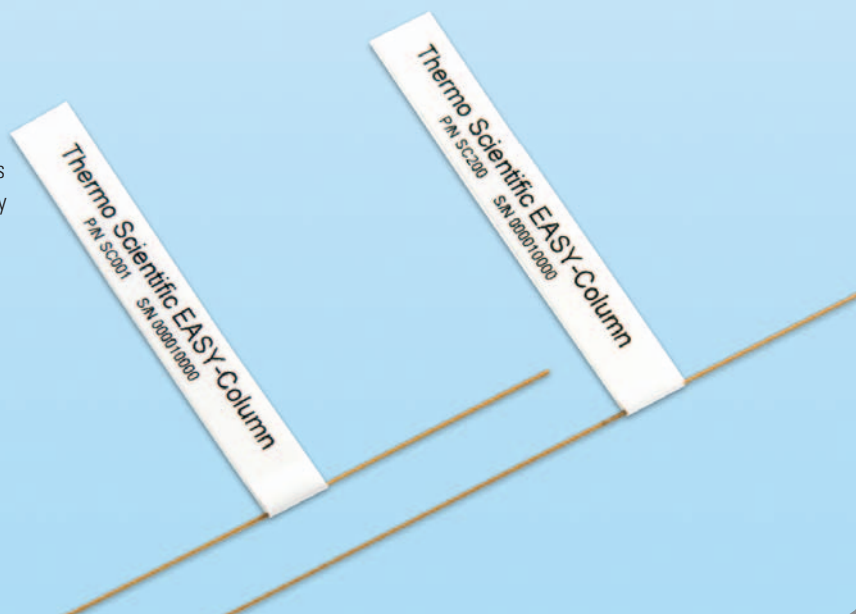
- **Stable spray – from 10 nL/min to 40 nL/min**
- **Long length emitters to achieve slower flow rates**
- **Medium length emitters for samples with higher viscosity and easier “start up”**
- **Double coating of Au/Pd for use with original Micromass® sources and whenever a stronger coating is useful**



Chromatographic Excellence at Nanoscale

Using top quality media and components, and produced with a focus on design simplicity and strict quality control, EASY-Column capillary columns ensure top chromatographic performance at nanoscale.

- **Compatible with any nanoscale HPLC system**
- **Optimized for online LC-MS**
- **Quality control on every column**
- **Simple, flexible design**



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"I'm very impressed. Previously we were using emitters from another manufacturer but after a trial of these emitters I am now a committed user. The only problem is that they appear so robust I don't know when I will ever have to order another box!"

Rohan Steel, St Vincent's Institute of Medical Research, Victoria, Australia

Laboratory Solutions Backed by Worldwide Service and Support

Tap our expertise throughout the life of your instrument. Thermo Scientific Services extends its support throughout our worldwide network of highly trained and certified engineers who are experts in laboratory technologies and applications. Put our team of experts to work for you in a range of disciplines – from system installation, training and technical support, to complete asset management and regulatory compliance consulting. Improve your productivity and lower the cost of instrument ownership through our product support services. Maximize uptime while eliminating the uncontrollable cost of unplanned maintenance and repairs. When it's time to enhance your system, we also offer certified parts and a range of accessories and consumables suited to your application.

To learn more about our products and comprehensive service offerings, visit us at www.thermoscientific.com.



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