PicoTIP®

NANOSPRAY EMITTERS

NEW OBJECTIVE

"The art of performing
Nano LC-MS/MS is putting the
right things together in a proper way.
The New Objective SilicaTips
are one of those right things."

Manfred Raida, Ph.D.

online nanospray

Fused-silica PicoTip® emitters provide the highest performance and quality attainable for online nanospray. The SilicaTip™ features high-grade fused-silica tubing with precise shape and tip diameters and is an ideal choice for low flow and ultra-low flow methods. The TaperTip™ is the standard choice for microspray applications with flow rates ranging from 0.2 to 3.0 µL/min.

offline nanospray

Precision-crafted PicoTip emitters are also ideal for offline nanospray applications. Borosilicate GlassTips™, EconoTips™, and specialized QuartzTips™ offer the most rugged, most reliable and most reproducible nanospray performance for offline applications.

PicoTIP®
NANOSPRAY EMITTERS

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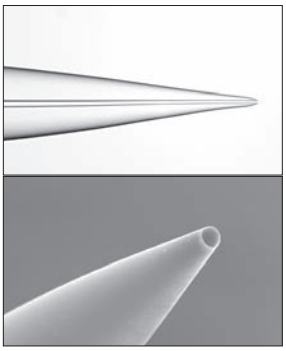
NANOSPRAY EMITTERS

Online Nanospray Analysis

SilicaTips and TaperTips represent the highest performing and most versatile nanospray emitters available. Each emitter requires mounting hardware that can accommodate 150 or 360 µm outside diameter (OD) fused-silica tubing. The SilicaTip is manufactured from the highest-grade fused-silica tubing and is pulled to precise dimensions. Stringent internal taper shape and tip opening parameters are critical for low-flow and ultra-low flow rate delivery; <10 nL/min.

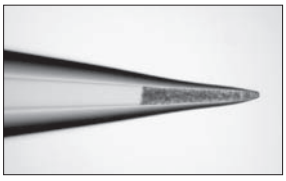
The TaperTip is an extremely robust emitter and is popular for use in microspray applications. A TaperTip has no internal taper, and therefore, is an ideal choice for applications where clogging may be an issue.



SILICATIP™

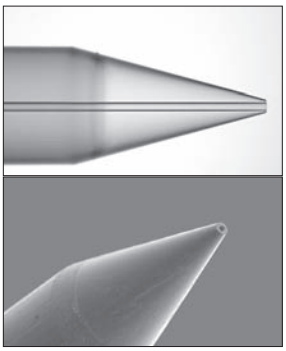
SilicaTip emitters are capable of hundreds of hours of continuous operation (more than 800 hours with MeOH/water/acetic acid mobile phase) without a loss of coating. These emitters are engineered for continuous-flow nanospray in a 20-1,000 nL/min. range. Each SilicaTip must pass rigorous video inspections and conform to stringent specifications to ensure the highest performance nanospray emitter.

- Consistent, sustainable, high-performance spray
- Ideal for low-flow and ultra-low flow applications
- Wide selection of IDs, tip sizes, and lengths for nearly all applications
- Multiple coating options for high-voltage application
- Custom sizes available to fit any mass spectrometer platform



FRITTED SILICATIP™

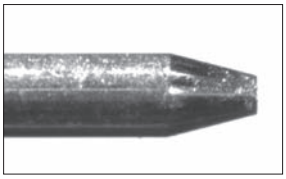
A fritted SilicaTip provides a nanospray emitter that is virtually clog-free. The fritted SilicaTip is a popular choice when the application demands cleanliness within the fluid path as well as high performance sample preparation methods.



TAPERTIP™

Fused-silica TaperTip emitters are engineered and designed for microspray flow rates (0.2 to 3.0 µL/min.) As with the SilicaTip nanospray emitters, each TaperTip undergoes a rigorous video inspection protocol, resulting in the highest performance nanospray emitter.

- Microspray flow rate applications (0.2 to 3.0 µL/min.)
- External taper only
- Virtual clog-free operation
- Rugged, reliable, and reproducible performance
- Choose from a variety of sizes and formats to meet specific needs
- Multiple coating options for high-voltage application



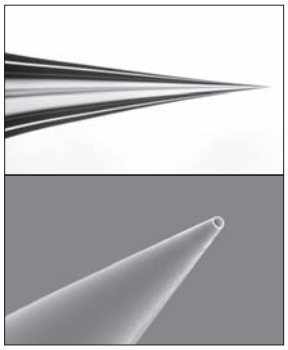
METAL TAPERTIP™

Each stainless-steel TaperTip is precision trimmed and polished. The TaperTip is engineered and designed to be extremely durable and can last many months. TaperTip nanospray emitters are easily inserted into a microsleeve to enable use with systems that require 360 µm OD sizes. The TaperTip nanospray emitter is a microspray workhorse!

- Outstanding ruggedness and reliable performance (>1,000 hrs.)
- Accommodates a wide flow range: 0.2 - 1.5 µL/min.
- Stable and reliable spray features
- No internal taper means virtually clog-free operation
- Reusable. Reusable. Reusable.

Offline Nanospray Analysis

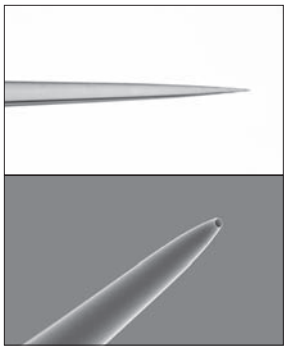
GlassTips™, QuartzTips™, and EconoTips™ provide the most sensitive and versatile ensemble of nanospray emitters for offline applications. These high performance nanospray emitters are manufactured using the highest-grade borosilicate glass or quartz. Each nanospray emitter features a specially engineered bore filament that allows for self-filling. The unique, precision-made tip opening eliminates the need to break open tips prior to use.



GLASSTIP™

GlassTips are the easiest way to ensure a rugged, reproducible sample delivery method for nanospray. Precision engineered with borosilicate glass to meet strict specifications, GlassTips are ready for use right out of the box - no breaking required.

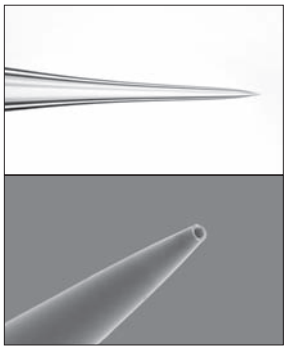
- Rigorous video inspections to conform to stringent specifications
- Available with a durable, inert, multi-layer coating
- No breaking required!
- Easy, self-filling



QUARTZTIP™

Specialized QuartzTips are the perfect nanospray emitter for work with large proteins and DNA. QuartzTips are manufactured with significantly lower sodium content to provide an extremely stable and reliable platform for nanospray and sample delivery.

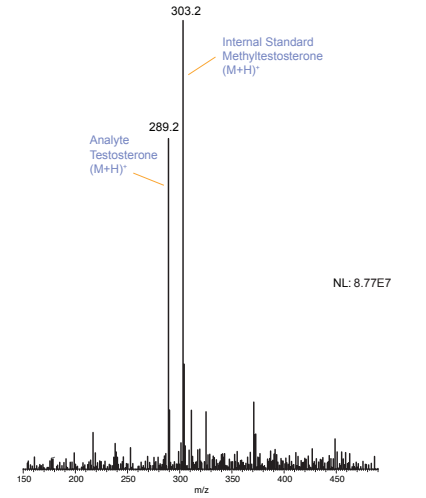
- Reduced sodium contamination
- Widely used for applications with large proteins and DNA



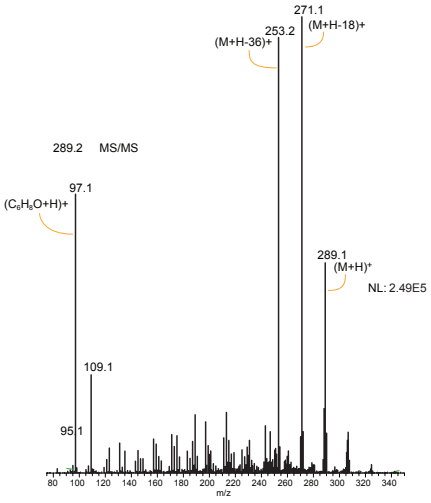
ECONOTIP™

EconoTips provide an attractive solution when durability and cost are concerns. EconoTips feature a 1 µm tip ID and combine both durability and reproducibility with the highest standards of quality.

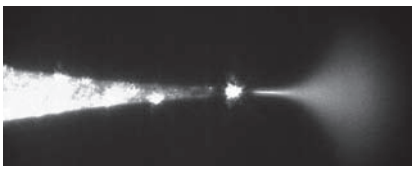
- Attractive choice for routine sample sets
- Available with standard, single layer conductive coating
- No breaking required



Mass spectrum of testosterone with methyltestosterone (IS)



MS/MS of testosterone $(M+H)^+$



GlassTip with a 1.2 mm OD, 0.69 mm ID, and 2 µm tip spraying at 60 nL/min.

PICOTIP®
NANOSPRAY EMITTERS

Selecting the Right Emitter

STEP 1

ONLINE OR OFFLINE ANALYSIS

Sometimes the desired flow rate determines the best nanospray format and emitter; Sometimes the available sample volume is most critical. Need more help? Call us at 781 933 9560. We'll help you get started!

PUMPED VOLUME	SAMPLE VOLUME	TIP ID	FLOW RATE	METHOD
Yes	<0.1 > 10 µL (1 – 5 µL typical)	2 – 50 µm (5 –15 µm typical)	100 nL – 1 µL/min. (1 –- 5 µL typical)	Online
No	0.1 – 5 µL (1 µL typical)	1 – 4 µm (1 µL typical)	10 – 80 nL/min. (25 µL typical)	Offline

STEP 2

TARGET FLOW RATE

Nanospray emitter ID and tip opening play important roles in controlling the flow rate. The smaller the tip opening, the lower the flow rate – and the greater the risk of clogging.

SILICATIPS™

TIP ID	FLOW RATE (nL/min.)
5	20 – 100
8	50 – 300
10	100 – 400
15	150 – 400
30	300 – 1,000

TAPERTIPS™

TIP ID	FLOW RATE (nL/min.)
20	0.2 – 0.5
50	0.2 – 1.0
75	0.3 – 2.0
100	0.4 – 3.0

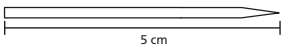
GLASSTIPS™

TIP ID	FLOW RATE (nL/min.)
1	20 – 80
2	20 – 80
4	40 – 100

STEP 3

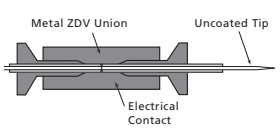
SELECT THE RIGHT COATING STYLE

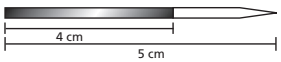
Electrical contact with the nanospray emitter is essential. A wide selection of coatings provide the optimum electrical contact for nearly all mass spectrometers.



JUNCTION CONTACT (UNCOATED)

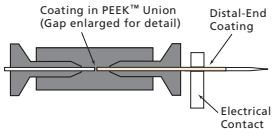
The electrical contact is made to the union holding the emitter. The voltage travels back the emitter and passes to the mobile phase in the gap between the emitter and the transfer line. PicoTips that are uncoated have -N- in their part numbers.

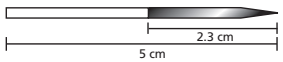




DISTAL CONTACT (DISTAL)

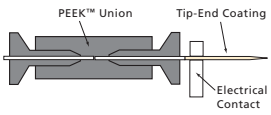
The electrical contact is provided to the outside of the emitter, which has a conductive coating on the distal (back) end. Voltage contacts the mobile phase via the gap between the emitter and the transfer tubing. Distal-coated PicoTips have -D- in their part numbers.





TIP CONTACT (STANDARD)

The electrical contact is made to the outside of the tip. The emitter has a conductive coating to the tip where the voltage contacts the mobile phase. PicoTips with a standard coating have -CE- in their part numbers.



STEP 4

DETERMINE YOUR EMITTER LENGTH FOR ONLINE ANALYSIS

The length of the nanospray emitter is often dependent on the requirements of the nanospray source. PicoTip® emitters feature a standard length of 5 cm, though we also offer lengths for most mass spectrometer sources. Need a custom length? A different size? Give us a call. We can customize PicoTip emitters to suit your specific needs.

Hate cleaving fused silica? Try our pre-cut emitters and tubing!

SilicaTips are manufactured and sold under U.S. Patent 5,788,166.

NEW OBJECTIVE

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