

Sampling into Nano Electrospray Needles

INTRODUCTION

Nano electrospray ionization sources use drawn capillaries with a very small spraying orifice to produce very small sized charged droplets. The liquid flow through the capillary is maintained by the electrospray process and generates flow rates at the low nL/min range. The sample is directly loaded into the nanospray needle. Hence, nano electrospray is typically operated off-line.

RESULTS AND DISCUSSION

Using the pipetting routine of the FAMOS™ micro autosampler, samples can be directly loaded into the borosilicate needles. Sample loss is strongly reduced and tedious manual pipetting circumvented due to the high degree of automation. The borosilicate needle is positioned into a specially designed holder to allow precise pipetting and to prevent damage to the electrospray needle.

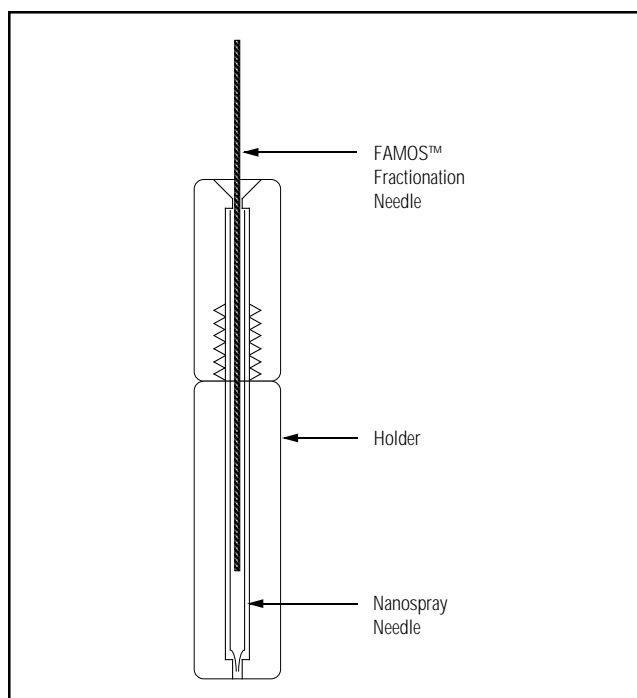


Figure 1. Needle holder.

The FAMOS micro autosampler can be used for μ -fractionation as well, using one of the additional column switching valves. Hence, the effluent of a Capillary LC columns can be collected into a series of nano electrospray needles. The fused silica injection needle that aspirates the sample in the injection mode is switched to the detector outlet capillary when fractionation—with programmable time intervals—is required. Thus, tandem mass spectrometric analysis at virtually unlimited time is feasible after Capillary LC analysis.

Furthermore, with the use of μ -Guard or μ -Precolumns, fast sample clean-up, e.g., desalting or detergent removal, can be performed before sampling into the borosilicate needle. A typical example that demonstrates the potential of automated sampling and μ -fractionation into nano electrospray needles is shown in Figure 2.

SUPPLIER

Borosilicate needles are available from Protana a/s, Odense, Denmark, e-mail: protana@protana.com, cat. no. ES09.

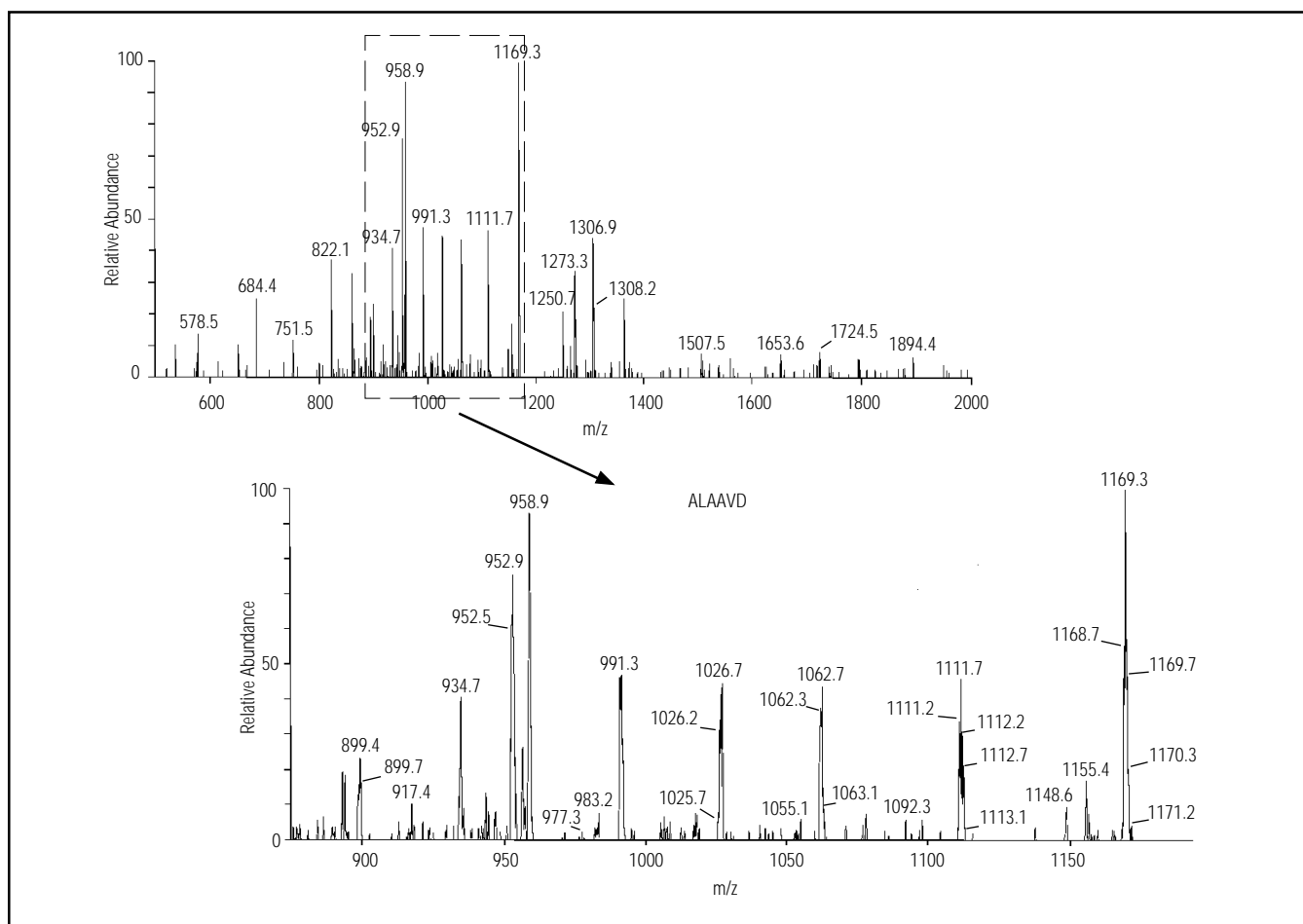


Figure 2. MS/MS/MS spectrum of a peptide sample introduced with a nano electrospray needle that was filled automatically after clean-up by reversed-phase capillary HPLC.

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* Designed, developed, and manufactured under an NSAI registered ISO 9001 Quality System.



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