Optimization of ELSD Conditions using PEG 400

Technical Overview

Introduction

For non-UV absorbing compounds, the Agilent 380-ELSD is the first choice since the principle of detection does not rely on the optical properties of the solute.

A good example of the benefits of the Agilent 380-ELSD is illustrated by the gradient HPLC analysis of polyethylene glycols (PEGs). The Agilent 380-ELSD has three main control variables: nebulizer temperature, evaporator temperature and gas flow rate. For essentially non-volatile compounds, such as PEGs, these parameters can be tuned to maximize the sensitivity of detection.

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Figure 1 shows an overlay of chromatograms obtained for a separation of PEG 400 oligomers. Both analyses used exactly the same method but with different Agilent 380-ELSD operating conditions, predominantly illustrating the effect of the evaporator temperature.

The higher evaporator temperature results in a visible increase in signal and a reduction in baseline noise with obvious benefits in sensitivity. However, the lowest molecular weight PEG oligomers, i.e the most volatile, do show a reduction in peak height at 70 °C due to partial degradation or loss with solvent due to low boiling point.

Conditions

Column: PLRP-S 100Å 5 µm, 4.6 x 150 mm (p/n PL1111-3500)
Eluent A: Water
Eluent B: ACN
Gradient: 10-30% B in 12 min
Flow Rate: 1.0 mL/min
Detection: Agilent 380-ELSD (for conditions see Figure 1)

Agilent 380-ELSD conditions

1. neb=35 °C, evap=35 °C, gas=1.6 SLM
2. neb=50 °C, evap=70 °C, gas=1.4 SLM

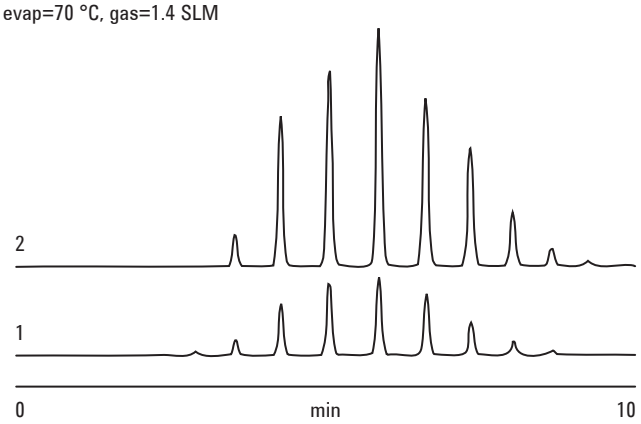

Figure 1. Overlay of chromatograms obtained for a separation of PEG 400 oligomers using different Agilent 380-ELSD operating conditions.

These data represent typical results. For further information, contact your local Agilent Sales Office.

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