



# High Throughput Screening — LC/MS with ELS Detection

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*The suitability of the PL-ELS 1000 evaporative light scattering detector for use as a concentration detector in an LC/MS system has been evaluated for monitoring a combinatorial library. The design of the instrument eliminates pressure pulses, and a stable split ratio and baseline are obtained.*

Evaporative light scattering detectors, such as the PL-ELS 1000, can be used as stand-alone detectors or as one of two or more detectors operated in combination. It can be used in series, as the last detector, or the flow can be split in part to the PL-ELS 1000 and in part to an alternative detection system. By using multidetector HPLC systems, the amount of information that can be obtained from a single chromatographic run is maximized.

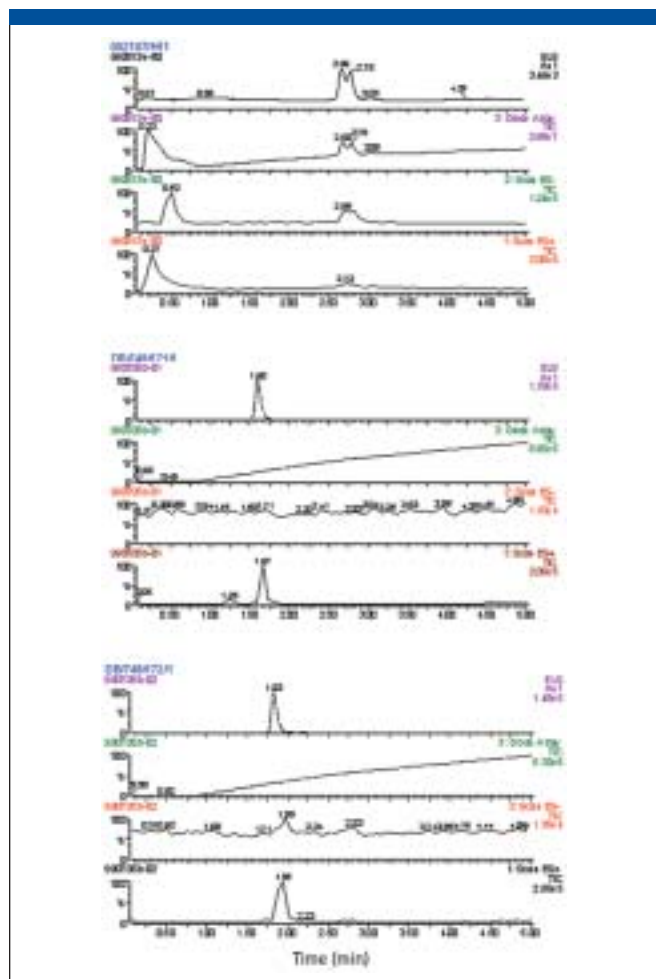
The principle of operation of the PL-ELS 1000 detector involves the evaporation of the volatile eluent to leave particles of nonvolatile solute, which scatter light. This means that it has the same eluent requirements as mass spectrometry; i.e., that the eluent must be volatile. It is therefore an ideal detection procedure for developing LC-MS methods off-line or as a concentration detector in an LC-MS system. The structural information, which is obtained from an LC-MS system, is extremely useful for monitoring combinatorial libraries in high throughput screening situations. However, in addition to structural identity, purity and concentration information is also required. This can be obtained using UV detection; however, this relies on the solutes being UV active and having similar extinction coefficients. Alternatively, use of the PL-ELS 1000 detector requires only that the solute is not volatile.

The suitability of the PL-ELS 1000 detector for use as a concentration detector in an LC-MS system has been evaluated for monitoring a combinatorial library. The PL-ELS 1000 is designed so that during its operation, there are no pressure pulses, which enables a stable split ratio to be achieved throughout the analysis. In the system, the flow was split in part to the mass spectrometer and in part to the concentration detectors, diode array, and evaporative light scattering.

The traces from the three detection systems for three samples are included for comparison in Figure 1. For sample 002107/H11, the traces from the two concentration detectors are similar, although the PL-ELS 1000 is more sensitive. However, samples DB/749/171/1 and DB/749/172/1 appear to be single compounds but are not detected by the diode array detector at 200–350 nm; they are not UV active.

The suitability of the PL-ELS 1000 detector for use as a concentration detector in an LC-MS system is evident. The design of the instrument eliminates pressure pulses, and a stable split ratio and baseline are obtained. It can be used to obtain concentration information when the solutes are not UV active.

Column: Phenomenex Luna C18 (C2), 3  $\mu$ m, 50  $\times$  2.1 mm  
 Eluent A: 0.1% formic acid in water-ACN 95:5 v/v  
 Eluent B: 0.1% formic acid in water-ACN 5:95 v/v  
 Gradient: Linear 0–100% B in 5 min  
 Flow rate: 0.9 mL/min



**Figure 1:** Traces from the three detection systems for three samples. (Separation courtesy of Dr. I. Reid, Celltech Chiroscience, Cambridge, United Kingdom.)

Samples: 1  $\mu$ g on column  
 Detector: PL-ELS 1000  
 Nebulizer: 85  $^{\circ}$ C  
 Evaporator: 95  $^{\circ}$ C  
 Gas flow rate: 0.8 SLM

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