

岛津超快速液相色谱仪 Prominence UFLC

Prominence UFLC

Your Solution for Ultra Fast/High-Throughput HPLC Analysis



Researchers demand for faster separations has highlighted the need for increased efficiency in high-speed liquid chromatography. The direct approach is to increase the mobile phase flow rate (linear velocity); however, increasing the mobile phase flow rate in the widely used 5 μ m particle diameter packed column diminishes chromatographic efficiency. As a result, two approaches have been developed:

Use of smaller particle size packing materials

- This approach will enable more rapid separation. However, there will be a significant increase in backpressure on the instrument components and column due to the increased column flow resistance.

Separation under elevated temperature

- Higher temperature has the effect of accelerating diffusion of the species while decreasing resistance to flow in the column, enabling better and faster separation simultaneously.

To address the backpressure issue, expensive, specialized instruments with improved pressure capabilities for high-speed separations have been developed. These specialized instruments, however, compromise injection performance and limit sensitivity. Consequently, use in conventional HPLC analysis may be less efficient.

Features

Prominence Support for High-Speed Analysis

Utilizing standard components, Prominence supports temperature operation up to 85°C, enabling, high-speed analysis at lower pressures, while maintaining performance/throughput levels not seen in more expensive instrument configurations. And with these standard components, Prominence enables researchers to perform both conventional and high-speed analysis.

Prominence supports high-speed analysis through the following features:

- Low volume tubing and flow cell decrease extra-column bandspreading
- 10 sec ultra-fast injections with the Prominence SIL-20 Autosampler
- Temperature capability up to 85°C
- Fast data acquisition allows for better signal tracing

These features, together with the use of a 2µm particle material column, can shorten analysis time 5- to 6-fold.

Reproducibility in High-Speed Analysis

Achieving gradient retention time reproducibility is more difficult for fast separations than in normal analysis. The excellent pumping performance of the Prominence Pumps, with its 3nL flow rate resolution / s micro stroke delivery, shows outstanding retention time reproducibility. Retention time RSD values for high-speed gradient operation with Prominence HPLC are typically less than 0.1%

What is High Throughput?

The goal of Fast LC is high throughput, meaning how many samples can be analyzed per day or per hour. In order to achieve high throughput, not only must the run time of a single analysis be shortened, but the total cycle time of the injection sequence and run time needs to be optimized.

With Prominence UFLC components, combined with unique 2.2µm packing material columns, which generate less than half the back pressure compared to commercially available 1.8µm packing material columns, researchers can perform both conventional and high-throughput analysis at performance levels far surpassing others. A specialized instrument is not needed