

Application Data Sheet

No.29

LC
Liquid Chromatograph

Ultra-Fast and High-Sensitivity Analysis of Artificial Colorings Using the SPD-M30A Photodiode Array Detector

The newly-designed capillary SR-Cell (Sensitivity and Resolution Cell) has been adopted for the SPD-M30A high-sensitivity photodiode array detector in the Nexera SR Ultra High Performance Liquid Chromatograph. By optimizing the cell's optical path length and diameter, both low noise levels and high sensitivity have been achieved. This article introduces the high-speed, high-sensitivity simultaneous analysis of artificial colorings using the Nexera SR UHPLC and a high-sensitivity cell (option).

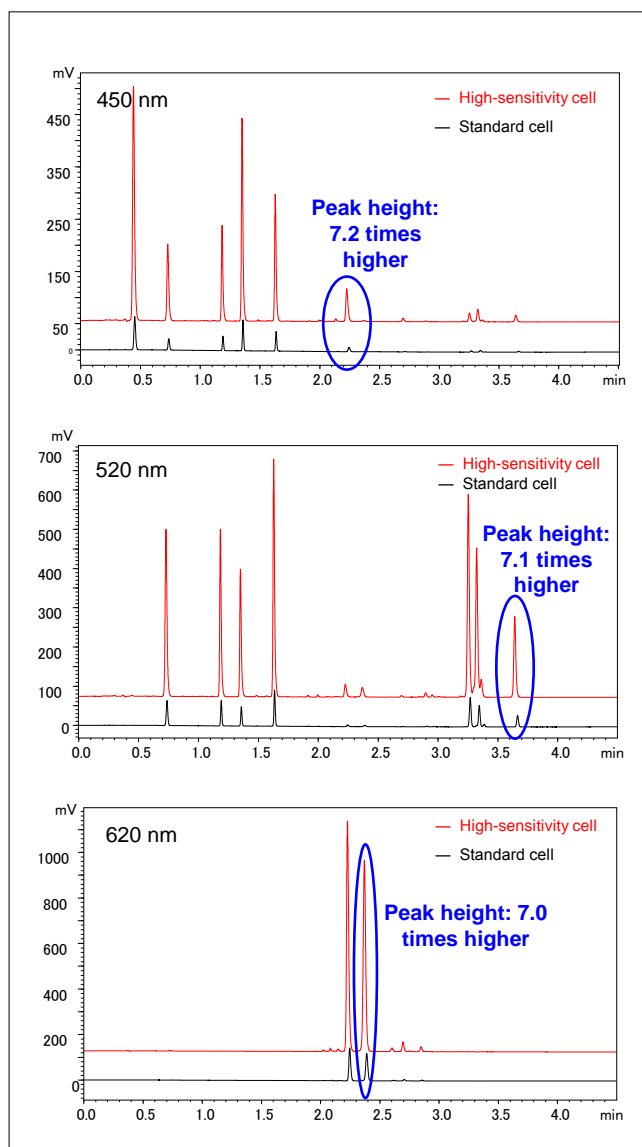
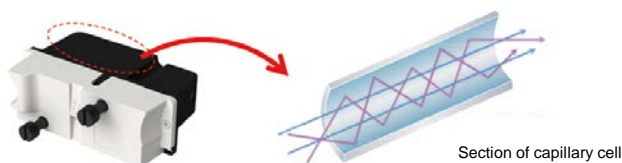
Simultaneous Analysis of 12 Artificial Colorings

Colorings used as food additives can be classified as natural coloring ingredients and artificial colorings. Approval for artificial colorings varies from nation to nation. In Japan, 12 types are currently designated. High-speed, high-sensitivity simultaneous analysis was achieved with the peak height improved by approximately 7 times (in-house comparison) using the SPD-M30A and a high-sensitivity cell.

Column : Shim-pack XR-ODS II (75 mmL. x 3.0 mmI.D., 2.2 μm)
 Mobile Phase : A) 10 mmol/L Ammonium acetate / Acetonitrile (v/v=95/5)
 B) 10 mmol/L Ammonium acetate / Acetonitrile (v/v=50/50)
 Gradient : B 2% (0min.)→100% (4.20min.)→2% (4.21min.)
 Flow Rate : 1.3 mL/min
 Column Temp. : 40 °C
 Injection Volume : 3 μL

Newly-Designed SR-Cell

If a conventional cell's optical path length is shortened, although scattering will be minimal, sensitivity will be reduced. Conversely, if the optical path length is extended, the peak width will increase, as will noise and drift. The new capillary SR-Cell (Stability and Resolution Cell) overcomes these limitations. By optimizing the cell's optical path length and width, both low noise and high sensitivity have been achieved.



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