Development of UHPLC

Our Performance-oriented World

Ideal Ultra High Performance Liquid Chromatograph Pursued by Everyone

The development of Hitachi's first UHPLC began in 2010. In the field of UHPLC, Hitachi High-Technologies Corporation was the last to start the development. However, we, counting in the company's history as Hitachi, Ltd., have over half a century's worth of achievements and experiences in the field of HPLC.
With the generous applications of technologies and know-hows the company can offer, Hitachi Ultra High Performance Liquid Chromatograph "ChromasterUltra Rs" was perfected and launched into the market.
ChromasterUltra Rs is filled with the wisdoms and experiences that only engineers can provide and invites you to the profound world of the UHPLC development.

Vol.3

i n t e r v i e w

Pride of Engineer

For Future Users

Takeda, who takes the lead in the UHPLC development at the designing site, places emphasis on "for whom and for what, we are developing products." Liquid chromatograph engineers highly specializing in the field tend to focus on "how to manufacture" as they become obsessed with logics and restrictions. However, a good product cannot be produced based on only those factors. It is important to thoroughly consider what kind of UHPLC will please the users and then come up with the target specifications. He is certain that this is the way to develop a new UHPLC.

"My belief was strengthened during my training in Germany. For example, when you drive on the Autobahn (German expressway), you will be surprised that there are no-speed-limit zones. You are allowed to increase the speed as much as you want within the common sense limits. While the maximum speed specification in a car catalogue is important, the car should be manufactured focusing on the drivers," says Takeda.

He is thankful that the idea on car manufacturing in Germany greatly broadened his vision for the UHPLC development.

Based on his experiences in Germany such as this, when installing a prototype model, he tries to collect feedbacks from users as much as possible by cooperating with the sales department. He feels it is "doable" when the users' voices are applied to the UHPLC development. To maintain this attitude is Takeda's pride as a UHPLC engineer.

Optical Instruments Engineering Department
Engineer

Akihiro Takeda

While he was attending a university, he participated in a collaborative research project related to elemental analysis with Central Research Laboratory, Hitachi Ltd. With this experience, he was assigned to the driver software development. In addition, he became interested in car manufacturing during his training in Germany and his view of his career was expanded.

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ChromasterUltra Rs, an ultra high performance liquid chromatograph, provides the ultimate in high performance, high resolution, and high sensitivity analysis that are becoming requirements for research and development in pharmaceutical and chemical fields.
Hitachi UHPLC supports cutting edge studies including the high resolution analysis of chemically-similar substances and impurities in synthetic compounds and the high sensitivity detection of impurities such as harmful substances that are becoming increasingly relevant in our daily lives.

Ultra High-Speed Analysis

- World's highest range of the pressure resistance, which is 140 MPa*1, not only supports high-speed analysis but also gives selectivity of mobile phase which likely causes of higher pressure. This delivers more variety of analysis.

High Resolution Analysis

- The newly developed high resolution column (LaChromUltra Ⅱ C18 (1.9 μm), 250 mm), has a high number of theoretical plates (50,000), and high pressure resistance, taking ultra high resolution analysis to the next level.
- A newly designed 6170 Binary Pump with independent variable stroke plungers ensures solvent delivery with higher mixing performance and stability as it employs the low-volume double corkscrew mixer in addition to its unique LBT*2 control.
- The standard installation of the 6430 Diode Array Detector includes a total reflection type capillary flow cell unit (optical path length: 10 mm). The excellent control of the extra-column dispersion contributes to higher resolution analysis.

High Sensitivity Analysis

- By using the high sensitivity flow cell unit for 6430 Diode Array Detector (optical path length: 65 mm) (optional), excellent sensitivity can be obtained from the 6430 Diode Array Detector.
- The 6430 Diode Array Detector equipped with a new optical system achieves low noise and low drift which are key to high sensitivity analysis.
- The 6270 Autosampler, which allows a selection of multiple washing modes, is installed with an injection port reverse washing mechanism and can provide the excellent carry-over performance.

∗1 Among models sold in Japan, surveyed by Hitachi High-Technologies as of July 2013
∗2 LBT：Liquid Beat Technology

ChromasterUltraRS

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