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# No more separation anxiety

## Chromatography tools for pain-free separations

Chromatography can be a time-consuming, delicate and on occasion, nerve-racking process, especially if the technique is being used to separate out a valuable research product. No matter what type of chromatography process is being used, be it liquid- or gas-chromatography, ion-exchange or thin-layer, operators are always looking for systems that are simple to use and will produce reliable and consistent results. This Product Focus looks at some of the latest advances in chromatography technology that aim to remove the anxiety from this staple laboratory technique.

### Chromatography systems

**Proxeon's EASY-nLC™** is a fully integrated, split-free nanoscale LC system, optimised for use with mass spectrometry and in particular LC-MS applications in proteomics. Systems are delivered pre-configured to interface and synchronise easily with any MS system. With the system installed and running within hours, wizard-style programming assists with defining optimal running conditions. Split-free, factory-configured flow paths minimise swept volume and solvent usage, while flow sensors immediately before high-pressure mixing ensure accurate delivery of each mobile phase creating stable, pulsation-free gradients from 100 nL/min. Automatic system re-tuning continues to ensure accurate, reproducible nanoscale chromatography.

The demand for chiral separations in pharmaceutical research has been on the rise due to more stringent FDA mandates covering drug candidates. Enantiomers – mirror images that cannot be superimposed on each other – must be screened separately on their pharmacodynamic and pharmacokinetic properties. Yet chiral molecules are often difficult to separate and identify using traditional chromatography tools. **Phenomenex** introduces the **Lux™ Amylose-2 chiral column** for the identification and resolution of enantiomers.

The new column chemistry incorporates an amylose backbone with a novel 5-chloro-2-methylphenylcarbamate derivative to give chiral chromatographers an additional selectivity option for these difficult separations. This new product compliments Phenomenex's existing Lux Cellulose-1 and -2 chiral offering.

**Agilent Technologies** has introduced the **Agilent 1290 Infinity Liquid Chromatography System**, delivering greater power, speed and sensitivity for Ultra High Performance Liquid Chromatography (UHPLC). The Agilent 1290 Infinity LC enables users to deploy any particle type, any column dimensions or any mobile and stationary phases and provides the highest separation power per time for sub-two-micron and other advanced particle columns. It is the first system that delivers the foundations for method transferability from and to any vendor's UHPLC and HPLC systems. "In other words, this system provides users with infinite capabilities to solve all analytical challenges in LC and LC/MS," observes Patrick Kaltenbach, Agilent general manager, Liquid Chromatography Business.

Superior-quality separations and reproducibility are critical to the success of nanoLC-MS-based biomarker validation studies. **Eksigent** has introduced the **chiPLC-nanoflex System**, delivering

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The compact LCMS-2020 single quadrupole mass spectrometer from Shimadzu

improved reproducibility and ease of use to proteomics research. The system is a docking station for up to three microfluidic chips that contain nanoLC or trap columns. Eksigent's proprietary EksPort™ microconnector system ensures reliable and consistent fluidic connections to facilitate column changes. Chips can be interchanged in seconds, even by inexperienced users, with minimal dead volume to compromise resolution. The proprietary microfabrication process used for both the trap chips and analytical column chips delivers exceptional column-to-column reproducibility.

**GE Healthcare** has launched **ÅKTA™ ready**, a liquid chromatography system designed for process scale-up and production for Phase I-III drug development and full scale production to GLP and cGMP standards. Simplified system handling and reduced downtime between products and batches improves cost efficiency and productivity by saving time and expenditure for start-up, labour and consumables. ÅKTAready operates with ready-to-use, disposable flow paths, eliminating the risk of cross-contamination and the need for cleaning and validation of cleaning procedures. ÅKTAready comprises the chromatography unit, UNICORN™ software, and a disposable ReadyToProcess™ Flow Kit including sensors and detection flow cells. UNICORN includes an installation wizard that provides instructions and reports for column installation and ensures correct functionality of the Flow Kit. All ÅKTA systems use the same software, which enables easy process scale-up and quick transfer to ÅKTAprocess for use in full cGMP production.

### Analysis tools

**Syngene** has introduced the **ChromaScan** range of cost-effective automated thin-layer chromatography (TLC) plate readers for rapid, accurate documentation and analysis of non-radioactive TLC plates. Both ChromaScan and ChromaScan Lite feature a high-resolution 16 bit colour CCD camera inside a darkroom and with just a few simple mouse clicks provide accurate results in seconds, either as TLC plate



ChromaScan thin-layer chromatography plate readers from Syngene

images or chromatograms. These GLP compliant systems are compact enough to fit inside a fume hood and can be supplied with a PC, or can be connected to an existing laboratory PC. To analyse the results, ChromaScan users have the option to add ChromaTools software to either system. With ChromaTools, researchers can use the software's effective pixels feature to generate publication quality 2D images of up to 5.5m pixels. Laura Sullivan, Syngene's Divisional Manager commented: "Scientists often need a fast, accurate method of getting results from their TLC plates but cannot do this by manual measurements. This is why we utilised Syngene's extensive design expertise with imaging systems and software to develop our ChromaScan range. Both systems are affordably priced, yet can generate accurate data in seconds, which makes ChromaScan perfect for any researcher looking for rapid, reproducible TLC analysis."

The compact **LCMS-2020** single quadrupole mass spectrometer from **Shimadzu** offers fast measurement speed and high sensitivity using Shimadzu's ultrafast (UF) technology. This provides more accurate detection of trace impurities in pharmaceuticals, environmental pollutants and other contaminants. The new UFscanning technology achieves mass spectrum measurement speeds of 15,000 u/sec without sacrificing sensitivity or resolution, thus obtaining the best chromatography for the fastest LC conditions. The novel UFswitching technology achieves industry-leading 15 ms polarity switching, enabling accurate data from even the fastest chromatographic peaks without any loss of peak height.

### Accessories

Chromatographers can reduce cost and save valuable time in the laboratory with **Big Mouth Inserts** with polymer bottom springs, available from **J.G. Finneran Associates**. The inserts have a capacity of up to 250 µL and are available with or without preassembled polymer bottom springs. The spring acts as a shock absorber that protects against breakage if the needle bottoms out. The conical design of the

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Patrick Kaltenbach, General Manager,  
Liquid Chromatography Business, Agilent

insert permits complete sample removal.

**Thermo Fisher Scientific** has introduced the **Thermo Scientific Reacti-Therm Heating and Stirring Modules** for GC and HPLC derivitisation, as well as other small scale reactions. These reliable and easy-to-use dry block heaters provide uniform, stable heating with a temperature range of 10-200 °C. Ideal for performing heating, stirring and evaporation functions, this modular unit is CSA certified and CE compliant. Available in four different models: single block and triple block sizes with either heat only or heat-and-stir functionality, the unit is compatible with a range of interchangeable accessories, enabling it to adapt to a variety of vial types and sizes. Each Reacti-Therm module contains a recessed cavity that holds either one or three interchangeable Reacti-Block aluminium blocks, which accommodate a variety of small reagent vials, test tubes and glassware.

### Companies mentioned in this Product Focus:

Agilent Technologies – [www.agilent.com](http://www.agilent.com)  
Eksigent – [www.eksigent.com](http://www.eksigent.com)  
GE Healthcare – [www.gelifesciences.com](http://www.gelifesciences.com)  
J.G. Finneran Associates – [www.jgffinneran.com](http://www.jgffinneran.com)  
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