

# THE UHPLC DEBATE IS OVER.



## Agilent 1290 Infinity LC

The last word in HPLC and UHPLC performance.

Our measure is your success.

products | applications | software | services



**Agilent Technologies**

## Agilent 1290 Infinity LC

# Welcome to the infinitely better liquid chromatography system.

Innovative new technology delivers more resolution per time, more sensitivity and more flexibility

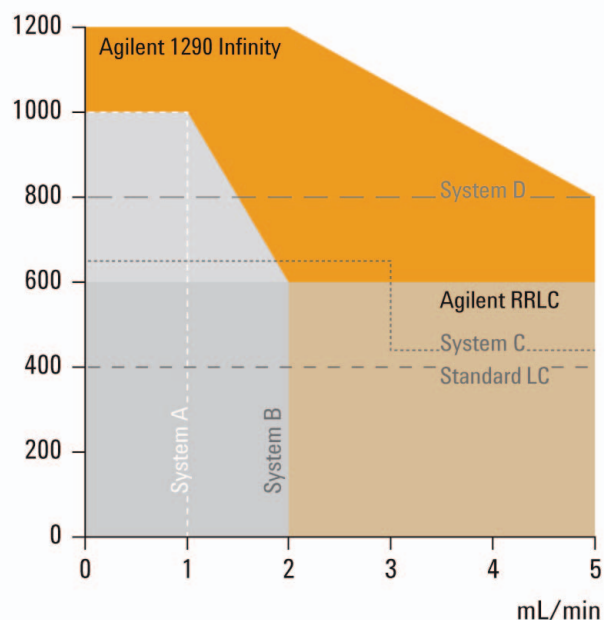
**The debate is over.** The advantages of smaller particles—speed, resolution and sensitivity—were developed 40 years ago. The technology took a giant step forward in 2003 when Agilent introduced the first totally porous sub-2  $\mu\text{m}$  particle columns, the ZORBAX Rapid Resolution High Throughput (RRHT) columns. The availability of other advanced particle columns provided additional ways to achieve further gains in separation power per time by using higher flow rates.

Today, about a dozen vendors offer dedicated UHPLC systems. All of them operate at different pressures, flow rates, system volumes, temperatures and detector sensitivities. So each system suffers from performance limitations for specific column dimensions or particle technology. And methods transferability between these systems is either impossible or requires redevelopment and revalidation.

**Here's why the 1290 Infinity LC is the last word.** With the Agilent 1290 Infinity LC, you're no longer limited in your choice of column dimension, particle type, mobile and stationary phase, flow rate or pressure. Whatever the chromatography requires for optimum performance, the system can handle it, thanks to its unique power range and next-generation technology. This also includes the new ZORBAX Rapid Resolution High Definition (RRHD) 1.8  $\mu\text{m}$  columns—the only columns for up to 1200 bar operation.

The 1290 Infinity LC is also the first system to give you a foundation for methods transfer to or from any Agilent or non-Agilent UHPLC or HPLC system. In short, infinite capabilities are available to solve all your HPLC, UHPLC and LC/MS challenges.

**Who can argue with that?**



*The power range of the Agilent 1290 Infinity LC is the widest available, combining ultra-high pressures up to 1200 bar and high flow rates up to 5 mL/min for maximum chromatographic performance, compatibility, flexibility and investment protection.*

### Infinitely more powerful

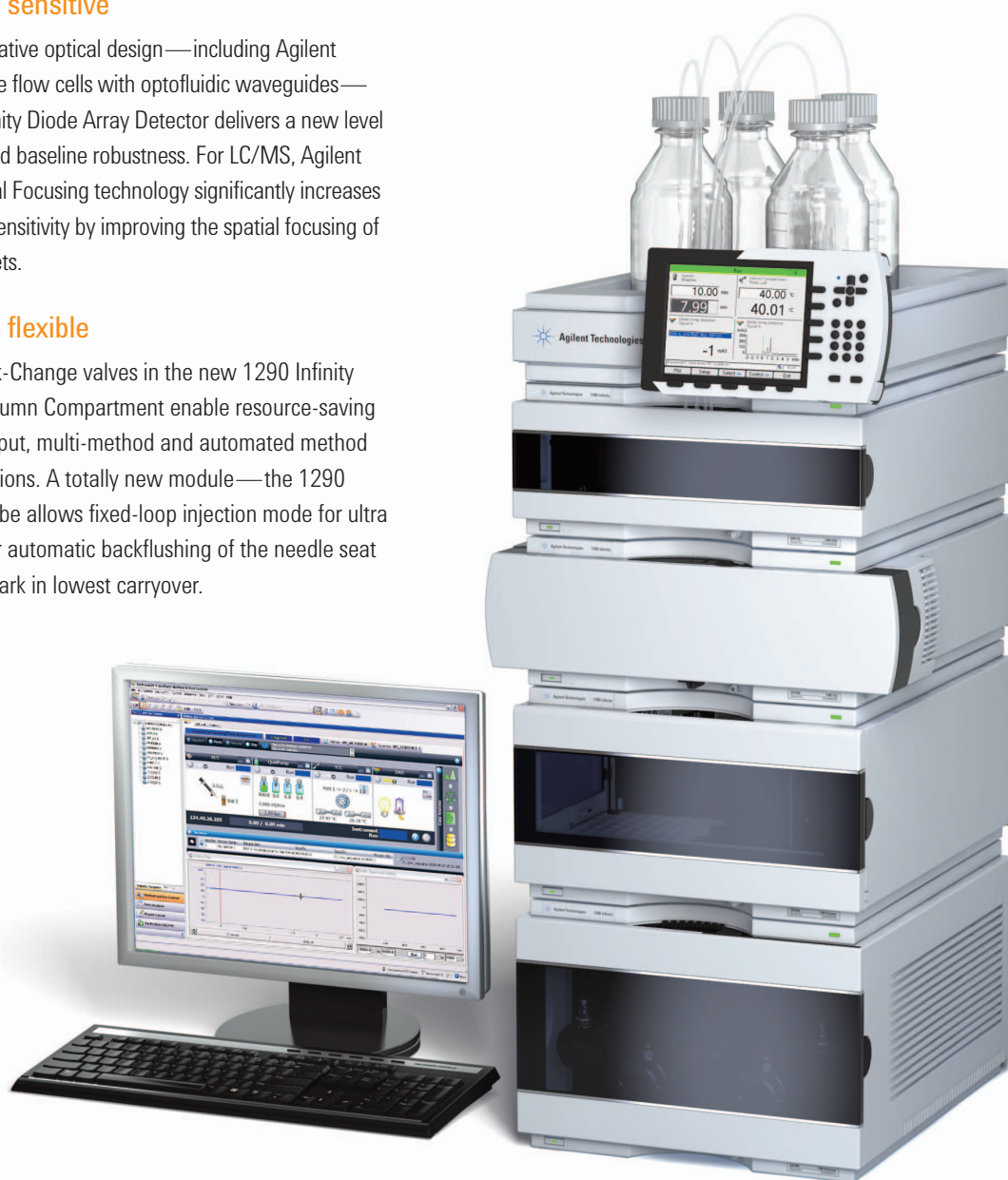
Agilent's new 1290 Infinity Binary Pump gives you maximum chromatographic performance, compatibility and flexibility. Active damping combines with lowest delay volumes—facilitated by propriety multi-layer technology in the new Agilent Jet Weaver mixer—to provide ultra fast gradients and superior LC/UV and LC/MS performance.

### Infinitely more sensitive

Featuring an innovative optical design—including Agilent Max-Light cartridge flow cells with optofluidic waveguides—the new 1290 Infinity Diode Array Detector delivers a new level of UV sensitivity and baseline robustness. For LC/MS, Agilent Jet Stream Thermal Focusing technology significantly increases MS and MS/MS sensitivity by improving the spatial focusing of electrospray droplets.

### Infinitely more flexible

New Agilent Quick-Change valves in the new 1290 Infinity Thermostatted Column Compartment enable resource-saving ultra high-throughput, multi-method and automated method development solutions. A totally new module—the 1290 Infinity Flexible Cube allows fixed-loop injection mode for ultra fast cycle times, or automatic backflushing of the needle seat for a new benchmark in lowest carryover.

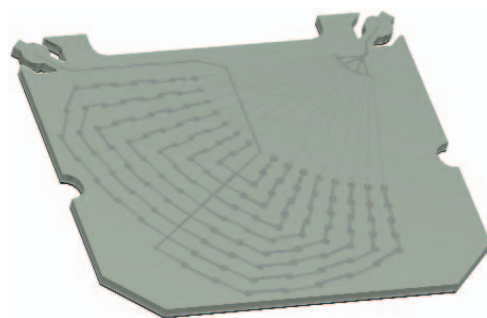
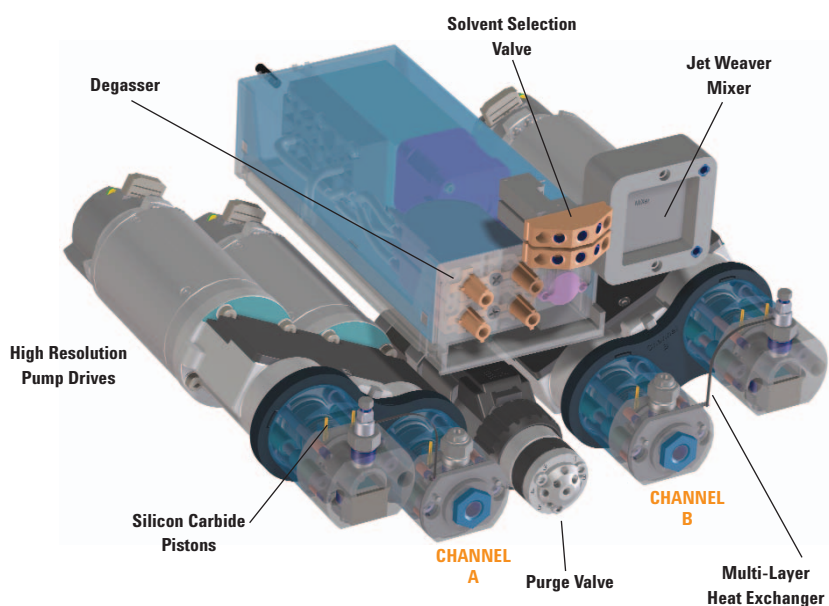


## 1290 Infinity Binary Pump

# Infinitely more powerful.

With more than enough power to handle any UHPLC or HPLC challenge, the 1290 Infinity LC's all-new, advanced technology fluid delivery system opens the door to virtually limitless separation and throughput possibilities. Highlights include:

- **“Infinite” power range**—up to 2 mL/min at 1200 bar and 5 mL/min at 800 bar—enables unprecedented speed and resolution, as well as compatibility with methods developed on other platforms
- **Lowest delay volumes down to 10  $\mu$ L**—enable ultra-fast gradients for LC/MS and LC/UV applications
- **Dual-core microprocessor-controlled active damping**—compensates for solvent properties and provides real-time flow optimization to ensure negligible noise and highest precision
- **Silicon carbide pistons with superior thermal behavior**—provide higher seal lifetime and instrument uptime
- **Integrated, high efficiency degassing**—offers fast change-over of solvents for purging and priming the pump



**Innovative Jet Weaver mixer**—based on multi-layer microfluidics technology—combines highest mixing efficiency with lowest delay volumes to virtually eliminate detector noise.

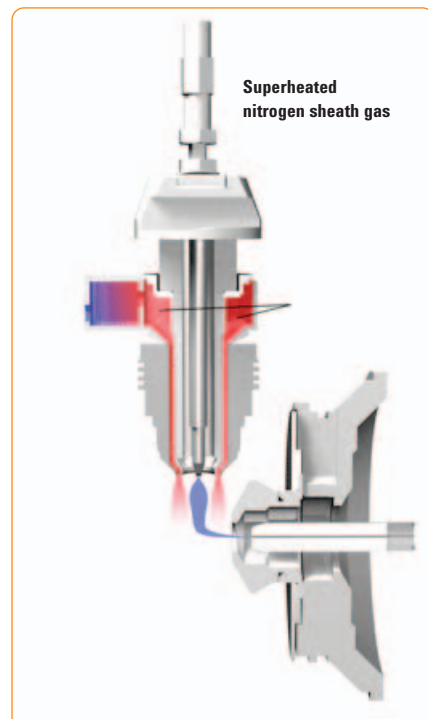
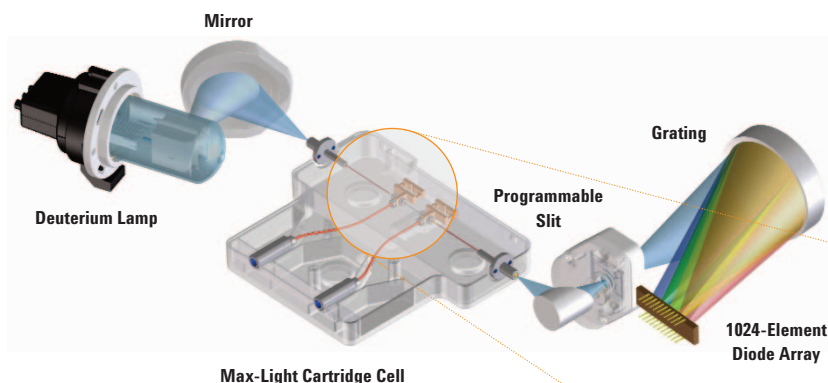


## 1290 Infinity Diode Array Detector

# Infinitely more sensitive.

To achieve unmatched detector sensitivity for both UHPLC and conventional HPLC analyses, the Agilent Max-Light cartridge cells with optofluidic waveguides improve light transmission to near 100% efficiency without sacrificing resolution caused by cell dispersion effects. Compromising refractive index and thermal effects are almost completely eliminated, resulting in significantly less baseline drift.

- **Lowest noise and highest linearity**—with 10 mm Agilent Max-Light cartridge cell
- **Ultra sensitivity**—with unique 60 mm Agilent Max-Light high sensitivity cartridge cell
- **More reliable and robust peak integration process** due to less baseline drift
- **Multiple wavelength and full spectral detection at a highest sampling rate (160 Hz)**—keeps pace with the analysis speed of ultra-fast LC
- **Programmable slit (1 to 8 nm)**—provides optimum incident light conditions for rapid optimization of sensitivity, linearity and spectral resolution
- **RFID tags for flow cell and lamps** ensure data traceability and usage tracking
- **Engineered for simplicity and ease of use**—cartridge design allows fast, easy exchange of flow cell



**Agilent Jet Stream Thermal Gradient Focusing Technology for LC/MS.** Super-heated nitrogen sheath gas surrounds the nebulizer spray, increasing desolvation efficiency. More ions and fewer solvent droplets enter the sampling capillary, resulting in greater signal and less noise.



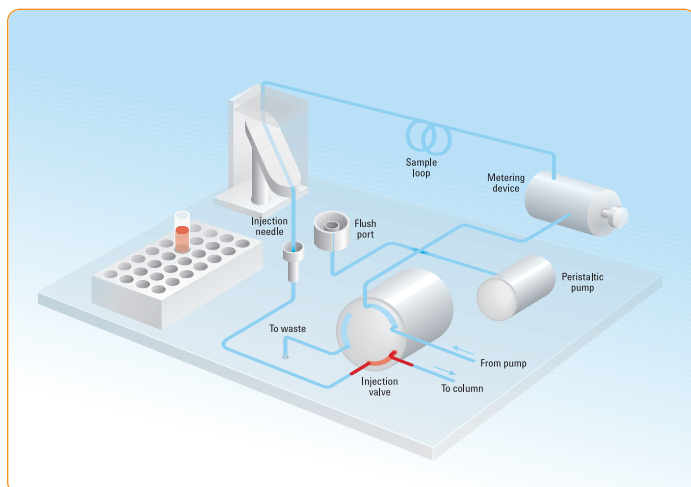
**Optofluidic waveguides.** Agilent Max-Light cartridge cells utilize total-internal reflection in non-coated fused silica fiber.

## 1290 Infinity Autosampler

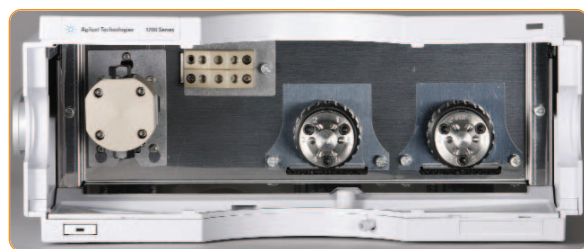
# Infinitely more flexible.

Based on an advanced, flow-through design, the 1290 Infinity Autosampler offers high precision injection of both large and small volumes without the need to change sample loops. Designed for fastest injection times with no sample losses, the autosampler delivers:

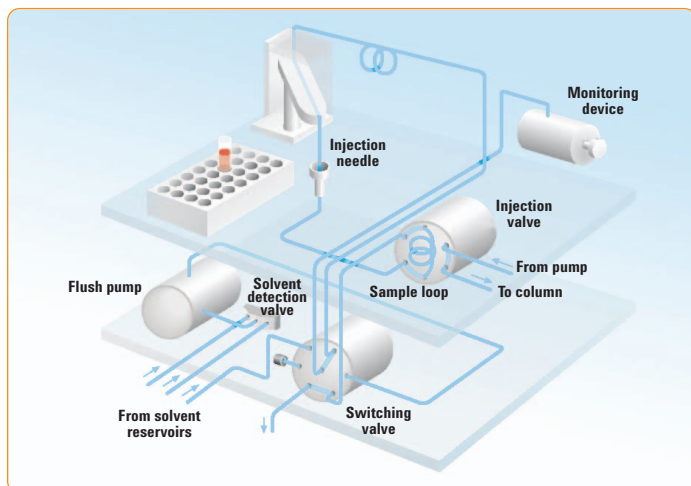
- **Highest precision**—over an injection range from 0.1 – 40  $\mu\text{L}$
- **Lowest hydraulic volumes**—for fastest gradients
- **Peltier temperature control from 4 to 40°C**—for thermally-labile samples
- **Overlapped injections**—for shorter injection cycles and higher productivity
- **Best carryover performance**—through inert seal and needle seat material



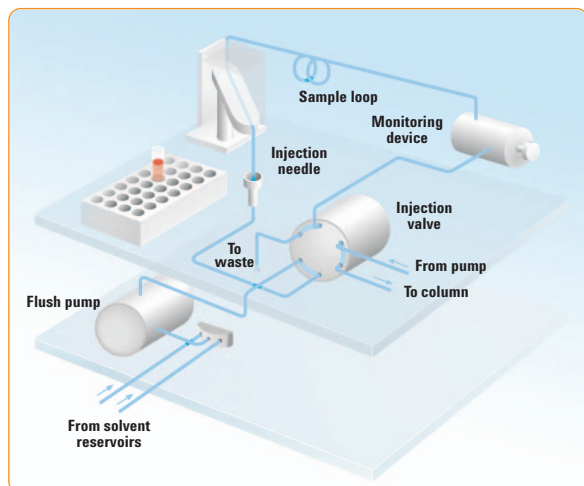
**Next-generation flow-through design** ensures highest precision injection of all sample volumes.



*Agilent's new 1290 Infinity Flexible Cube adds even more sampling capabilities and allows you to select the optimum injection mode for your application. Automated needle seat backflushing helps to reduce carryover dramatically and prevents blockages. Or you can switch to fixed-loop injection mode for absolute lowest delay volume with fastest possible cycle times.*



**Fixed-loop injection mode** enables lowest delay volume and fastest cycle times.



**Automatic needle seat backflush** dramatically reduces carryover.

## 1290 Infinity Thermostatted Column Compartment

# Infinitely more productive.

With a temperature range from 10 degrees below ambient up to 100°C, the 1290 Infinity Thermostatted Column Compartment provides infinitely better flexibility to optimize a separation on the speed and selectivity. New Agilent Quick-Change valves pave the way for ultra high-throughput, multi-method and automated method development solutions.

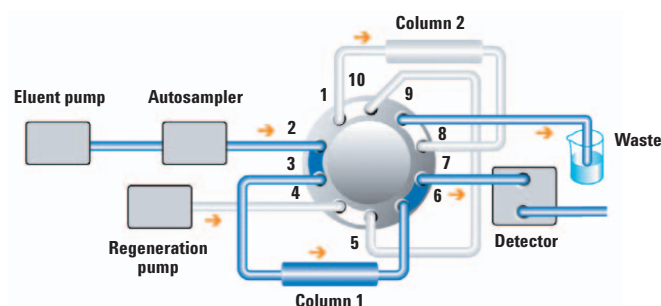
- **Temperature stability specification of  $\pm 0.05$  degrees**—for repeatable retention times
- **Maximum application flexibility through Peltier cooling and heating**—for two independent temperature zones from 10 degrees below ambient up to 100 °C
- **Low volume heat exchangers**—for lowest peak dispersion
- **Spacious column racks**—provide room for three 30 cm columns or many more shorter columns
- **Door-open sensor**—for improved safety and usability



*Agilent Quick-Change valves give you easy access to capillary fittings, and the valves' RFID tags provide information such as valve type, pressure range and number of valve switches.*

Agilent's advanced 1290 Infinity Thermostatted Column Compartment saves valuable lab time by enabling you to automatically select multiple columns and solvents and quickly optimize temperature selection. You can combine two, or even three, column compartments—for up to six independent column temperature zones with thermostatted valves.

Walk-up users can select optimum separation methods without tedious manual column changing, making the column a simple method parameter in your analysis. Or the system can be used for fully-automated methods development, from modeling through experimental proof.



### Achieve throughputs of 2,000 samples per day

A special high throughput configuration of the 1290 Infinity LC enables maximized productivity for laboratories with high sample loads. While one column is used for the analysis, the second column is washed and regenerated by a regeneration pump. With this high throughput configuration, cycle times can be reduced by up to 50 percent.

## Want to maximize the performance and productivity of your new 1290 Infinity LC?

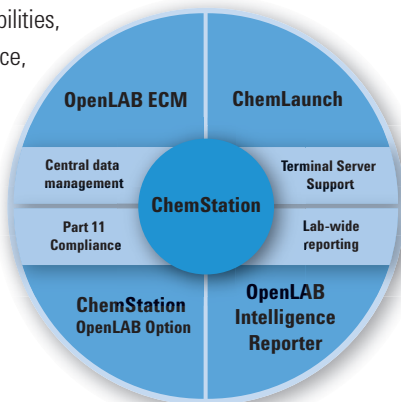
For every LC analysis requirement—from leading edge methods development to high throughput routine analyses—Agilent LC and LC/MS supplies and ZORBAX LC columns give you the sensitivity, accuracy and reliability you need to achieve expert results every time.



**New ZORBAX Rapid Resolution High Definition columns**—introduced with the 1290 Infinity LC—deliver the resolution and peak definition you need, as well as rugged and reliable performance over the extended operating range of the 1290 Infinity LC. The RRHD columns are available in popular ZORBAX bonded phases providing flexibility and scalability between Agilent instruments.

## An infinite level of control for your 1290 Infinity LC

As the industry-standard chromatography data system (CDS) for Agilent instrumentation, Agilent ChemStation provides best-in-class instrument control for the new 1290 Infinity LC. The new graphical user interface gives you all important status information at a single glance, as well as a visual representation of all configured instrument modules with direct access to all method setpoints. ChemStation helps to boost the productivity of the widest range of common separation techniques—including Agilent GC, LC, LC/MS, CE and CE/MS, as well as a number of third party detectors. It is a robust, scalable CDS ideally suited for applications in all industries, from early product development to quality control. Extensive customization capabilities, including regulatory compliance, give you the flexibility to support different workflows.



## Agilent Value Promise—10 years of guaranteed value

In addition to continually evolving products, we offer something else unique to the industry—our 10-year value guarantee. The Agilent Value Promise guarantees you at least 10 years of instrument use from your date of purchase, or we will credit you with the residual value of that system toward an up-graded model. Not only does Agilent ensure a safe purchase now, we help ensure your investment is as valuable to you in the long run.



## Agilent Service Guarantee

Agilent Advantage Service not only protects your investment in Agilent instruments—it connects you with our global network of experienced service professionals, dedicated to helping you get the highest levels of speed, resolution, and performance from every system in your lab, every day.

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