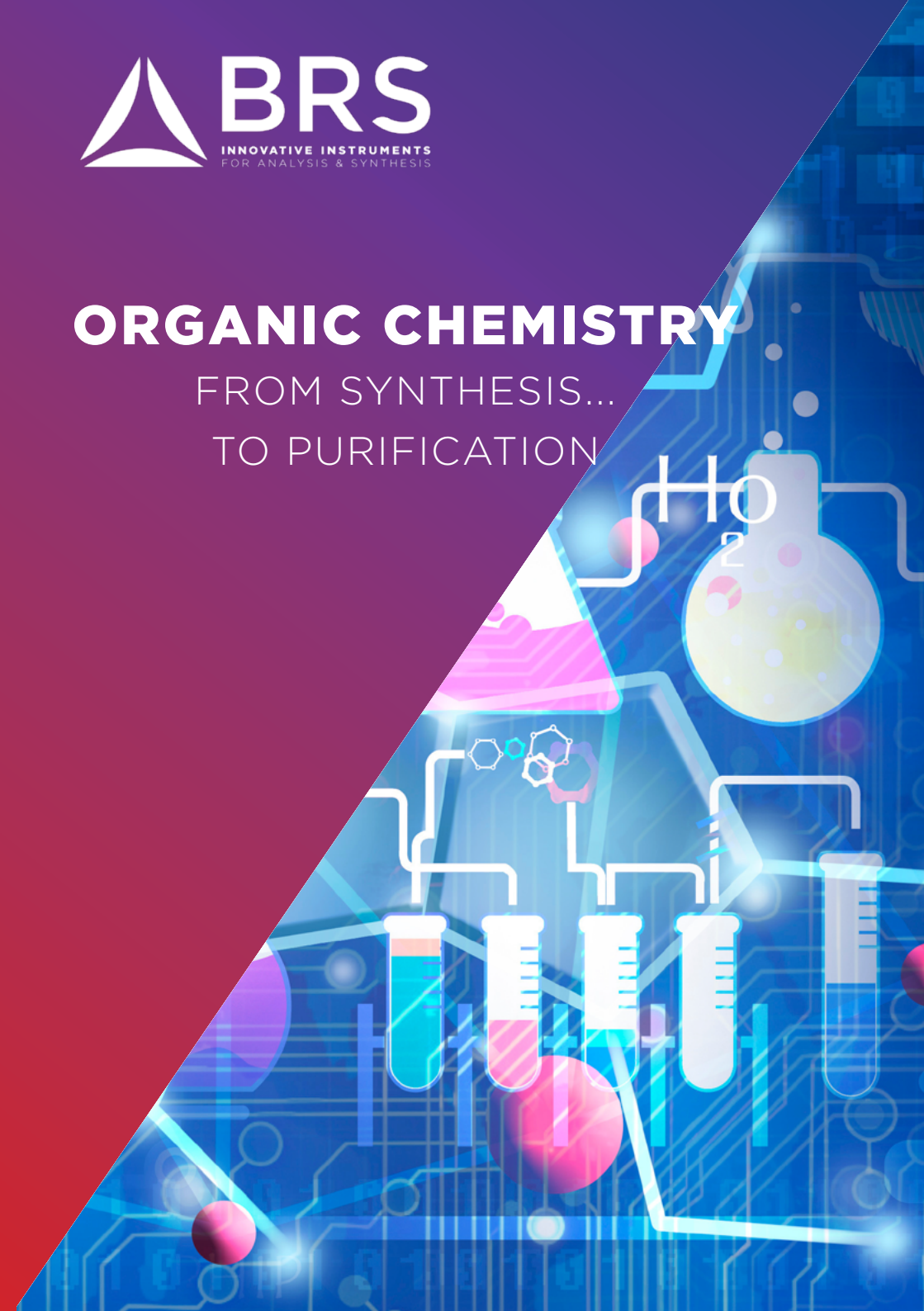




ORGANIC CHEMISTRY

FROM SYNTHESIS...
TO PURIFICATION



A foreword by Ann De Winne

From synthesis to purification, a four-word title of this fairly thin booklet, but the story behind it fills libraries...

As an exclusive distributor of high-end laboratory instruments, we focus on the organic synthesis market where suppliers as CEM, ISCO Teledyne, ThalesNano, Syrris, Dolomite, Particle Works and Lauda play the leading role.

Syrris is a world leader in flow chemistry, batch chemistry reactor systems and chemical scale-up solutions. Applications including process development, discovery chemistry, reaction calorimetry, crystallization and process scale-up are being covered.

Dolomite microfluidics delivers technology for the production of monodisperse particles, droplets, bubbles, foams and emulsions.

Particle Works produces platforms for nanoparticle generation as an excellent method for vaccines, drugs, gene therapies and other APIs.

ThalesNano is widely recognized for its expertise in transforming chemical processes to microscale continuous-flow operations. Researchers can perform hazardous and challenging chemical reactions in a safe and easy way using e.g. the H-Cube family, or the Phoenix reactor and the Photocube.

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The **CEM** Discover microwave reactors have become the industry standard for methodology development and total synthesis assuring faster reaction times, more accurate reaction control and safer setup. The Discover can be used both in batch and flow synthesis mode. The Discover was also the inspiration for the development of the Liberty Blue: the unique standard for Automated Microwave Peptide Synthesizer.

In flow chemistry, a stable and reproducible flow rate is mandatory, in other words the quality of the pump is crucial.

The **Teledyne ISCO** Pumps product line includes syringe and reciprocating pumps for a wide range of challenges. These rugged, do-anything pumps solve your toughest fluid delivery problems, from micro-flow to scale-up and pilot plants. They pump corrosive liquids, supercritical solvents and very viscous solvents safely even in explosive atmospheres.

Once the organic synthesis is done, we have solutions for purification using flash and preparative chromatography.

The **Teledyne ISCO Combiflash** and ACCQprep include instruments and accessories for the purification of organic compounds in normal and reversed phase and for bio-purification.

As a pioneer in Chromatography, Teledyne ISCO developed the **Redisep chromatography columns** providing easy purification and scale-up.

All our products are designed to ensure your chemistry. We can deliver ready-made or custom made packages from synthesis to purification.

Who are we?

Through our mission statement **“Your innovation is our goal”** and our company values **“Customer minded, cooperation, communication and focus on the result”** BRS is committed to deliver the highest level of sales, service & support to you, our customer.

Support and Product Xperts

As Support and Product Xperts, we help laboratories with their research and analysis.

We introduce new technologies and developments of existing technologies to our customer to help them reach their goals.

Through our experience, versatility and organizational strength, our organization distinguishes itself as a company where every employee maximizes customer satisfaction, personal results, teamwork and communication skills. These principles help us establish a long-term relationship with our customers.

BRS Service & Support

Our Support Engineers and Product Specialists support the whole process from advising, demonstrating, developing the application, installing and maintaining your laboratory equipment.

1. Tailor-made installations of new equipment & training
2. Upgrades of existing equipment
3. Preventive maintenances with or without service contract
4. Technical support (hardware & software)
5. IQPQOQ + reporting
6. Validation & Calibration services
7. Omnium service contracts
8. Demo lab
9. Remote & application support





Batch synthesis From Lab scale to Pilot scale

Atlas HD Automated Reactor System

- Fully automated control of parameters
- Vessel range: 50ml to 5L
- Temperature range: -90°C to +250°C
- Captures process data
- Intuitive Touch Screen
- High performance hotplate or circulator temperature control and stirring
- Available in different configurations for crystallization & calorimetry



ORB Affordable Reactor System

- Quick vessel changes
- Wide range of vessels: from 100ml to 10L
- Maximum chemical resistance: all wetted parts are glass or PTFE
- Wide temperature range: -90°C to +250°C
- Pressure range: vacuum (50 mbara) to 0.25 bar



ORB PILOT effortless SCALE-UP

- Wide range of vessels: 10L, 20L, 30L and 50L
- Rapid Vessel Changes: easy motor lift
- Detachable bottom outlet valve: easy cleaning and maintenance
- Wide temperature range: -40°C to +235°C
- Rapid change baffles: enables high performance stirring across a wide range of viscosities



Check the 2 last pages of this brochure for our temperature control instruments



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IN

Fast synthesis solutions in Batch Filtered reactors

AG!

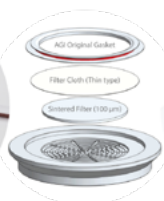
Benchtop Filter reactor

Offers multi-mode product collection upon completion of a filtration process. A single support structure for vessels of up to 5 L.

- Reaction and vacuum filtration in a single vessel
- Minimal direct handling - prevent product loss
- Wide temperature range: -40°C to +200°C
- Interchangeable vessels and accessories



Filter with gasket



Filtration unit parts



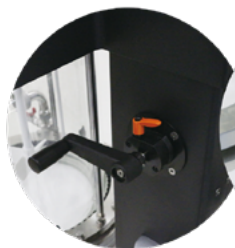
Gasket for thicker filters



Pilot Plant Filter Reactor PLUS

Available in 10-30 L volumes with a large filtration area. A mobile filter base ensures safe and easy product cake collection with minimal loss. Suitable for complex reaction and filtration processes.

- Reaction and vacuum filtration in a single vessel
- Easy access to filter
- Wide temperature range: -90°C to +200°C
- Support structure with castors for mobility



Rotating handle located on the side of the stand. Can be fitted on either side of the stand



The filter plate can be easily pushed to the side



The product cake is easily accessible for collection

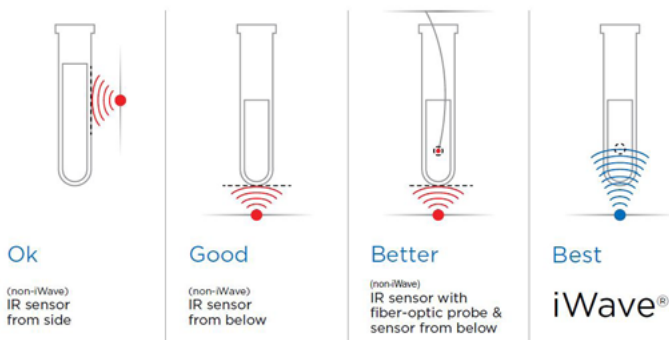


Mars 6 Multimode Microwave

- Suitable for running from a single vessel up to 40 in parallel
- Fully customizable: can be dedicated for synthesis or serve as an all-in-one microwave reactor for a variety of applications
- Dual magnetrons provide ample power (1800 W) for high-throughput synthesis
- Strategically designed waveguides disperse microwave energy uniformly throughout the cavity, providing even heating
- Standard temperature control, cooling and stirring



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iLink: Monitor and control your MARS 6

With iLink you will be able to operate and monitor your MARS 6, or multiple MARS 6 systems, and get the results on your mobile device. You will be free to move about the lab and you will have time to focus on other tasks.

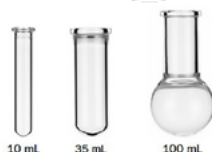


- Complete digests in 10 minutes, including cool down
- Monitor up to 4 MARS 6 units on your mobile device
- Start or stop a run from wherever you are
- Review past runs and generate lab reports



Discover 2.0: The absolute best approach for Chemical Synthesis

- Widest pressurized vessel sizes for a single mode microwave - 10mL, 35mL, 100mL
- Iwave® Temperature Sensor that sees through glass and Teflon®
- Vent and reseal technology for safe handling of over-pressurization (ActiVent)
- Variable speed magnetic stirring and rapid compressed air cooling
- Integrated camera to observe your reaction
- Upgrade options: autosamplers - 12/48 positions; Gaseous addition, Sub-ambient temperature & Flow cells



Flow cells

For decades, microwave chemistry has been known to accelerate chemical transformations and provide a simple means to access more rigorous reaction conditions. Flow chemistry has demonstrated similar benefits, with the added bonus of being able to increase the reaction scale simply by prolonging the reaction. The combination of the two technologies opens the door to a quick optimization and easy scale-up of virtually unlimited types of chemical transformations. The Discover® 2.0 microwave synthesizer provides the means to perform both types of reactions simultaneously or sequentially within the same system.



Gas Addition Kit

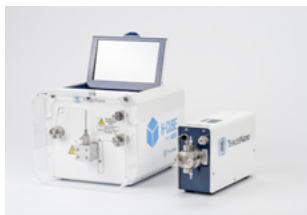


Specially designed for reactions involving gaseous reagents. Perform hydrogenations, carbonylations, or other reactions with gaseous reagents or use the vessel to ensure an inert atmosphere during microwave irradiation. Allows you to purge the reaction vessel and back-fill with a gas.

During the reaction, the gas source is completely shut off from the microwave, ensuring your safety at all times.

H-Cube MINI Plus

Safe and affordable hydrogenation

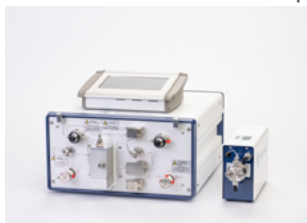


- Hydrogenation without cylinders
- Fast catalysed reactions
- Easy to use
- Academia budget compatible



H-Cube PRO®

Continuous-flow Benchtop Hydrogenation Reactor



- Flow rate: 0.1-3 mL/min
- Wide temperature range: 10-150°C
- Pressure: 1-100 bar
- High throughput and control: generates 60ml/min H₂-gas with the TWO cells
- Auto Inlet/Outlet valve control
- New software

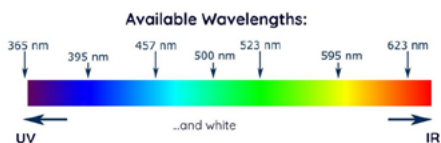


PhotoCube

Batch and flow reactions in one reactor with several wavelengths



- Batch, flow, stop-flow and CSTR reactions in the same platform
- 7+1 wavelengths in one instrument



Phoenix II Flow Reactor

Multifunctional Module compatible with H-cube Pro™



- Fast: reactions in seconds
- Simple: 2 buttons and automated touchscreen
- Innovative: performs chemistry till 450°C not possible in standard lab reactors
- Versatile: perform reactions in a loop homogeneously or use a range of different catalyst cartridges



H-Genie

Safe and powerful hydrogen generator specifically developed for chemists!

- Expand chemistry in batch and flow with up to 100 Bar H₂ generated from water
- Accurately log how much hydrogen is used in your reaction
- Up to 1 L/min
- Simple and safe: click & go

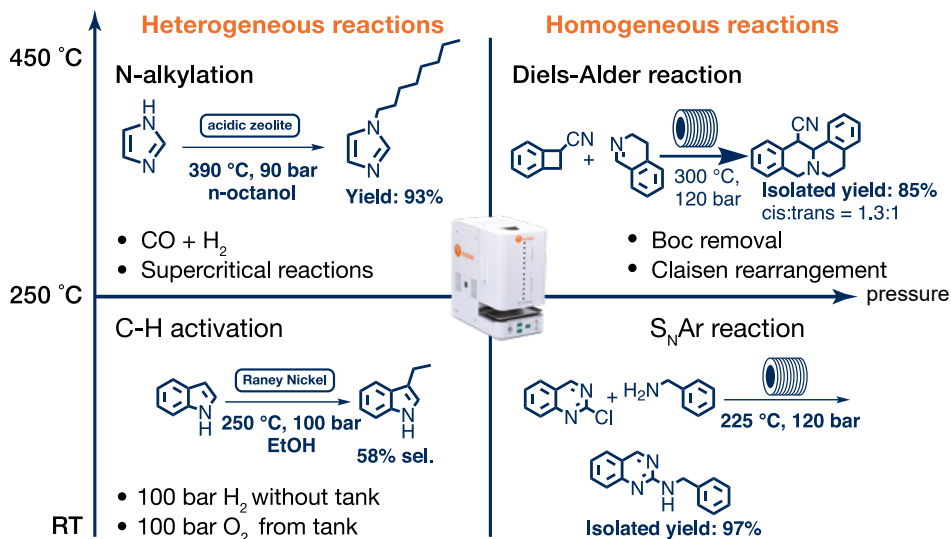


The H-Genie® combined with the Phoenix Flow Reactor™ is an **all-in-one flow chemistry setup** for catalyst testing, synthesis, optimization, and scale-up that is useable in any fume hood in any lab.



This combination offers you a wide temperature and pressure range in addition to high pressure hydrogen generated safely without cylinders for your reactions. This grants you the capability of synthesizing from milligrams to kilograms of product on the same system without the need to spend on expensive infrastructure or equipment.

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Liberty Blue 2.0: New Generation Automatic Peptide Synthesizer

- 4 minutes cycle time
- 90% waste reduction (HE-SPPS)
- Flex-add™ critical reagent delivery system (patented)
- True Internal fiber-optic temperature control
- 0.005 - 5 mmol scale range

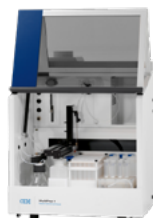
More information on www.biospx.com

**MultiPep 1 & MultiPep 2 Automated Parallel Peptide Synthesizers****10**

The MultiPep 1™ is a highly flexible and economical automated parallel peptide synthesizer.

The MultiPep 2™ is the state-of-the-art automated parallel peptide synthesizer.

- Features unmatched flexibility for screening hundreds of peptides in parallel using plates, columns, or cellulose membranes formats
- Heating option for elevated temperature synthesis in plates and columns
- Fast synthesis with 8 position parallel washing arm
- Vortex mixing
- Pre-activation or in-situ activation



Flow synthesis

From Lab scale to Production Scale



ASIA Modular Flow Chemistry

- Reactor temperature: -15°C to +250°C
- Liquid phase reactor volumes: 62.5µl, 250µl, 1ml, 4ml, 16ml
- Solid phase reactor volumes: 0.7ml, 2.4ml, 5.6ml, 12ml
- Pressure: 0 – 20bar (300psi)
- Flow rate: 1µl/min – 10ml/min per pump
- Residence times: 1 second to several hours
- Rapid diffusional mixing
- Production volumes: mg to kg



Asia is a modular system. All modules can be acquired separately and arranged in any fashion to add new functionalities on an existing system. Your system evolves with your needs.



Asia Photochemistry reactor

Access a host of novel continuous photochemistry applications with Asia Photochemistry Reactor.



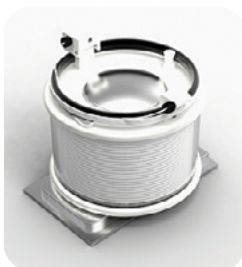
- Increase the light intensity (up to 108W) to reduce reaction times and increase production rates
- No external cooling required
- Select from a wide range of wavelengths
- Process parameters are monitored



Glass Microreactors



Tube Reactors



Solid Phase Reactors



μEncapsulator 1 System

- Precise control, manipulation and analysis of fluids in the μl to pl range
- Allows the manipulation of living matter by mixing, separating and handling different components at a microscale
- Droplet sizes from 12-65 μm



Mitos Dropix® System

Compact and portable droplet-on-demand microfluidic system designed to generate droplets of up to 24 different samples.

- Small portable device
- Easy to set up with no tools required
- Automated production of droplets from 24 samples in any sequence
- Ability to generate droplet sizes down to 50nl
- Ability to generate up to 5 droplets per second
- Full visibility of the samples and droplet generation within the Dropix® Fluid
- Reservoir – PMMA (extra)
- Storage of droplets in the removable transparent Droplet Storage Coil – 0.25mm for external experimentation and analysis
- Can run autonomously for up to 24 hours after setup
- Excellent control of droplet size and frequency via PC software



Automated Library Synthesis (ALiS) System

The ALiS system enables high-throughput screening of Lipid Nanoparticle formulations and mRNA candidates in early-stage development.

- High-throughput: aspirate from and dispense into sealed/covered 96-well plates
- Excellent encapsulation efficiency
- Process up to 96 samples in a typical working day
- Broad range of particle sizes: 40 – 800 nm
- Monodispersity: excellent Poly Dispersity Index (PDI) < 0.2
- Automation: walk away during experiments increasing laboratory efficiency
- Anti-dispersion Technology: work with smaller reagent volumes
- Flexibility: modify both process parameters and formulations for each experiment
- Scalability: scale seamlessly to process & protocol optimization
- Cost Saving: reduced reagent use and reusable chips

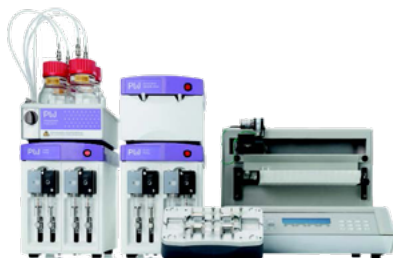


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Automated Nanoparticle (ANP) System

The ANP system is designed for automation and acceleration of process development and initial production of larger samples of lipid nanoparticles.

- Monodispersity: excellent PDI (< 0.2) and encapsulation efficiency
- Broad range of particle sizes: 40 – 800 nm
- Scalability: from 200 µl to continuous production
- Rapid optimization timeframes
- Highly reproducible
- Flexibility: easy to set up and modify parameters
- Cost saving: reduced reagent use and reusable chips
- No IP Licensing



ACCQPrep SFC - Supercritical fluid Chromatography

Green Preparative SFC: Chiral or Achiral Separations in a single, compact solution.

The only system enabling both bulk collection from stacked injections, and multi-sample, open access with an optional SFC AutoSampler (2×2 or 4×2).

- Flow rates from 50 to 200 mL/min for use columns of 2 or 3cm x 25cm or less
- 4 different cosolvent options with composition from 5 to 70% for elution of more polar compounds than other systems
- Column oven with selection valve for up to six columns
- Autoinjector to enable multiple injections of a single sample or stacked injection workflow
- Choice of UV or UV-Vis (PDA) detectors.



CombiFlash® NEXTGEN 300+

RFID technology ensures the automated detection of your columns and racks, adjusting the flow rates to provide the best results every time.

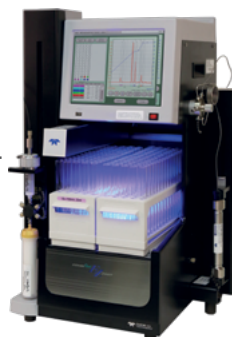
- Active solvent and waste level monitoring is standard
- Flow rates from 1 to 300 mL/min
- Operating pressure up to 300 psi (20 bar)
- UV, UV-VIS, ELSD and MS detection options available
- Designed to take up minimal lab space
- New default methods speed up the flow without sacrificing performance
- Greener: Conserve less solvent with optimized gradients



CombiFlash® EZ Prep

Streamline Flash and Preparative HPLC

- Up to 3500 psi (240 bar) and 200 mL/min
- Run Prep HPLC columns up to 50mm in diameter
- Flash purification for 10mg to 33g
- UV, UV-VIS, ELSD and MS detection options available
- Switch between normal and reverse phase solvents automatically, without user interaction



Purification : Flash & Prep Chromatography

ACCQprep HP 150 Preparative HPLC

- Up to 6000 psi (413 bar) and from 1 to 150mL/min
- UV, UV-VIS, ELSD and MS detection options available
- Compatible with automation modules: auto injector, autosampler and column selector module
- Switch between normal and reversed phase solvents automatic, without user interaction



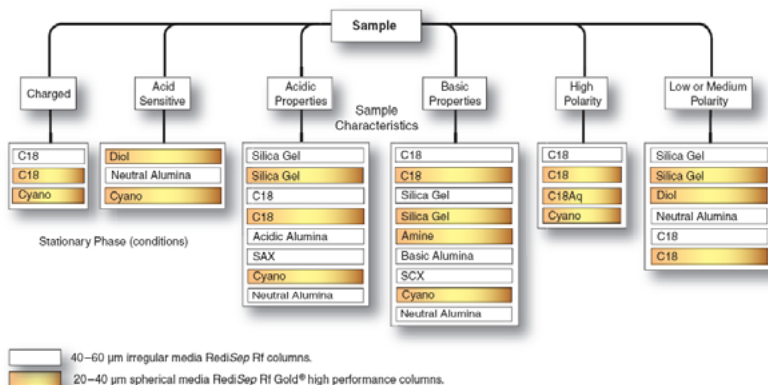
REDISEP Flash Chromatography Columns

Are designed to consistently produce high purity compounds.
Easy purification and scale-up from milligram to kilogram.



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- Patented packing technique providing reliable and reproducible columns
- Extra thick walls for safe and robust columns
- Easy to use luer lock fittings
- A broad versatility on column phases for each type of purification



Single Head



M1 CLASS

3 MODELS: 10mL/min - 40mL/min - 100mL/min
Up to 2.000 psi (10mL/min)
Fluid path: Stainless steel



MX CLASS

3 MODELS: 10mL/min - 40mL/min - 200mL/min
Up to 5.000 psi (10mL/min)
Fluid path: Stainless steel



LS CLASS

3 MODELS: 10mL/min - 40mL/min - 100mL/min
Up to 6.000 psi
Fluid path: Stainless steel or Hastelloy

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Dual Head



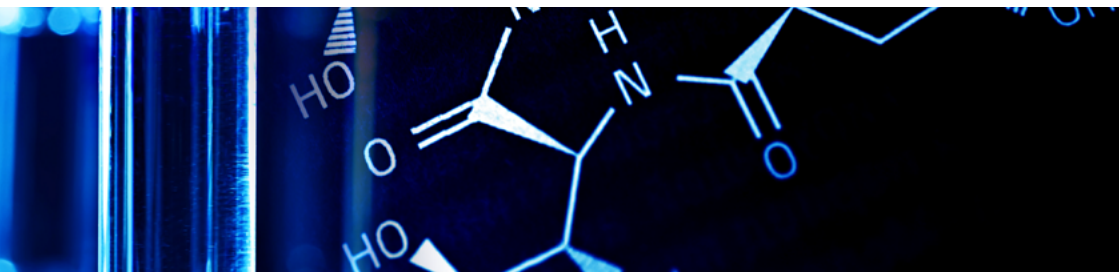
LD CLASS

3 MODELS: 12mL/min - 36mL/min - 100mL/min
Up to 6.000 psi
Fluid path: Stainless steel or Hastelloy



PR CLASS

2 MODELS: 100mL/min - 300mL/min
Up to 4.000 psi
Fluid path: Stainless steel



SyriXus Syringe Pumps
When reliability & accuracy are critical

Teledyne ISCO SyriXus precision syringe pumps give you flow and pressure control throughout a broad operating range. SyriXus syringe pumps can be metered with great accuracy and do not exhibit pulsation or flow anomalies typically associated with other pump types.

They can handle a wide variety of fluids including:

- Aqueous and organic liquids
- Viscous fluids
- Corrosive solutions
- Slurries and pastes
- Heated fluids
- Precision fluid delivery
- Liquified gases
- Continuous flow mode is possible



65x



500xv



	Capacity	Flow* Range (mL/min)	Flow** Accuracy	Pressure Range (psi, bar)	Standard Pressure Accuracy	Standard Plumbing Ports	Dimensions	Continuous Flow Range (mL/min)	Higher Viscosity Materials
1000x	1015 mL	0.01–408	0.5% of Setpoint	10–2,000 0.7–137.9	0.5% FS	1/4" NPT	40.3x10.7x18.4 in 102x27x47 cm	0.01–265	
500x	507 mL	0.001–204	0.5% of Setpoint	10–5000 0.7–345	0.5% FS	1/8" NPT	40.3x10.7x18.4 in 102x27x47 cm	0.001–132	
500xv	507 mL	0.001–204	0.5% of Setpoint	10–5000 0.7–345	0.5% FS	3/8" NPT	40.3x10.7x18.4 in 102x27x47 cm	0.001–132	X
260x	266 mL	0.001–107	0.5% of Setpoint	10–9,500 0.7–655	0.5% FS	1/8" Valco	39.8x10.7x18.4 in 101x27x47 cm	0.001–70	
65x	68 mL	0.00001–25	0.3% of Setpoint	10–74 000 0.7–1,655	0.5% FS	1/4" F250C	39.8x10.7x18.4 in 101x27x47 cm	0.00001–16	

PRO Circulation Thermostats

Compact circulation thermostats for professional temperature control thermostating from -90 to 250 °C

- Thermostating from -90 to 250°C @ ± 0.05 °C
- Small liquid volumes for quick temperature changes.
- Hybrid cooling permits cooling using ambient air or cooling water.



Variocool

Versatile for dissipating process heat in laboratories, mini plants and production facilities

- 1.2 kW to 10kW circulation chillers
- Used between -20 and 80°C @ ± 0.05 ° C
- Space-saving construction
- Versatile: wide variety of options
- Simple and convenient: color TFT display
- Standard USB interface and alarm contact
- Standard heating and sound insulation



Integral XT

High-performance process thermostats

- From 1.5 to 18 kW for temperature control thermostating
- Broad temperature range from -90 to 320°C @ ± 0.05 ° C
- Operate according to the flow principle with a cold oil blanket that allows the utilization of the entire temperature range through the use of a heat transfer medium.
- Electronically controlled, magnetic coupled pump can alter the pressure to adapt the flow rate to the relevant batch process requirements.



Hot

Cold

Constant Temperature equipment

LAUDA

ECO Cooling thermostats

From -50 to 200 °C: Cooling thermostats for economic temperature control in the lab

- Available in standard silver (LCD display) or gold (color TFT display)
- The circulation pump can be adjusted to six levels.
- Cooling capacities of 180 to 700 watts and minimum temperatures of -15 to -50 °C.
- Energy-saving LAUDA SmartCool system.



LAUDA Ultracool: the next stage of Energy-Efficient Temperature control

Process circulation chiller with cooling capacity of up to 10 kW or 265 kW from -5 to 25°C for industrial applications.

- Suitable for setup outdoors.
- Ready-to-operate "Plug & Operate".
- Incl. cold water container, centrifugal pump and internal bypass.
- Standard-issue temperature sensing prevents freezing of the heat exchanger.
- Integrated pressure switches to protect the circuit against pressure that is too high or too low.
- Chiller casing made of galvanized steel panels coated with epoxy resin protected against corrosion even in aggressive production environments.



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WERE YOU LOOKING FOR A SYNTHESIS & PURIFICATION BUNDLE?



CEM DISCOVER 2.0

THE ABSOLUTE BEST APPROACH
FOR CHEMICAL SYNTHESIS



TELEDYNE ISCO COMBIFLASH NEXTGEN

SETTING A NEW BAR IN FLASH
CHROMATOGRAPHY

FLEXIBLE
300 ML/MIN 300 PSI (20BAR)



TELEDYNE ISCO
Everywhere you look™

YOU MIGHT WANT TO KNOW MORE.

In that case, don't hesitate to contact us to make an appointment for a meeting, a product presentation, or any other question.

BRS

INNOVATIVE INSTRUMENTS
FOR ANALYSIS & SYNTHESIS

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