



**H.A. Shah & Sons**  
Trusted partner for total laboratory solutions



**DELIVERING**  
QUALITY To Every SINGLE  
**CUSTOMER**



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# OUR MISSION

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Our organization is driven towards a single goal: customer satisfaction. We at H. A. Shah & Sons aim to ensure that our market leadership extends far beyond hardware, into turfs like customer loyalty, product diversity, and the establishment of mutual trust between our customers, suppliers, and employees. Our mission is not the quantitative growth of the company but to ensure that through our diversity, speed and quality we are able to bring about an improvement in the quality of life of society at large, by partnering with our customers to create economic opportunities.

# OUR VISION

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We aspire to become a leading global and national enterprise in the chemical analysis industry and the partner of choice for laboratory devices and solutions.

# OUR CORPORATE VALUES

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We perform with integrity at all levels and continue to ensure corporate excellence through innovation and focused quality conscious efforts in all our ventures. We strive to play our role as a good corporate citizen, by serving the people and society, for a better tomorrow.

WE SELL WORLD-CLASS PRODUCTS MANUFACTURED BY  
WORLD-CLASS MANUFACTURERS TO ENSURE THE PERFECT  
BLEND OF RENOWNED PRODUCTS, GUARANTEED  
QUALITY AND SUPREME SOLUTIONS.

# BOARD OF DIRECTORS

## MUSHARRAF BOKHARI CHAIRMAN



“H. A. Shah & Sons is a progressive and forward-thinking organization dedicated to the pursuit of global growth opportunities. With nearly a century of experience in international chemical industry business, we’re experts in forging partnerships to improve performance, customer loyalty, reduce costs, provide the best support services, and build strong, innovative businesses. This has equipped us to drive greater innovation, and create a distinctive corporate identity for ourselves.”

## ZULFIQAR BOKHARI CEO



“H. A. Shah & Sons has come a long way since it embarked upon its journey of growth. It has evolved to become the leading name of the industry today, holding the very top niche in its area of operations within Pakistan by representing the world-reknoned market leaders in its product line. It gives me great pride to see the huge success and dynamic force that we have become today.”

## WAQAR BOKHARI MANAGING DIRECTOR



“During the past years, we embarked upon a very successful expansion of our business. New banches were added in Bangladesh and UAE, and as of now the company has four major divisions working simultaneoualy: chemical analysis, life sciences, forensic sciences, and chemistries & supplies. Staffed by the industry’s most qualified and capable professionals, the company has also been presented with numerous prestigious achievement awards from our principals for best distributor in the entire south-asian pacific region; this is a mark of how far H. A. Shah & Sons has come since its inception several decades ago.”

# ABOUT H. A. SHAH & SONS

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**We are ISO 9001:2015** certified representatives of the world's leading laboratory equipment manufacturers.

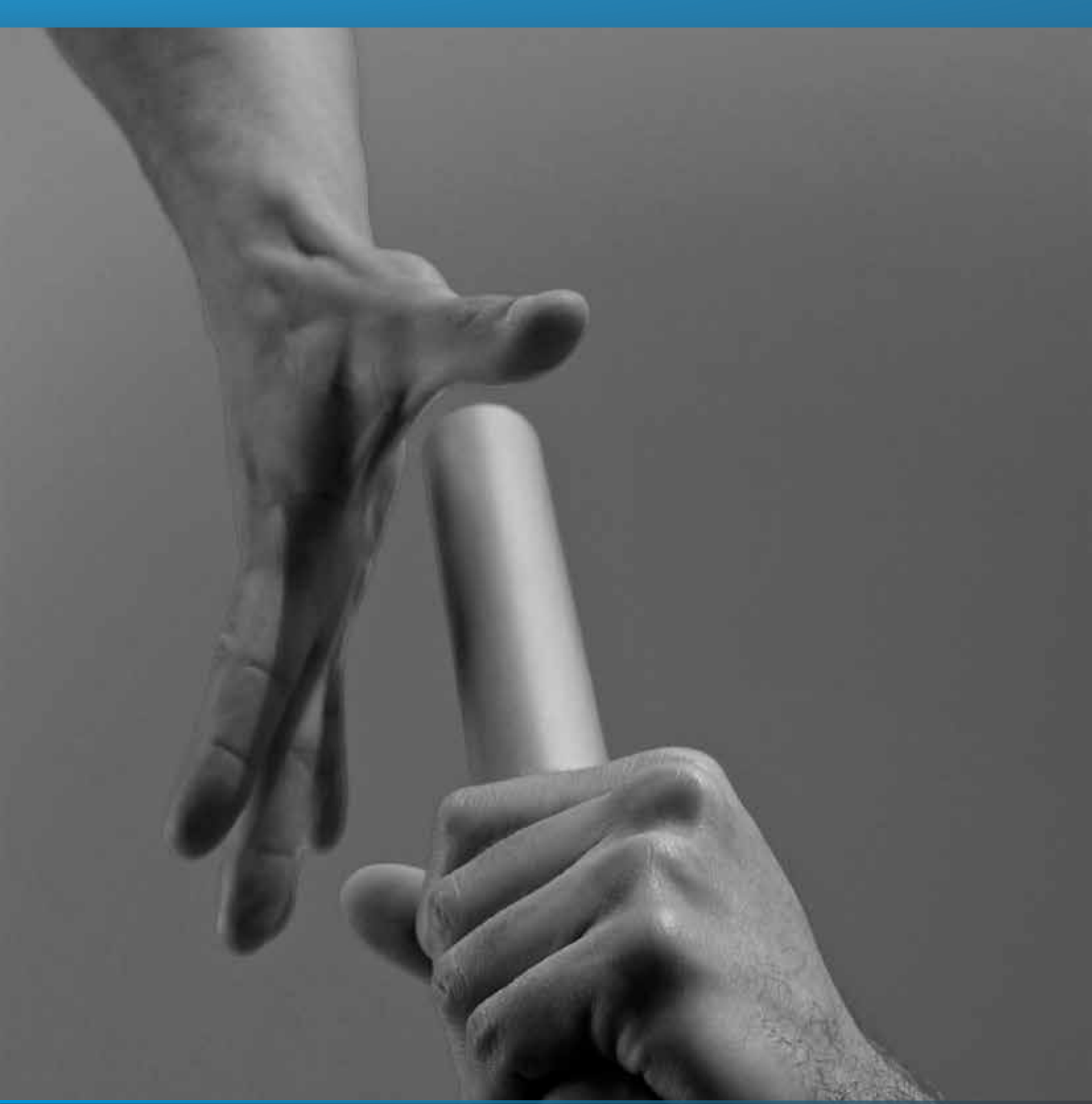
**We are science aficionados.** We are dedicated to providing you with all the latest and innovative products. We have four separate divisions involved in chemical analysis, life sciences, forensic sciences and chemistries & supplies.

**We are hard working.** Our trained and assiduous resources are working extremely hard to deliver you with the finest products on time. Our service team is dedicated, visionary and committed so that all your issues get resolved on time and we fulfill our promise of delivering you the finest products.

**We are quality epitomized.** We embody your trust in our products. All the products being delivered to you are not only world-class but also speak for themselves.

**We are fanatics.** Our pockets are filled with unflagging enthusiasm. Our customer support team never misses a chance to impress you by lucidly displaying its high level assistance and near to perfect services.

**We are perfectionists.** For the last forty years we have been depicting our vivid dedication to impersonate perfection. Back in 1975 H. A. Shah & Sons started off as an exclusive country wide distributor of world renowned laboratory manufacturers and till now we have never stopped, never looked back, never despised our conviction; yet still here to bring to our clients services of the finest quality.



# OUR BUSINESS PARTNERS



**Agilent**

Authorized  
Distributor

As the world's premier measurement company, Agilent offers the broadest range of innovative measurement solutions in the industry. The company's major businesses are Chemical Analysis, Life Sciences, & Diagnostics and Genomics. At Agilent Research Laboratories, research is conducted that anticipates customer needs and produces breakthroughs that power growth. Agilent's singular focus on measurement helps scientists, researchers and engineers address their toughest challenges with precision and confidence. With the help of their products and services, they are better able to deliver the breakthroughs that make a measurable difference.



[www.agilent.com](http://www.agilent.com)



**Agilent**

Authorized  
Distributor

Formerly Cobalt Light Systems, Now Agilent develops innovative products and technologies for non-invasive, through-barrier chemical analysis, for applications in airport security, hazardous chemical ID and pharmaceutical QC. Cobalt's proprietary technologies use novel variants of Raman spectroscopy. Cobalt's instruments can rapidly and accurately identify materials hidden inside objects or through opaque barriers such as plastic, colored glass, paper and skin, or can measure the concentrations of materials in mixtures, with a high degree of accuracy. Founded in 2008 as a spin-out from the UK Science and Technology Facilities Council (STFC) Rutherford Appleton Laboratory, Cobalt is headquartered in Oxfordshire, U.K., with offices in Reston, Virginia, U.S., and Hong Kong.



[www.coballight.com](http://www.coballight.com)



**Anton Paar**

Producers of high precision measuring and analytical instruments for industry and research, ISO Certified Anton Paar GmbH has had a quality management system according to ISO 9001 since 1994. They are the world leaders in the field of density, concentration measurement, CO<sub>2</sub> and of rheometry. The careful and responsible use of human and natural resources is a central and historical element of Anton Paar's philosophy and therefore the basis for its management system. The primary aim of which is to have a uniform and organized system across the whole concern in order to guarantee customers worldwide product and service quality.



[www.anton-paar.com](http://www.anton-paar.com)



# Quantachrome

INSTRUMENTS

A brand of Anton Paar

The entire Quantachrome company is focused on sharing our expertise in porous material characterization to satisfy your instrument and application support requirements with integrity and first-class personal service. Our highly credentialed team of science and customer service representatives work closely with our customers to deliver an enhanced, individualized level of service upon which we have built our reputation.



[www.quantachrome.com](http://www.quantachrome.com)

## ThermoFisher SCIENTIFIC

Applied Biosystems is one of the various brands under the Life Technologies brand of Thermo Fisher Scientific corporation. Applied Biosystems™ instruments and reagents have been trusted in the lab for over 20 years by the world's top scientists. Researchers who demand efficiency, accuracy, and gold-standard technology use Applied Biosystems integrated systems for sequencing, flow cytometry, and real-time, digital and end point PCR— from sample prep to data analysis.



[www.thermofisher.com](http://www.thermofisher.com)

## GERSTEL

GERSTEL delivers automated solutions focused on the needs of the customer. As a specialist for automated sample preparation and sample introduction, GERSTEL is able to provide custom solutions, including complete solutions that include GC/MS and LC/MS with integrated software control. The innovative MAESTRO software enables intuitive control and flexible, efficient operation for R&D or routine laboratories. Your daily analysis tasks are set up using just a few mouse-clicks.



[www.gerstel.com](http://www.gerstel.com)



MILLING SIEVING ASSISTING

RETSCH is active in the fields of homogenizing laboratory samples for analysis as well as particle size analysis of solid substances. On the basis of more than 90 years' experience they have developed into the leading instrument manufacturer in these technologies. Since 1990 RETSCH is part of the continuously growing technology group VERDER and forms the core of the group's Laboratory Division. Other companies belonging to this division are Retsch Technology GmbH, Eltra GmbH and Carbolite Ltd.



[www.retsch.com](http://www.retsch.com)

## NETZSCH

The Analyzing & Testing business unit of the NETZSCH Group develops and manufactures a complete high-precision instrument line for thermal analysis and thermophysical properties measurement, as well as offering world class commercial testing services in our laboratories. Our instrumentation is employed for research and quality control in the polymer sector, the chemical industry, the areas of inorganic and building materials, and environmental analysis. Instruments for controlling – such as for in-situ cure monitoring – complete our product line.



[www.netzsch.com](http://www.netzsch.com)

## foster + freeman

Improving the Quality of Forensic Evidence

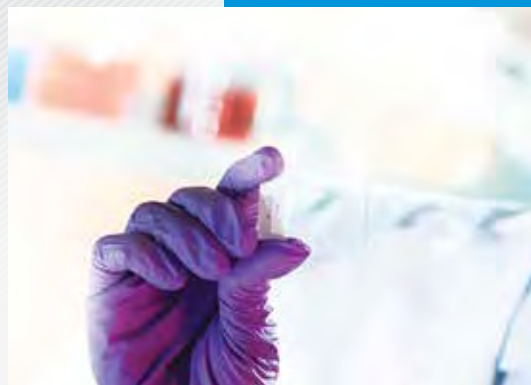
Established in 1978, Foster+Freeman has become one of the foremost forensic science equipment suppliers in the world, exporting market leading, and in many cases unique products from the United Kingdom to more than 155 countries worldwide. We believe the key elements essential in achieving our strategic direction are derived from this policy and are in controlling the company internal and external factors, identifying our risks and opportunities to achieve our objectives and meeting the needs of our customers and associated stakeholders.



[www.fosterfreeman.com](http://www.fosterfreeman.com)



Since being founded in 1990, Antec Scientific has sold worldwide more than 5,000 analytical instruments, such as DECADE™ Detectors, ROXY™ Reactors and ALEXYS™ Analysers. Being the world's most dedicated company providing analytical instrumentation based on Electrochemistry (EC), Antec Scientific is strongly committed to further fully meet its customers' needs as well as to continue to develop state-of-the-art technologies and innovative solutions for today's analytical challenges. Our instruments cover a broad range of applications in almost any analytical field ranging from research and development to routine analysis.



[www.antecscientific.com](http://www.antecscientific.com)



OrigalyS was founded in 2010, by R&D Engineers coming from a famous French Manufacturer (Tacussel and Radiometer Analytical) of Potentiostat, Galvanostat and Impedancemeter (EIS), based in Lyon, France. It's started within a business incubator Cap Nord. Our goal is to propose to the customer "design" products with an affordable price and a high level of quality. With a minimum of 30 years background and knowledge in electrochemistry and a worldwide distributor network, the company is able to provide a complete range of: Instruments, Potentiostat-Galvanostat-Impedancemeter, Multi-Potentiostats and Rotating Disc Electrode, Software, Electrode, Tips and Accessories.



[www.origalys.com](http://www.origalys.com)



# OUR PRODUCTS



#### **1220 Infinity II LC System**

The 1220 Infinity II LC is an integrated system for routine HPLC and UHPLC analysis in analytical and QA/QC labs. Based on the proven technology of the InfinityLab LC Series, the system's high quality and high performance help you to achieve maximum return on investment and lowest cost of ownership from day one. You can choose from four affordable, "all-in-one" configurations while upgrade paths allow you to increase system capability as your needs change.



#### **1260 Infinity II LC System**

The 1260 Infinity II LC offers the widest choice of modules for analytical HPLC and UHPLC. Reliable instrumentation combines with latest column technologies and advanced supplies to guarantee robust separation and detection performance. Easy column handling and superior sample logistics, from sample submission to data analysis, ensure fast turnaround times and highest instrument utilization. Seamless method transfer and stepwise upgrade paths facilitate risk-free integration in current infrastructure, for nondisruptive transition to highest performance within the confines of your budget.



#### **1260 Infinity II Prime LC System**

Within the 1260 Infinity II LC portfolio, the 1260 Infinity II Prime LC offers the highest functionality and operational convenience for analytical HPLC and UHPLC. The pressure range up to 800 bar for flow rates up to 5 mL/min helps you to achieve highest separation performance in terms of accuracy and precision for utmost confidence in your results. Instrument automation capabilities reduce the need for manual interaction, giving you a new level of convenience in your everyday analytical work.



#### **1290 Infinity II LC System**

The Agilent 1290 Infinity II LC System embodies the next generation of UHPLC—with the exceptional reliability and robustness you expect from Agilent, plus breakthrough technologies to maximize the efficiency of your business. The 1290 Infinity II LC delivers unmatched separation and detection performance for ultimate confidence in your results. Highest sample capacity and fastest injection cycles help you to achieve highest throughput for any application. Seamless integration into your current laboratory infrastructure and smooth method transfer from legacy equipment facilitates nondisruptive transition to highest productivity and lowest total cost of ownership (TCO).



#### **LC, HPLC, UHPLC columns and UPLC columns**

Agilent liquid chromatography (LC) columns deliver reliable, consistent performance in a wide range of analytical LC applications. We offer LC, HPLC, UHPLC columns and UPLC columns for diverse applications ranging from small molecule separations to biomolecule separations, glycan mapping, protein analysis, and mAb analysis



#### **InfinityLab Poroshell 120 Column**

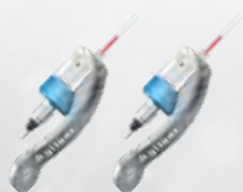
InfinityLab Poroshell 120 columns provide exceptional efficiency and reliability, significantly boosting performance from all instruments, whether you want improved HPLC performance, UHPLC performance at lower pressures or the highest UHPLC performance.



#### **ZORBAX Eclipse Plus**

Eclipse Plus columns provide the ultimate in performance for silica-based columns. Peak shape for the Eclipse Plus is excellent for the most challenging basic compounds, improving efficiency and resolution with these sample types. These results are achieved by improvements in the silica manufacturing and bonding technology, which is completely controlled by Agilent.

### LC SUPPLIES



#### **A-Line Quick Connect fittings**

InfinityLab Quick Connect fittings are the only truly “finger-tight,” reusable fitting for UHPLC, stable to 1300 bar. There are no tools needed... just use your fingers to close the lever for a perfect connection every time.



#### **Liquid Chromatography Supplies**

Agilent InfinityLab supplies work seamlessly with InfinityLab LC Series instruments to achieve the highest performance, operational efficiency and lab safety. Smart consumables track usage for added confidence in your analysis. Learn more about InfinityLab Our extensive portfolio of high quality instrument parts and generic LC supplies are designed for both Agilent and other manufacturers instruments.



#### **Chip LC Tubing, Fittings, Valve Supplies**

Agilent provides a range of Chip LC supplies and replacement parts manufactured to high levels of quality and performance. Specially-designed PEEK fittings, along with fused silica/PEEK and sample transfer capillaries, are available as well as inner and outer valve rotors.



#### **Intuvo 9000 GC System**

The Agilent Intuvo 9000 Gas Chromatograph (GC) system opens new paths to higher productivity and better business outcomes. Built with advanced technologies, the Intuvo 9000 streamlines the GC workflow with a simplified operator experience to reduce operational and maintenance costs often found with conventional GC systems.



#### **7890B GC System**

The 7890B Gas Chromatograph (GC) System is the world's most widely used GC system. It features accurate temperature controls and precise injection systems, plus enhanced Electronic Pneumatic Control (EPC) modules for the best retention times.



#### **7820A GC System**

The 7820A Gas Chromatograph system is an affordable, high-quality GC with a wide range of inlet and detector options, including mass spectrometer. This system provides small to medium-sized labs reliable capabilities for a wide range of application areas, to meet regulatory and lab SOP needs.



#### **490/490-PRO/ 490-Mobile Micro GC System**

490 Micro GC System: Portable Gas Chromatograph is pre-configured and factory tested for on-site analysis. 490-PRO Micro GC System: Gas Chromatograph for process-controlled applications that can operate unattended. 490-Mobile Micro GC System: Wireless Gas Chromatograph connects to your mobile device for on-site sample analysis



#### **GC System 8890**

The 8890 Gas Chromatograph (GC) System continues Agilent's legacy as the provider of proven gas chromatography systems that deliver the utmost reliability and highest performance. As the most flexible and configurable gas chromatography system, the 8890 addresses whatever your specific analysis demands. When your results are critical and instrument operation is a must, the 8890 exceeds expectations for uptime and accuracy, every time.



#### **GC System 8860**

The 8860 GC System features built-in intelligence that enables remote connectivity to allow you to monitor your GC system, check system logs, and make method changes outside of the laboratory. The intuitive touch screen interface offers you real-time instrument status information. Cost-effective options such as DA Express and electronic pneumatic regulation (EPR) make the 8860 an attractive option for any laboratory. Based on the core platform designs of the industry standard 7890 GC, the 8860 elevates routine GC analysis to new levels of performance, reliability, and cost effectiveness.





### J&W GC Column

Agilent's GC columns help lab analysts maintain the highest standards of performance. Agilent J&W capillary columns deliver industry-leading technology with the highest inertness, lowest bleed levels and tightest column-to-column reproducibility.



### Self Tightening Column Nuts

This unique, stainless steel GC column nut delivers a tight connection – without expensive upgrades or adaptors. An innovative spring-driven piston continuously presses against the short graphite/polyimide ferrule – maintaining a leak-free seal even after hundreds of injection.



### J&W Ultra Inert Intuvo GC columns

As part of the Agilent J&W Ultra Inert GC column family, Ultra Inert Intuvo GC columns push industry standards for consistent column inertness and exceptionally low column bleed, resulting in lower detection limits and more accurate data for difficult analytes. Offered in a wide range of stationary phase polarities (non, low, mid, and high polarity).



### Packed GC Columns

Agilent J&W Packed GC Columns are designed and manufactured to offer excellent and reproducible performance for all sample types associated with packed column separations, most important in the hydrocarbon processing industry. The highly efficient and rigorous packing technology used in Agilent J&W packed GC columns assures column-to-column reproducibility and ultimate efficiency,



### Column Baskets and Hangers

Agilent offers column baskets and hangers, including a 13 cm (5 in) basket for 6850 capillary columns, column hanger for a 13 cm (5 in) basket, column hanger clip kit for a 18 cm (7 in) basket and column hanger for 6890, 5890 and 5880A systems.



### Gas Chromatography Supplies

At Agilent, we understand that it is vital for your process to be efficient. gas chromatography supplies provide the best of both worlds: small, easily handled quantities in economical gas chromatography packaging. Ideal for high usage laboratories, Agilent GC supplies provide the quality and consistency of Agilent chromatography supplies offered in convenient and economical packaging.



#### **Sulfur Chemiluminescence Detector (SCD) 8355**

The reimaged and redesigned Agilent 8355 SCD represents the first major advance in sulfur chemiluminescence detection in 25 years, making the technology more reliable and easier to use. Highly sensitive and highly specific, the reimaged detector is also easier to maintain, thanks to a simplified burner design with 50 percent fewer components. The most common service routine, which used to take one hour, now takes only 10 minutes.



#### **Nitrogen Chemiluminescence Detector (NCD) 8255**

NCD is a nitrogen-specific detector that produces a linear and equimolar response to nitrogen compounds. This is accomplished by using a stainless steel burner to achieve high temperature combustion of nitrogen containing compounds to form nitric oxide (NO). A photomultiplier tube detects the light produced by the subsequent chemiluminescent reaction of NO with ozone.



#### **Micro-ECD**

The Agilent micro-electron capture detector (micro-ECD), together with the Agilent 7890A, 6890N, or 6850N Series II gas chromatograph system, revolutionizes trace-level analyses of halogenated organic compounds and aromatic pollutants. Major design innovations neatly wrap ruggedness and reliability around unprecedented sensitivity and linearity. Spend less time maintaining the detector and more time running samples, with the Agilent micro-ECD.



#### **Automatic Liquid Sampler 7693A**

The Agilent 7693A ALS (Automatic Liquid Sampler) provides reliable, fast, and precise injections for Agilent GC and GC/MS systems. With additional sample preparation capabilities, this autoinjector can enhance the output of the GC or GC/MS laboratory.



#### **Automatic Liquid Sampler 7650A**

The Agilent 7650A ALS (Automatic Liquid Sampler) provides reliable, fast, and precise injections for up to 50 samples on Agilent GC and GC/MS systems.



#### **Sample Prep Workbench 7696A**

The Agilent 7696A Sample Prep Workbench provides consistent precision and eliminates errors associated with mundane sample preparation procedures, such as dilutions, internal standard additions, and derivatization. WorkBench with WeighStation provides the ability to weigh precise amounts of material directly into the GC or LC vial, allowing for weight calculations required for specific ASTM and EN methods.



#### **Headspace Sampler 7697A**

The Agilent 7697A Headspace Sampler, in both 11 and 12 vial capacity configurations, represents the state-of-the-art in headspace gas chromatography. It is based on the architecture of the market leading 7890 Series GC and 7693A Automatic Liquid Sampler line of products.



#### **Accurate-Mass Time-of-Flight (TOF) LC/MS 6200 Series**

The Agilent 6230B TOF LC/MS system provides accurate mass analyses for a variety of analytical applications including profiling, identification, characterization, and quantification of both small and large molecules. Together with advanced accurate mass software processing tools the 6230B supports applications including drug development, toxicology, and the analysis of recombinant proteins.



#### **Triple Quadrupole LC/MS 6400 Series**

Meet your quantitative needs with triple quadrupole performance that gives you superior sensitivity, renowned reliability, and overall system robustness. Agilent 6400 Series Triple Quadrupole LC/MS Systems are proven choices for quantitative applications in pharmaceutical ADME/DMPK studies, biomarker validation, clinical research, food testing, forensics, toxicology, and environmental analyses.

Choose an Agilent 6420, 6460, 6470 or NEW 6495B Triple Quadrupole LC/MS system for unmatched productivity, performance, and value for all your analytical needs.



#### **Accurate-Mass Quadrupole Time-of-Flight (Q-TOF) LC/MS 6500 Series**

Whether you need to identify, screen, profile, or perform quantitation on complex samples, Agilent Q-TOF is ready. When simultaneous speed, sensitivity, accuracy, and dynamic range come together, you get the most information from your samples. The immense detail revealed is harnessed by MassHunter software to provide answers you can trust. Find out how an Agilent Q-TOF can help solve metabolomics, pharmaceutical research, discovery proteomics, food safety, forensic toxicology, and environmental screening challenges.

#### **Ultivo triple quadrupole LC/MS (LC-TQ)**

Ultivo presents a transformative approach to LC/TQ and is the newest member of the Agilent Triple Quadrupole family. At the core of Ultivo lie our Triad Technologies (Tt) - Vortex Collision Cell, Cyclone Ion Guide, and VacShield. These innovations afford technicians the sensitivity, robustness, reliability, and performance required for the day-in, day-out challenges of high-throughput sample analysis in the applied markets. "Quant-My-Way" software has been streamlined to emulate your targeted workflows, and system diagnostics alert you in a straightforward manner to items requiring attention. Ultivo is Agilent's first stackable LC/TQ that eliminates the MS footprint by incorporating the MS into the LC stack.



#### **LC/MSD iQ (Single Quadrupole LC/MS)**

The Agilent InfinityLab Liquid Chromatography/Mass Selective Detector iQ (LC/MSD iQ) system provides essential mass detection to quickly confirm compounds and provide more specificity and selectivity than a UV detector - even for those compounds which are chromatographically unresolved. Whether in the pharmaceutical, academic, chemical or food industries, this single quadrupole mass spectrometer adds credibility, not complexity to your analyses.



#### **LC/MSD (Single Quadrupole LC/MS)**

The Agilent InfinityLab Liquid Chromatography/Mass Selective Detector (LC/MSD) system uses the power of mass selective detection to enhance analytical confidence. The LC/MSD is designed for the chromatographer who wants to work more efficiently. From basic pharmaceutical analysis to synthetic chemistry to routine food testing applications, the system provides unparalleled ease of use and more insight. The single quadrupole LC/MSD system is the ideal running partner for your 1260 and 1290 Infinity II LC systems and combines the power of mass selective detection with data reporting software tools to enhance lab efficiency and return on investment.





#### **5977B GC/MSD**

The NEW 5977B High Efficiency Source (HES) GC/MSD builds on a tradition of providing the most trusted single-quadrupole GC/MS system. The ultra-efficient EI source maximizes the number of ions that are created and transferred out of the source body and into the quadrupole analyzer. This novel design revolutionizes single quadrupole mass spectrometry performance.



#### **7000D Triple Quadrupole GC/MS**

The NEW 7000D Triple Quadrupole GC/MS is the latest version of the most successful GC/MS/MS in history. The 7000D is now even easier to use and more efficient than ever, due to its new Dynamic MRM (dMRM) mode of acquisition. If your lab includes Agilent 5975 or 5977 GC/MSD systems, you'll be able to load your GC/MSD SIM and scan methods on the 7000D to balance your workload across all available instruments. Coupled with the 7890B GC, the 7000D MS works in perfect harmony to enhance productivity, save resources and alert operators about pending maintenance.



#### **7010B Triple Quadrupole GC/MS**

The 7010B Triple Quadrupole GC/MS is the latest version of the first compact benchtop Triple quad (MS/MS) system to provide attogram detection limits in Electron Ionization (EI) mode. The 7010B is now even easier to use and more efficient than ever, due to its new Dynamic MRM (dMRM) mode of acquisition. If your lab includes Agilent 5975 or 5977 GC/MSD systems, you'll be able to load your GC/MSD SIM and scan methods on the 7010B to balance your workload across all available instruments. Its high-efficiency EI source produces at least 20 times as many ions as the previous generation, improving your efficiency.



#### **Quadrupole Time of Flight GC/MS 7250 GC**

The Agilent 7250 GC/Q-TOF system delivers full-spectrum, high-resolution, accurate-mass data with a wide dynamic range for identifying and quantifying GC-amenable compounds. This high-resolution GC/Q-TOF enables accurate mass screening by GC/MS and enhanced compound identification through MS/MS, low energy electron ionization and complimentary chemical ionization techniques.

### SAMPLE INTRODUCTION SUPPLIES AND SYRINGES



#### **Autosampler Syringes**

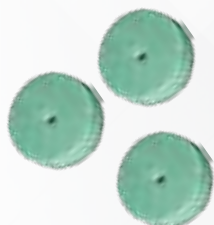
Agilent has what you need for precise, effective, sample delivery from your GC autosampler. Agilent offers two major lines of syringes for Agilent liquid autosamplers: Blue line and gold standard syringes. Blue line syringes are designed to support the higher productivity features of the Agilent 7693A automatic liquid sampler.



#### **Manual Syringes for GC**

Many of Agilent's manual syringes for GC have color-coded barrels to facilitate volume selection while making life in the lab more colorful. Each denomination (0.5  $\mu$ L to 50 mL) features a distinct color boldly embossed on the glass barrel for fast, easy identification.

### INLET SEPTA SUPPLIES



#### **Advanced Green Septa**

Agilent now treats each premium 11 mm inlet septa to eliminate sticking in the GC inlet. With our premium non-stick septa, you'll never have to scrape bits of septum out of your inlet. Agilent's premium septa also have a recess on the injection side, to guide the syringe needle to the same point with every injection.



#### **Long Life Septa**

Agilent now treats each premium 11mm inlet septa to eliminate sticking in the GC inlet. With our premium non-stick septa, you'll never have to scrape bits of septum out of your inlet. Agilent's premium septa also have a recess on the injection side, to guide the syringe needle to the same point with every injection.



#### **General Purpose Septa**

Agilent's General Purpose Septa are made from an enhanced injection-molded silicone rubber material. The septa material, dark red or gray in color, is specified to withstand over 200 automatic injections at an injection port temperature of 350 °C.



#### **IDP Oil Free Vacuum Pump**

The Agilent IDP-3 Dry Pump provides an affordable, oil-free vacuum that has been qualified for existing Agilent 5977, 5975, and 5973 GC/MSD systems. The pump creates a vacuum using a simple dual scroll mechanism one nested scroll orbits around the other, creating moving zones of captured gas.



#### **Vacuum Pump Supplies for GC/MS**

To ensure the highest levels of accuracy and performance of Agilent's GC/MS systems, a range of vacuum pump supplies are available. These supplies include foreline and diffusion pump supplies such as oil mist filter kits, gauge tubes for measuring vacuum, and pump oil.



#### **Standards for GC Instrument Evaluation & J&W GC Column**

Biodiesel Test Samples, GC Instrument Evaluation, Installation and Calibration Standards, GC Qualitative Standards, GC/MS Analyzer Kit Standards, GC/MS Test and Performance Samples and J&W GC Column Test Standards



#### **Gas Clean Purification System**

The Agilent Gas Clean Filter System delivers clean gases, reducing the risks of column damage, sensitivity loss, and instrument downtime. Inserting a Gas Clean Filter System in the gas line immediately before the instrument inlet greatly reduces the level of impurities, thus improving trace analysis. Contaminants entering your GC column will also be reduced, which is critical for high temperature analysis and essential for longer column lifetime.



#### **Intuvo Guard Chips**

The Agilent Intuvo Guard Chip harnesses the protective power of a traditional retention gap within an easy-to-install, disposable, microfluidic chip. It traps sample residue by providing almost one meter of inert flow path between the liner and the column. With rapid, regular replacement, sample contamination never reaches the head of the Intuvo GC column, eliminating the need for column trimming.



#### **Intuvo Gas Clean Filter Kit**

The Agilent Gas Clean Filter System delivers clean gases, reducing the risks of column damage, sensitivity loss, and instrument downtime. Inserting a Gas Clean Filter System in the gas line immediately before the instrument inlet greatly reduces the level of impurities, thus improving trace analysis. Contaminants entering your GC column will also be reduced, which is critical for high-temperature analysis and essential for longer column life.





### 200 Series Atomic Absorption

Agilent leads the industry with innovative atomic absorption (AA) instruments. The entry-level SpectrAA 55B is ideal for labs in remote locations, while the 240FS and 280FS AA systems achieve the productivity of sequential ICP with Agilent's Fast Sequential technology. The 240Z and 280Z AA systems provide superior performance and accurate background correction with transverse Zeeman technology. Our AA Duo systems feature unique simultaneous operation of both the flame and graphite furnace.



### ICP-MS 7800

The Agilent 7800 ICP-MS combines proven, robust hardware, auto-optimization tools, and Pre-set Methods to simplify routine analysis. With high matrix tolerance, wide dynamic range, and effective control of polyatomic interferences, the hardware takes the uncertainty out of analyzing complex or variable sample matrices. The 7800 ICP-MS is easy to set up and use, so you can quickly produce reliable results in the widest range of sample types.



### ICP-MS 7900

The Agilent 7900 ICP-MS opens up a new dimension in ICP-MS, with 10x higher matrix tolerance, 10x wider dynamic range and 10x better signal to noise than the 7700 ICP-MS Series, with software so powerful it can write your methods for you. The 7900 ICP-MS includes the industry's most effective helium collision mode for unsurpassed interference removal, ensuring superior data quality for any application.



### Triple Quadrupole ICP-MS 8900

The new 2nd generation 8900 ICP-QQQ offers a range of configurations to cover applications from routine contract analysis to advanced research and high performance materials analysis. With helium mode performance and productivity to match Agilent's market-leading quadrupole ICP-MS systems, the Agilent 8900 ICP-QQQ adds MS/MS mode for controlled and consistent interference removal in reaction mode, making it the world's most powerful and flexible multi-element analyzer.



### ICP-OES 5110

The Agilent 5110 ICP-OES features unique Dichroic Spectral Combiner (DSC) technology that enables synchronous radial and axial measurements. Combined with a vertical torch and high speed, zero gas consumption VistaChip II CCD detector, the 5110 ICP-OES (also referred to as ICP-AES) runs even your toughest samples up to 55% faster using 50% less argon, without any compromise on analytical performance.



### MP-AES 4210

The Agilent 4210 MP-AES has high sensitivity, detection limits down to ppb levels and is faster than conventional flame Atomic Absorption (AA) for a typical multi-element analysis. Best of all, the Agilent 4210 MP-AES runs on air instead of combustible gases.

## ATOMIC SPECTROSCOPY SUPPLIES

### AA SUPPLIES



### Hollow Cathode Lamps

Agilent provide a wide range of lamps regardless of make, model or manufacture. Background Correction Lamps, Coded Multi-Element Lamps, Coded Single Element Lamps, High Intensity UltrAA Coded Multi-Element Lamps, High Intensity UltrAA Coded Single Element Lamps, Hollow Cathode Lamps for PerkinElmer, Uncoded Multi-Element Lamps, Uncoded Single Element Lamps.



### AA Standards

Agilent offers a comprehensive range of single and multi-element standards, ionization buffers and environmental standards for Atomic Spectroscopy. With the assurance of NIST traceability, Agilent's selection of standard mixes offers accurate, reliable calibrations at great value.

## ICP-MS SUPPLIES



### Spray Chambers

Agilent manufactures a range of high quality spray chambers and associated accessories for use with our market-leading portfolio of ICP-MS systems. Two spray chamber models are available, both of which can be effectively utilised with our full range of nebulizers. The two models are manufactured of Quartz and Polypropylene (with sapphire tube) respectively, and both should be replaced when memory effects remain after cleaning.



### Torches

Comprised of three Concentric Quartz tubes through which streams of argon gas pass. Three streams = plasma, auxiliary, and nebulizer (carrier) gas. The Quartz torch is not suitable for samples containing hydrofluoric acid. It must be completely dried before installing and igniting the plasma. The torch should be replaced if chipped, cracked or distorted.



### Interface Cones for 7700/7800/7900 and 8800/8900

The influence of good quality plasma/vacuum interface design on the overall performance and sensitivity of an ICP-MS system is vitally important and high quality interface cones are key elements.



#### **Nebulizers**

Agilent ICP-OES series instruments are compatible with a range of accessories and supplies designed to extend their capabilities, including the Agilent OneNeb Series 2 nebulizer.



#### **Torches**

Agilent's ICP-OES series are compatible with a range of accessories and supplies designed to extend the capabilities of the instruments. Agilent axial fully demountable torches for ICP-OES instruments light easily and stay lit, reducing downtime.



#### **ICP-OES Standards (single element)**

Agilent offers a comprehensive range of single and multi-element standards, ionization buffers and environmental standards for Atomic Spectroscopy. With the assurance of NIST traceability, Agilent's selection of standard mixes offers accurate, reliable calibrations at great value.



#### **Nebulizers**

Agilent 4100/4200 Series MP-AES instruments are compatible with a range of Agilent accessories and supplies designed to extend the instruments capabilities, including the Agilent OneNeb Series 2 nebulizer. The OneNeb Series 2 nebulizer offers superior performance with MP-AES instruments.



#### **Torches**

The Agilent 4200 MP-AES features a plug and play torch, optimized for high precision and sensitivity with the recommended power and gas flow settings. The torch features a unique polymer base that fits easily into the simple and effective torch-loader mechanism.



#### **MP-AES Spray Chambers**

The Agilent 4100/4200 Microwave Plasma-Atomic Emission Spectrometer runs entirely on air, which means your lab can eliminate flammable and expensive gases. It's safer and more cost efficient than other spectrometers. The 4100/4200 MP-AES enables superior detection and can perform unattended multi-element analyses.



### Spectrophotometer Fluorescence Cary Eclipse

Meet your analytical needs with an easy to use and reliable fluorescence spectrophotometer that gives you superior sensitivity where you need it most, renowned reliability and enhanced sampling capabilities. The Agilent Cary Eclipse Fluorescence Spectrophotometer is the proven choice for all applications in academia, life sciences, biotechnology, chemicals, energy and food testing analyses.



### Spectrometer FTIR Cary 630

The Agilent Cary 630 FTIR spectrometer is versatile, innovative, and intuitive, providing superior quantitative and qualitative information for routine analysis of solids, liquids, and gases. With a wide range of sample interfaces and high performing optics, - including Agilent's unique and revolutionary DialPath for measuring liquids - the compact Agilent Cary 630 FTIR will give you accurate results — fast. Cary 630 has permanently aligned optics to simplify uptime, has snap and go modules to increase testing, and has easy-to-use technology that reduces training.



### FTIR Handheld 4300

The 4300 Handheld FTIR is the first of its kind employing lightweight ergonomics, ease of use, ruggedness, and flexibility into one system. The 4300 weighs in at approximately 2kg. With its lighter weight and new design, the ergonomics of the system make it ideal for field use and deployment into non-laboratory situations.



### Microscopes FTIR Cary 610

The Cary 610 is a single point FTIR microscope, capable of mapping, while the Cary 620 is a Focal Plane Array (FPA) chemical imaging FTIR microscope. With the option to couple the microscope to either a research-grade Cary 660 FTIR or top of the range, air bearing, Cary 670 FTIR spectrometer, you get two instruments in one – a research FTIR spectrometer and an FTIR microscope.



### Microscopes FTIR Cary 620

The Agilent Cary 610 and Cary 620 FTIR Microscopes and Chemical Imaging systems represent the latest in cutting-edge performance. Leveraging off the latest in technological developments, the systems now deliver unparalleled spatial resolution and sensitivity, which coupled with a wide range of options, provide flexibility to suit applications ranging from routine measurements to cutting-edge analytical development.



### Spectrometer FTIR Cary 660

The Cary 660 FTIR is only available in conjunction with the Cary 610 or Cary 620 FTIR Microscope systems. The Agilent Cary 660 FTIR is a versatile, high performing spectrometer designed to meet routine spectrometry and research application needs. The Cary 660 FTIR is controlled using high performance operating software and can also be fitted with a wide range of accessories to provide extra capabilities.



### Universal Measurement Spectrophotometer (UMS) Cary 7000

The revolutionary Agilent Cary 7000 Universal Measurement Spectrophotometer (UMS) will satisfy all your solid sampling needs. Collect hundreds of UV-Vis-NIR spectra overnight, or characterize optical components or thin films in minutes to hours rather than hours to days. Delivering a turn-key solution for research, development and QA/QC in optics, thin films/coatings, solar and glass, the Cary 7000 UMS will advance your materials analysis.



### UV-Vis Cary 60

The Agilent Cary 60 UV-Vis Spectrophotometer is efficient, accurate and flexible, and is designed to meet your immediate and future challenges. With remote sampling options, proven performance and low cost of ownership, you can be sure that the Agilent Cary 60 UV-Vis will give you answers you can trust.



### UV-Vis Diode Array Cary 8454

The Agilent Cary 8454 UV-Visible spectrophotometer builds on 30 years of experience in photodiode array (PDA) technology and delivers an updated instrument that is easy to use, is ideal for routine applications, and meets the compliance needs of global pharmaceutical companies.



### UV-Vis Cary 100/300

The Cary 100 is a cost-effective UV-visible spectrophotometer with a versatile set of accessories for routine laboratory work. The Cary 300 is a versatile UV-visible spectrophotometer with a versatile set of accessories and a large photometric range for use in research laboratories.



### UV-Vis-NIR spectrophotometers Cary 4000/5000/6000i Series

The Cary 4000/5000/6000i Series UV-Vis-NIR spectrophotometers are unrivaled, precise and flexible, and are designed to meet your application requirements — now and in the future. With unsurpassed photometric accuracy and a wide range of flexible accessories, this research-grade series will ensure you stay at the forefront of your field.



### **UV-Vis Cary 3500**

The Agilent Cary 3500 UV-Vis spectrophotometer offers photometric performance together with unique measurement capabilities. Available in several configurations including a multizone multicell that allows up to four temperature experiments, across eight cuvette positions, simultaneously. With proven performance and low cost of ownership, the Cary 3500 UV-Vis will streamline your experimental design and amplify confidence in your results.

## MOLECULAR SPECTROSCOPY INSTRUMENTS

### LDIR CHEMICAL IMAGING



### **Chemical Imaging System 8700 LDIR**

The Agilent 8700 Laser Direct Infrared (LDIR) chemical imaging system provides a sophisticated new approach to chemical imaging and IR spectral analysis. Designed to be used by both experts and nonexperts alike, the 8700 LDIR provides a simple highly automated approach for obtaining reliable high-definition chemical images of constituents on surface. Using the 8700 LDIR, you can analyze more samples, in greater detail, in minutes vs. hours. This robust solution provides you with more statistical data than ever to aid in the compositional analysis of tablets, laminates, tissues, polymers, and fibers.

### FLUORESCENCE SUPPLIES



#### Fluorescence Standards and Reference Materials

Agilent's fluorescence spectrophotometers are augmented by a wide range of accessories and supplies including fluorescence standards and reference materials.



#### Microplates

96-well Microplates and 384-well Microplates. Our microplates are available in white for best overall well-to-well reproducibility, or black for the lowest background signal levels. Both types have high binding surfaces that bind medium and large biomolecules (greater than 10 kDa) that have hydrophobic and/or ionic groups. These microplates are recommended for the Cary Eclipse Microplate Reader Accessory.

### FTIR SUPPLIES



#### Cary Series FTIR Instrument Supplies and Sources

Our range of consumables for the Agilent Cary Series FTIR instruments includes desiccant cartridges, replacement windows and assemblies, filters, and sources.



#### Cary 630 FTIR System Supplies

Agilent is proud to offer a variety of supplies and replacement parts for the Cary 630 FTIR: window, desiccant cartridges, ATR tips, and more.



#### FTIR Standards

Included in are NIST traceable polystyrene test film and spectroscopic grade KBr powder.



#### **Cuvettes and Flow Cells**

Cylindrical Cells, Disposable Cells, Flow-through Cells, Macro Cells, Rectangular Cells, Semi-micro Cells and Ultra-micro Cells.

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#### **8453 UV-Vis Supplies**

8-Position Multicell Transport, 8453 Source Lamps, Autosampler, Cell Holders, Dissolution Testing, Peltier Temperature Controller, Sipper, Spacers and Accessories and Tubing and Fittings

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#### **Cary UV-Vis Supplies**

Cary 50 Cells, Cary Cell Holders and Bases, Cary Source Lamps, Cary Tubing, Fiber Optic Probes, Magnetic Stir Bars, Optical Filters, Polarizer and Depolarizer and Probe Accessories.

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#### **Standards**

##### **UV-Vis Certified Calibration Standards**

Agilent chemical standards and accessory kits provide an inexpensive and time-saving solution for OQ/PV. The kits are designed for analysts who need to conform closely to both quality and regulatory requirements when performing UV-visible measurements.

##### **UV-Vis Installation and Checkout Solutions**

UV-Vis Installation and Checkout Solutions for Cary Eclipse Fluorescence

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#### **Cobalt Insight200M - The Bottle Screener for Liquid, Aerosols & Gels**

Insight200M is the latest addition to the Insight range. Smaller and lighter than the popular Insight100 series- and offering improved detectivity and false alarm rates (FARs)- Insight200M fits into security operations with the lowest resource impact and highest screening throughput of any Type B LEDS system. Operational FARs for all containers are consistently better than 2%, but can be much lower. When tested using the standard ECAC test set, the Insight200M has a FAR up to 10-times lower than operationally demonstrated by the most widely used products from other manufacturers.

## RAMAN SPECTROSCOPY SYSTEMS

### PHARMACEUTICAL ANALYSIS



#### **RapID - Portable Raw Material ID Verification**

The RapID system is the next generation in portable Raman raw materials ID verification, extending high-throughput spectroscopic analysis through clear packaging to nontransparent and colored containers.



#### **TRS100 – Quantitative Pharmaceutical Analysis**

The TRS100 enables high-throughput, non-destructive assay of common dosage forms without sample preparation. Easier to implement than other spectroscopic methods, Cobalt's transmission Raman (TRS™) technology allows simple method-development and deployment in QC applications.

## RAMAN SPECTROSCOPY SYSTEMS

### HANDHELD CHEMICAL IDENTIFICATION



#### **Resolve – Through-Barrier Handheld Detection**

Providing a revolutionary new capability in handheld detection, the Resolve system enables rapid detection and identification of explosives, narcotics and hazardous materials through sealed, opaque containers. The system rapidly detects and identifies materials from comprehensive libraries, with Agilent’s unique handheld SORS technology enabling positive identification through a wide range of sealed nonmetallic containers, barriers, and packaging.

## RAMAN SPECTROSCOPY SYSTEMS

### OVERVIEW MANAGEMENT SERVER



#### **Manage Multiple Systems from a Single PC**

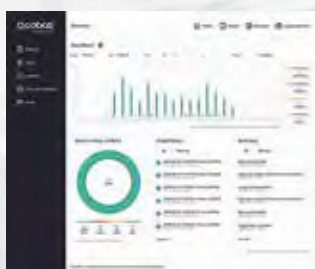
Overview provides centralized management and reporting of the Cobalt Insight series of liquids and bottle scanners. Accessible via a simple and secure web browser interface, Overview is easily scalable and monitors/reports across multiple checkpoints, terminals and airports. It uses common server software and can be installed on modest hardware or as a virtual machine.



System ID	Location	Status	Last Scan	Alerts
AP101	AP101	Online	2013-01-01 10:00	0
AP102	AP102	Online	2013-01-01 10:00	0
AP103	AP103	Online	2013-01-01 10:00	0
AP104	AP104	Online	2013-01-01 10:00	0
AP105	AP105	Online	2013-01-01 10:00	0
AP106	AP106	Online	2013-01-01 10:00	0
AP107	AP107	Online	2013-01-01 10:00	0
AP108	AP108	Online	2013-01-01 10:00	0
AP109	AP109	Online	2013-01-01 10:00	0
AP110	AP110	Online	2013-01-01 10:00	0

#### **Reporting for the Insight Systems**

Each Insight system is continuously monitored and real-time reports can be generated by machine, group or location. These reports can be scheduled for management oversight, and summaries by scanner or groups of scanners can produce the data required for regulatory compliance or SeMS reporting.



#### **Management and Installation**

Overview enables the setting of permissions and records logins and usage from a simple web control interface and permissions can be set by user group and location. Overview is configurable on an internal network and via a secure web interface from other network locations.



#### **Dissolution Sampling Station 850-DS**

The 850-DS Dissolution Sampling Station offers the latest capabilities for centralizing laboratory workflow of sample transfer, filtration and collection. By managing unattended dissolution sampling and automated sample archiving for future HPLC or UV analysis, the 850-DS frees up analysts' time while eliminating sampling errors associated with manual sampling.

### AUTOMATED SYSTEMS



#### **Cary 60 Multicell UV Dissolution System**

Dissolution sample analysis is most commonly determined with the use of UV dissolution methods. The Cary 60 UV-Vis spectrophotometer with multicell changer uses scanning technology from its Xenon lamp to take samples simultaneously and read each one sequentially. Each vessel contains its own flow cell and tubing, eliminating cross-contamination from your 708-DS or 709-DS Dissolution Apparatus.



#### **Cary 60 Fiber Optic UV Dissolution System**

Agilent's Cary 60 Fiber Optic UV Dissolution System is an ideal choice for analysis of dosage forms where rapid timepoint requirements are essential. With the ability to sample as often as every 45 seconds, the Cary 60 UV-Vis Spectrophotometer with multiplexer provides excellent optical transmission and reproducibility capabilities, and the extended linear photometric range is ideally suited for fiber optic analysis. Available in single- or dual-apparatus configurations, the system offers in situ readings for precise reading, and the probes are only lowered into position when the sample is taken, minimizing hydrodynamic disturbance.



#### **Dissolution Apparatus 708-DS**

The 708-DS Dissolution Apparatus is designed for reproducibility and ease of qualification, and is the ideal platform for standardizing dissolution testing. The rugged, yet versatile, instrument minimizes external variable influences and conforms to the USP Performance Verification Test (PVT) and enhanced Mechanical Qualification (MQ) standard recommended by the ASTM and FDA. The 708-DS can be configured for use with baskets (Apparatus 1), paddles (Apparatus 2), paddle over disk assemblies (Apparatus 5) and rotating cylinders (Apparatus 6), and can accommodate vessel sizes from 100 mL to 2L.



#### **BIO-DIS Reciprocating Cylinder Apparatus**

The Agilent BIO-DIS Reciprocating Cylinder Apparatus is ideal for automatic dissolution testing of dosage forms that require different types of media. It is typically used for imitating the pH changes that occur in the body and is perfectly suited for extended and sustained release dosage forms. The BIO-DIS can automatically transport samples to another row of media, simulating the gastrointestinal changes that occur in vivo.



#### **Reciprocating Holder Apparatus 7**

The Agilent Reciprocating Holder Apparatus 7 is ideal for automatic dissolution testing of dosage forms requiring a change of media, smaller volume or more vigorous agitation. Typical products tested include extended release tablets, capsules, transdermals, osmotic pumps and arterial stents. The standard apparatus has seven reciprocating positions for each of the six rows with 100 or 300 mL outer tubes



#### **400-DS Apparatus 7**

The Agilent 400-DS Dissolution Apparatus 7 sets the performance standard for small-volume drug-release testing of medical devices such as drug eluting stents (DES). A variety of standard and custom holders are available for testing of combinatorial products, pacemaker leads, contact lenses, catheters, wound care products, extractables, leachables and more. It is the first dissolution apparatus built specifically for small-volume dissolution testing of combination drug products that meets all compendial requirements for USP Apparatus 7. The 400-DS complies with 21 CFR Part 11 guidelines and brings an unprecedented level of convenience, throughput, and efficiency to your quality control and R&D operations.

### CALIBRATION AND VERIFICATION TOOLS



#### **280-DS Mechanical Qualification System**

The Agilent 280-DS Mechanical Qualification System (MQS) revolutionizes dissolution qualification by measuring critical physical parameters of dissolution apparatus with unmatched unprecedented precision. Using Instrument and Vessel Modules and powered by the intuitive Agilent 280-DS Workstation Software, the 280-DS provides accurate, qualitative measurements by eliminating the guesswork of interpreting values obtained with individual manual gauges.

### ACCESSORIES



#### **Dissolution Paddles, Baskets and Shafts**

For Apparatus 1 (baskets) and Apparatus 2 (paddles) dissolution testing, Agilent's variety of quality accessories can support your laboratory's needs while maintaining compliance with regulatory standards. In keeping with the most current guidance for mechanical qualification, Agilent also offers Verified Dissolution Accessories including baskets, paddles and basket shafts with certificates of conformity (CoCs) with actual component measurements for all critical dimensions using traceable devices.



#### **Dissolution Vessels**

Agilent provides a variety of dissolution vessels for use with Agilent dissolution apparatus, as well as other equipment manufacturers.

- TruAlign Vessels for the 708-DS and 709-DS
- TruCenter Vessels for the discontinued 7025 and 7030 Dissolution Apparatus.
- EaseAlign Vessels for the discontinued 705-DS, 7000 and 7010 dissolution apparatus
- Molded Vessels are vacuum formed (VF) and offer the tightest precision available to reduce position-to-position variability and improve uniformity.



#### **Filters**

Ensure the integrity of your dissolution sample with the original Full Flow Filter design. These filters offer increased surface area to optimize filter life and prevent clogging when taking dissolution samples. These are made of a low protein-binding material that can filter a wide variety of active drug substances.

### FILTRATION



#### **Captiva Syringe Filters/Econofilters Syringe Filter**

Sample filtration is critical to achieving optimal system performance. Agilent Captiva Premium Syringe Filters make the process faster than ever with the industry's highest flow rates and loading capacities. In addition, Agilent sets the standard for LC/MS testing and certifying more syringe filters to be completely free of observed extractables than any other manufacturer. All Agilent Captiva Premium Syringe Filters are supplied with a HPLC or LC/MS Certificate. Choose from a variety of membrane types and pore sizes to suit your needs.

### SOLID PHASE EXTRACTION



#### **Bond Elut Plexa**

Bond Elut Plexa offers simple, easy-to-use methods with general purpose extraction mechanisms to simplify SPE. In addition, Plexa provides performance enhancements due to a unique polymeric architecture with a nonretentive, hydroxylated, amide-free surface, and a nonpolar PS-DVB core for retaining small molecules. Binding of proteins and lipids on the polymer surface is minimized, resulting in cleaner samples and reduced ion suppression. Plexa is therefore ideal for high throughput assays requiring validated performance with minimal method development.

### QuEChERS



#### **QuEChERS Standards**

In addition to our industry-leading QuEChERS Kits, Agilent makes your analysis easier by providing standards for the most commonly used regulatory methods, including AOAC and EN.



#### **Ceramic Homogenizers**

Ceramic homogenizers increase your overall lab productivity and give you greater confidence in your results.



#### **OpenLAB CDS Version 2.2**

The newest generation of our chromatography data system combines chromatography and mass spectrometry into one single data system along with limited control of other vendors' instruments--eliminating the need for expertise with multiple software products. New tools in the software provide time-saving steps in the analysis, interpretation, and reporting workflows, so you can identify key information and solve problems faster. Built-in technical controls provide peace of mind for analytical labs that need the highest level of data integrity.

## CONTENT MANAGEMENT



#### **OpenLAB ECM**

OpenLAB ECM is a comprehensive enterprise content management system. It manages all the data, from any technology or vendor, that your lab produces as well as documents your lab may use to support its activities. It silently monitors your operation and secures data in a central location while ensuring timely completion of approvals, customized tasks, and lab-wide reports.

## MASSHUNTER FOR PHARMA



#### **MassHunter Software**

The all new Agilent MassHunter Workstation software provides intuitive, yet powerful, instrument control, data acquisition, qualitative and quantitative data analysis, and reporting for Agilent time-of-flight (TOF), quadrupole time-of-flight (Q-TOF), ICP-MS, and triple quadrupole systems. Designed from the ground up to make MS analyses easier from tuning to final report MassHunter Workstation software can be complemented by application-specific MassHunter software packages that provide even more power and stream-lined operation for specialized analytical tasks.

## DENSITY METER



### Density Meter DMA™ 4500 M

For thousands of users around the world, density measurement means DMA™ 4500 M. These density meters are in use day in, day out, wherever reliable and accurate 5-digit density values are required. To achieve this, the patented Repeated Fade-out Method applied by DMA™ 4500 M delivers the most stable density results based on comprehensive knowledge of the oscillation characteristics.



### Density Meter: DMA™ 501/ 1001

Has everything that industry standards for density measurement stipulate: 4-digits in density measuring accuracy. Based on comprehensive knowledge of the oscillation characteristics of the newly designed measuring cell, the applied patented repeated fade-out method delivers the most stable density results.



### Density Meter DMA™ 35 Portable

The DMA™ 35 portable density meter measures the density and concentration of your sample and is characterized by the highest level of user-friendliness. It employs the oscillating U-tube principle from Anton Paar. This means: 50 years of density measurement experience in one small instrument.

## POLARIMETER



### Modular Circular Polarimeter MCP 100/150

The powerful MCP polarimeter series from Anton Paar precisely, quickly, and easily determines the optical rotation of chiral substances. Based on a modular concept, the user-friendly MCP polarimeters are open to customer-specific configuration and are easily extended with a variety of sample cells and wavelength options in order to ideally suit your requirements.

## REFRACTOMETER



### Compact Refractometers Abbemat 3X00

Reliability, precision and convenience: Abbemat 3X00 refractometers offer you an exceptional combination of technical expertise and user-friendly operation for your refractive index and concentration measurements. The premium technology and compactness of the Abbemat 3X00 transform time-consuming measurements into highly efficient quality control.





### **Microwave Digestion/Extraction: Multiwave 7000**

Multiwave 7000 can digest food, environmental, polymer, cosmetic, pharmaceutical, geological, chemical, and petrochemical samples, even in the same run. Different samples with different reaction mixtures can be processed simultaneously in the Pressurized Digestion Cavity (PDC). Sample clustering is no longer necessary.



### **Microwave Digestion/Extraction: Multiwave GO**

The Multiwave GO microwave digestion system represents a masterstroke of Anton Paar's engineering. The newly designed DMC Directed Multimode Cavity provides the best of both monomode and multimode microwaves. As in a monomode system, the microwaves are directed to the sample, providing highly efficient heating in a small-footprint system.

## MICROWAVE SYNTHESIS & SYNTHETIC CHEMISTRY



### **Synthesis Reactor - Monowave 50**

Monowave 50 even fits into a crowded lab. High level organic synthesis is performed simply with the reactor, a vial and a silicone cap. Ideal for educational purposes, Monowave 50's safety standards ensure the safest handling even with inexperienced students. You save money, time and space as Monowave 50 provides the best combination of price and quality

## RHEOMETER



### **Rheometer: MCR 102/302/502**

Rheometer family based on cutting-edge technology: The amazingly versatile MCR rheometer series covers all rheological applications from routine quality control to high-end R&D applications – count on a convenient, highly precise rheometer custom-tailored to your needs.



### **Rheometer: MCR 72 and MCR 92**

The two new members of the renowned Modular Compact Rheometer (MCR) series – MCR 72 and MCR 92 – are the two wisest choices for quick and easy rheological measurements. These real rheometer “pearls” from Anton Paar are streamlined for your daily lab routine, easy to use in a Plug and Play fashion and available at an accommodating price.



## Rotational Rheometer: RheolabQC

RheolabQC is a rotational rheometer based on state-of-the-art technologies also used in R&D rheometers. It combines unrivaled performance with easy operation and robust design. From quick single-point checks over flow curve and yield point determinations to complex rheological investigations: RheolabQC sets new standards for carrying out routine rheological tests. This powerful rheometer is an excellent example of a modern measuring instrument utilizing all available technical possibilities to ensure flexible, reliable and simple operation.

## PARTICLE CHARACTERIZATION



## Particle Analysis Litesizer™ 100/500

The Litesizer™ is an instrument for characterizing nano- and microparticles in dispersions and solutions. It determines particle size by measuring dynamic light scattering (DLS). A highlight of the Litesizer™ 100/500 is its ingeniously simple software.



## Particle Size Analyzer (PSA) 990/1090/1190

Anton Paar has acquired the particle size analyzer (PSA) product line from CILAS. The particle size analyzers measure size distributions of particles in dry powders or in liquid dispersions. A practical example: the knowledge and control of the powder particle size is used to increase the efficiency of medical products.

## VISCOMETER



## SVM™ Series 2001/3001/4001

The SVM™ series gives you more parameters than any other kinematic viscometer on the market. There are three different models: SVM™ 2001 is a quick and easy-to-use viscometer for measuring kinematic viscosity at any temperature between 15 °C and 100 °C, whereas SVM™ 3001 provides measurements between -60 °C and +135 °C. SVM™ 4001 is designed to determine viscosity and density simultaneously at any two temperatures between 15 °C and 100 °C.



## Rotational Viscometer ViscoQC™ 100

ViscoQC™ 100 is Anton Paar's brand new entry-level digital rotational viscometer that measures the dynamic viscosity as a single-point value. Unbeatable ease of use makes ViscoQC™ the new standard for traceable viscosity checks. Unique features include automatic spindle detection by Toolmaster™, automatic guard detection, magnetic spindle coupling for easy one-hand exchange of spindles, a special Auto Mode, and many more – See for yourself!

## VISCOMETER

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### **Rotational Viscometer ViscoQC 300**

Developed for a wide range of applications, ViscoQC 300 ensures the quality of your substance – from almost any fluid to semi-solid samples – by delivering fully traceable viscosity results right at your fingertip. Starting from a multi-point viscosity measurement for your respective purpose, your system is upgradeable with compliance (21 CFR Part 11) and/or additional analysis software to also meet your future needs. Further improve your process with the optional sample bar code scanner and data processing via LIMS Bridge software.

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## RAMAN SPECTROMETERS

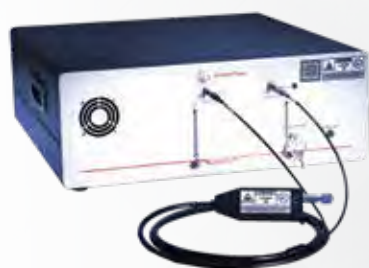
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### **Raman Spectrometers Cora 5X00**

The Cora 5X00 series combines the small footprint – about the size of an open laboratory book – with the performance and the high repeatability of a benchtop instrument. You can choose between a single-wavelength (Cora 5100, Cora 5200, or Cora 5300) and a dual-wavelength instrument (Cora 5500, Cora 5600, or Cora 5700) in order to achieve measurements with maximum Raman signal and minimum fluorescence background.

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### **Raman Spectrometers Cora 7X00**

The Cora 7X00 series of high-performance Raman spectrometers has been developed for use in academic and industrial research. It provides high resolution, a wavelength of 3 cm<sup>-1</sup> to 4 cm<sup>-1</sup> up to 15 cm<sup>-1</sup>, a low noise level, and a high sensitivity in a space-saving 19-inch housing, which makes it easy to fit into your laboratory. Cora 7100/Cora 7200/Cora 7200 Deep Cooled and Cora 7300 Deep Cooled

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### **Handheld Raman Spectrometer Cora 100**

Cora 100 is a small Raman analyzer which fits in your hand. It is ideal for point-and-shoot measurements to identify substances at the touch of a button. You can simply identify unknown samples such as hazardous materials, narcotics, explosives, and chemical warfare agents or verify incoming goods without being a trained chemist. The easy-to-use software and accessories enable you to assess the risks involved with substances in order to make life-saving decisions on the spot or in hot-zone environments.



### **Tosca™ 400**

Tosca™ 400 uniquely combines a premium technology with simple and user-friendly operation, which makes this AFM fit for industrial users as well as scientists. Automation is an integral element on every level of operation, increasing efficiency and simplifying the handling of your AFM measurements. Discover how your material performs – with peak performance AFM.

## FTIR ANALYSIS



### **FTIR Wine Analyzer: Lyza 5000 Wine**

The novel multi-parameter FTIR analyzer Lyza 5000 Wine is your solution for the analysis of wine. Fast measurements for a multitude of parameters ensure you have all the information you need. Thanks to a quick setup and pre-installed models all important results for wine analysis, including ethanol, sugars, and acid profile are just a tap away. Lyza 5000 Wine can be used as a stand-alone device, automated for high throughput, or connected to your benchmark instruments – Anton Paar density meters and Alcozyzer – for the most powerful wine analysis.

## FLASH POINT



### **Abel Flash Point Tester: ABA 4**

The automatic Abel closed-cup tester measures the flash point, the lowest temperature at which the vapors of a sample ignite upon the application of an ignition source. The tester can also be used to detect the ability of a sample to yield flammable vapors when maintained at an equilibrium temperature by the flash/no flash method. ABA 4 is suitable for flash point applications of jet fuels, solvents, chemicals, etc.



### **Pensky-Martens Flash Point Tester: PMA 5**

The automatic Pensky-Martens closed-cup tester measures the flash point at the lowest temperature at which the application of an ignition source causes the vapors of a sample to ignite. PMA 5 is suitable for flammability applications on both biodiesel and biodiesel-blended fuels along with distillate fuels like diesel, heating oil and kerosene. It is also commonly used for other potentially flammable liquids.



### **Thermo-optical Oscillating Refraction Characterization - TORC 5000**

TORC 5000 features unique technology in a robust and compact instrument and combines this with powerful measurement software. The Thermo-optical Oscillating Refraction Characterization (TORC) technique enables determination of the coefficient of thermal expansion and monitoring of phase and glass transitions. TORC 5000 is an interesting and economic solution for adhesive and polymer manufacturers.

## MILLING AND GRINDING



### **Ball Mill BM500**

BM500 is a versatile laboratory ball mill intended for the milling and homogenization of a broad variety of samples ranging from soft, fibrous to hard and brittle materials. With a simplified handling principle, it enables the quick processing of dry, wet, and even cryogenic milling procedures. As the all-rounder suitable for any application segment, BM500 quickly manages routine as well as scientific applications.

## HIGH-PRECISION THERMOMETERS



### **MKT 50 and MKT 10**

The high-precision thermometers from Anton Paar are designed for the most accurate temperature measurements, comparison calibrations and fixed point calibrations in industry, laboratories and research. Combined with calibrated platinum resistance thermometers, Anton Paar's thermometers achieve a measuring uncertainty of 10 mK or less.

## DISTILLATION



### **Atmospheric Distillation Analyzer: Diana 700**

Diana 700 is the ideal solution for automatically performing high-precision distillation range analysis at atmospheric pressure. Typical samples to be characterized include petrochemical products, aromatic hydrocarbons as well as other volatile organic liquids. The combination of premium technology and distinguished features leads to unrivaled ease of use, high efficiency, and safe operation.



### **Cold Filter Plugging Point Tester: Callisto 100**

The fully automated, compact, stand-alone CFPP tester Callisto 100 determines the low-temperature operability in diesel fuel, biodiesel, diesel blends and gas oils. Callisto 100 comes with a newly developed state-of-the-art Peltier element concept which allows the connection of a methanol-free cooling system. It ensures outstanding homogeneity of the cooling jacket, which is the most critical and decisive parameter for a correct CFPP value determination.

## CO<sub>2</sub> AND OXYGEN METER



### **CO<sub>2</sub> Meter: CarboQC**

CarboQC is the precise CO<sub>2</sub> meter which allows reliable QC on finished packages as well as highly accurate measurements in the laboratory for product development. It gives you fast, accurate and reliable determination of dissolved carbon dioxide in beverages.



### **Combined CO<sub>2</sub> and O<sub>2</sub> Meter: CboxQC™**

CboxQC™ is the precise combined CO<sub>2</sub> and O<sub>2</sub> meter which allows reliable QC on finished packages as well as highly accurate measurements in the laboratory for product development. It gives you fast, accurate, and reliable determination of dissolved carbon dioxide and oxygen in beverages. When combined with Anton Paar's PFD filling device, sample is taken directly from the package into the measuring chamber of CboxQC™ – with no loss of dissolved carbon dioxide and dissolved oxygen during sample transfer. CboxQC™ for the laboratory provides reliable CO<sub>2</sub> and O<sub>2</sub> results, even out of very small packages.



### Surface Area Analyzer Autosorb- iQ-MP®/XR

A highly sophisticated gas sorption analyzer available with up to three physisorption analysis ports for surface area analysis and pore size measurements; any or all can be equipped for low pressure micropore analysis including 0.1 torr transducer(s).



### Surface Area Analyzer Autosorb-6iSA®

Autosorb 6iSA surface area and Pore Size Analyzer allows a researcher to get a 360 degree perspective of the complex material pore structure enabling a variety of analysis techniques including adsorption isotherms, desorption isotherms, single point BET, multi-point BET, Langmuir surface area, mesopore volume, micropore size distribution (using carbon dioxide), and micropore surface area.



### Surface Area Analyzer Quadrasorb-evo™

The standard evo version provides fast and accurate B.E.T surface area measurements. The new B.E.T Quick Mode provides high throughput industrial material characterization labs the ability to process multiple samples at dramatically improved speeds. For advanced material characterization the micropore equipped version provides a 1 torr low pressure transducer and turbo pump to allow the measurement of microporous materials and extremely low surface area samples using Krypton.



### Surface Area Analyzer NOVAtouch® Series

The NOVAtouch- Series gas sorption analyzers deliver increased throughput and superior performance for BET surface area and pore size analyses. Eight models are available as standard and advanced LX versions with 2-or-4 analysis stations, a dedicated PO station, and four built-in sample preparation ports. All NOVAtouch models can produce BET surface area results using the classical helium void volume method, or via the patented helium-free method. Every NOVAtouch is also a pore size analyzer capable of measuring both adsorption and desorption isotherms with BET surface area results provided in a matter of minutes.



### Surface Area Analyzer NOVA e® Series

The NOVA e- Series of surface area analyzers offers a full line of rapid, high throughput B.E.T. surface area and pore size analyzers. Eight fully automatic models meet the needs of any research or quality assurance laboratory.



### Surface Area Analyzer AutoFlow BET+®

The AutoFlow BET+ is a fully automated state-of-the-art dynamic flow system designed to enable an extremely rapid evaluation of the surface areas of solid samples. Single-point or multi-point determination of surface areas using different standard methods (such as BET and STSA) is easily carried out without the need for measuring system void volumes or recalibrating signal responses.

## CHEMISORPTION ANALYZERS



### Chemisorption Nanalyzer Autosorb iQ-C-MP

When bench space is at a premium and maximum capability is essential. The only combined chemisorption-physisorption manometric analyzers available with built-in degassing stations and optional second and third micropore- capable physisorption ports. Built-in TCD options for flow methods of catalysts characterization, options put this model even further ahead of the field.



### Chemisorption Nanalyzer Autosorb iQ-C-XR

These analyzers are unrivalled in catalyst characterization capability: one moment they are rapid surface area and pore size analyzers, the next they are measuring active metal area and dispersion, and even temperature programmed analyses. The mass spectrometer option is truly unique and remarkably cost-effective, being close-coupled via a built-in vacuum chamber and a gas sampling system.





### Pore Size Analyzer Autosorb® iQ Series

The Autosorb iQ series represents the gold standard in high resolution/high sensitivity gas sorption. Metal-to-metal (VCR) fittings are employed in the measurement manifold(s) for extremely low leak rates. Available with up to three physisorption analysis ports for surface area analysis and pore size measurements; any or all can be equipped for low pressure micropore analysis including 0.1 torr transducer(s).



### Pore Size Analyzer Quadrasorb-evo™

Up to four simultaneous and independent analysis ports remove the limitations of single dewar systems allowing samples to be started as soon as previous measurements are completed. Krypton / Micropore option available for low surface area and micropore measurements. External roughing pump supplied separately. Secure PC version (21 CFR Part II) is also available.



### Surface Area Analyzer NOVAtouch® Series

The next generation of well-established NOVA analyzers, offering higher speed and performance enhancements including a touch-sensitive, multi-functional color screen that provides real time graphical and tabular displays of analyses, and enables local control in multiple languages and without a dedicated PC.



### Pore Size Analyzer Nova®e Series

High-speed surface area and pore size analyzers for quality control and research. Meets different throughput needs with single or multi-port (two, three or four sample stations) models. Can be run as stand-alone or PC-based. Secure PC version (21 CFR Part II) is also available. Nova's small footprint even includes built-in sample preparation stations! Operates in classical or helium-free mode. Vacuum pump supplied separately.



### Surface Area Analyzer Autosorb®-6iSA

The new Autosorb-6iSA provides six ports for independent analysis of 1 to 6 samples. Dedicated pressure transducers, dewar flasks, coolant level sensors, and Po cells allow independent and simultaneous operation of each station. Its Windows®-based software, available as a 21 CFR Part 11 version, provides the ability to perform a multitude of data analysis methods including single and multi-point BET Langmuir surface area, mesopore volume and size distribution, micropore area, total pore volume and much more. Modern data communication provides ease of data input and export.

## VAPOR SORPTION ANALYZERS



### Vapor Sorption Analyzer VStar™

Vapor sorption analyzer dedicated to the analysis of materials using water and organic vapors. A single thermostatically controlled chamber houses the vapor source and manifold and independently controlled sample cells provides the best temperature control available for the most accurate analyses. The VSTAR is available in 2 or 4 station model(s) to fit your needs.



### Vapor Sorption Analyzer Aquadyne™ DVS-1 & DVS-2HT

The Aquadyne DVS is a fully automated, gravimetric, one or two sample, dynamic water vapor sorption analyzer. It measures adsorption and desorption isotherms of water vapor both accurately and sensitively, including sorption kinetics, with minimal operator involvement.



### Vapor Sorption Analyzer Autosorb iQ® with Vapor Option

Manometric (static, volumetric) analyzer for gas and vapor physisorption measurements. Typical vapors include water, alcohols, and aromatics. The vapor generator is housed within the manifold chamber... heated and thermostatically controlled. A solenoid valve opens the pump ballast for all-important venting of condensable vapors. The vapor option is available on all models of the Autosorb-iQ, one- and two-station versions.

### Density Analyzer Gas Pycnometer Pentapyc™ 5200e/Pentafoam™5200e

Five station, automatic gas pycnometer for specific volume and true (skeletal) density measurement of porous solids and powders. Each of the five stations can be individually “tailored” for different sample amounts/shapes. Features data archiving to PC (Ethernet) or USB flash/thumb drive, interface to electronic balance and USB printer port. Easy-seal covers ensure reproducible operation. Thermostatted version available



### Density Analyzer Gas Pycnometer Ultrapyc® 1200e

Single station automatic gas pycnometers for volume and density measurement of porous solids and powders. Ultrapyc 1200e up to 135 cm<sup>3</sup> sample volume, micro-Ultrapyc 1200e down to 0.1 cm<sup>3</sup>. Like the Pentapyc 5200e, it operates via keypad or your PC and standard web browser. Same standard features as the Pentapyc. Additional vacuum purge option reduces consumption of analysis gas.



### Density Analyzer Gas Pycnometer Micro-Ultrapyc 1200e

The cell type of porous materials correlates with performance attributes such as strength, fluid exclusion (or acceptance) and insulating properties. Closed cells impart water resistance, thermal insulation, buoyancy and resilience. Open cells determine properties related to filtration, acoustics and wicking.



### Density Analyzer Gas Pycnometer Ultrafoam™1200e

Upgraded pycnometers for cellular plastics etc.; both conform to ASTM D6226. Pre-programmed modes include open and closed cell %, isometric compressibility and rigid foam fracture. Both retain all the features of the standard automatic pycnometers including normal density mode, with rapid switching between methods.



### Density Analyzer Automated Tap Autotap™ / Dual Autotap™

Tap density analyzers for bulk density and powder packing tests including Hausner Ratio and Carr index for predicting flowability. Built-in counter for error-free operation. Automated one and two sample models feature unique adapters for range of sample cylinder volumes. Also used for envelope (geometric) density measurement by dry powder displacement.





### Carbo 510 Smart Sensor

Our proven online CO<sub>2</sub> sensors have taken the next leap in their evolution: The Carbo 510 Smart Sensor has arrived. This sensor delivers values every 15 seconds and is hailed as the fastest CO<sub>2</sub> analyzer on the market. It is designed in accordance with the hygiene guidelines of EHEDG (European Hygienic Engineering & Design Group) and provides the highest accuracy and reliability.



### Carbo 520 Optical

Anton Paar's patented\* innovations offer you true values: on any beverage – at any time. With the new Carbo 520 Optical inline sensor you always know the actual CO<sub>2</sub> concentration of all beverages in your process. In addition to process monitoring, the measuring interval of 4 seconds enables a reliable and stable closed-loop control of carbonators.



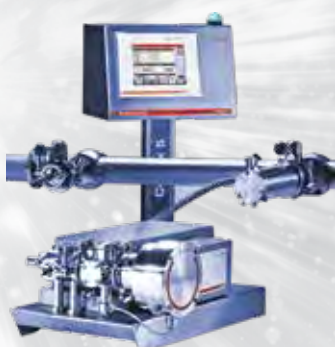
### Inline Refractometer L-Rix 510/520

Enjoy the simplicity of refractive index measurement without maintenance or adjustments. Soldered optics: no serviceable sealing with full CIP/SIP capability, Full range sugar scale instrument 0 to 100%, Accomplishes hygiene requirement according to the European Hygienic Engineering & Design Group, Integrated display and evaluation unit with standard industrial interfaces.



### Inline Viscometer: L-Vis 510

L-Vis 510 is an inline viscometer which is immersed directly in the production liquid. It continuously displays the viscosity and temperature of lubricants, starch adhesives, suspensions, and many more process liquids, allowing 24-hour production monitoring. L-Vis 510 is available in three versions: L-Vis 510 Smart Sensor combined with an mPDS 5 evaluation unit L-Vis 510 Smart Sensor with Operating Terminal (OT)- the measurement values are displayed directly on the instrument.



### Cobrix 5500/5600

The new Cobrix 5500 and Cobrix 5600 provide continuous measurements of °Brix, %Diet, and CO<sub>2</sub> during soft drink production. Being pre-adjusted in the factory, they do not require time-consuming, product-specific on-site adjustments and commissioning procedures. Besides measuring °Brix, %Diet, and CO<sub>2</sub> concentration, various other parameters, such as alcohol content, sugar inversion, and optionally also conductivity, color, and oxygen, can be determined.



### **Inline Oxygen Sensor Oxy 510**

The oxygen content is a crucial parameter for the taste and shelf life of beverages. Oxy 510 is an inline oxygen sensor which measures dissolved oxygen (DO) in real-time. It provides accurate, drift-free measurements throughout the entire production process. Oxy 510 extends the Anton Paar portfolio for multiple-parameter analysis of beverages and can easily be combined with additional process sensors to meet all future production and quality control requirements.



### **Density Sensors Series L-Dens 7000**

The new L-Dens 7000 series – the new generation of Anton Paar’s process density sensors with a tube size of 6.3 mm (inner diameter) – is a result of more than 35 years of essential practical experience. There are two types: 4-digit accuracy L-Dens 7400 and 5-digit accuracy L-Dens 7500. Density values are directly calculated by the sensor electronics.



### **Density Sensors L-Dens 3300**

The new L-Dens 3300 density sensor is a powerful and flexible measuring instrument for online density measurement and concentration determination at a 3-digit accuracy. It continuously determines the density and concentration of liquids. The wide range of application programs makes the instrument extremely versatile, even for small lab production setups. W-shaped oscillating tubes made of glass enable the measurement of aggressive media such as sulphuric acid.



### **Sound Velocity Sensors L-Sonic 5100/L-Sonic 6100**

30 years of experience have substantially contributed to the development of the new generation of sound velocity sensors. The new sensors offer two types of sensing elements: a fork-type L-Sonic 5100 and a tube-type L-Sonic 6100. They are ready for various applications, such as inline concentration measurements, interface detection, or product identification. The sensors continuously monitor the product quality of liquids during production.



### **DAVIS 5: Software for the recording, storing, visualization and analysis of measured data**

Davis 5 continuously records all sensor-specific and product-specific data which are determined by the mPDS 5 evaluation unit. The modern interface design of the software makes it intuitive and extremely easy to use.

### REAL-TIME PCR (qPCR)



#### QuantStudio 1 System

The Applied Biosystems QuantStudio 1 Real-Time PCR System makes quality and reliability the practical choice. This affordable instrument offers basic features ideal for those new to qPCR or those who have a limited budget. Despite its affordability, the QuantStudio 1 system offers the quality, reliability, and advanced user experience of our QuantStudio family of instruments.



#### QuantStudio 3 and 3D Digital PCR System

Now you can get up and running quickly with the Applied Biosystems QuantStudio 3 Real-Time PCR System, a simple and affordable real-time PCR solution designed for users with all levels of experience. Go beyond the limits of real-time PCR. QuantStudio 3D Digital PCR System produces absolute quantification data with the precision and sensitivity you need for your more demanding applications.



#### QuantStudio 5 System

The QuantStudio 5 Real-Time PCR System is ideal for all levels of users who need a high-performance instrument with features for maximum experiment control. With built-in security features, locked workflows, user account management and options for Web browser-based or desktop analysis, the QuantStudio 5 Real-Time PCR System helps connect you to your data more easily than ever before and offers uncompromising performance and quality.



#### QuantStudio 6 Flex System

The Applied Biosystems™ QuantStudio™ 6 Flex Real-Time PCR System is ideal for laboratories with multiple applications and end users on a limited budget. With a planned upgrade path to a Applied Biosystems™ QuantStudio™ 7 Flex System that accommodates automation or TaqMan Array Cards, the QuantStudio 6 Flex System is an ideal qPCR platform to accommodate changing future needs.



#### QuantStudio 7 Flex System

The Applied Biosystems™ QuantStudio™ 7 Flex Real-Time PCR System delivers the proven reliability, sensitivity, and accuracy of the Applied Biosystems™ ViiA™ 7 System in a new industrial design. The QuantStudio 7 Flex System has been optimized to enable the broadest range of quantitative PCR applications, with additional dyes, formats, and automation options.



#### QuantStudio 12K Flex System

Combining flexible throughput capabilities with a streamlined workflow, the Applied Biosystems™ QuantStudio™ 12K Flex system takes you from targeted discovery through confirmation and screening, all on a single platform.

### REAL-TIME PCR (qPCR)



#### **Real-Time PCR System StepOne/StepOnePlus™**

The StepOne/StepOnePlus™ Real-Time PCR System is a 96-well Real-Time PCR instrument perfect for both first-time and experienced users. The StepOnePlus™ Real-Time PCR System can be setup in a variety of configurations and comes ready to use, out of the box. The StepOnePlus™ Real-Time PCR System is designed to deliver precise, quantitative Real-Time PCR results for a variety of genomic research applications.



#### **PCR Instrument 7500 Fast Real-Time, with laptop computer**

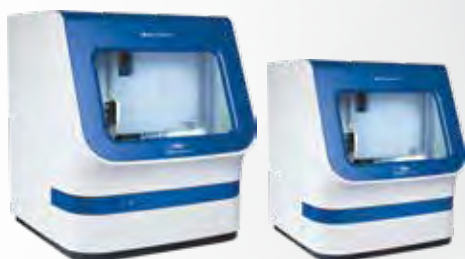
The Applied Biosystems™ 7500 Fast Real-Time PCR Instrument, with Sequence Detection System (SDS) Software, is a 96-well, 5-color real-time PCR instrument available for in vitro diagnostic use. Based on Peltier block technology, the 7500 Fast Real-Time PCR Instrument is designed to deliver the performance required for high-quality results, in a 96-well format.

### SANGER SEQUENCING



#### **Genetic Analyzer SeqStudio**

The new Applied Biosystems SeqStudio Genetic Analyzer is a low-throughput, easy-to-use, and convenient benchtop system that delivers gold standard Sanger sequencing and fragment analysis with just a simple click. It is easily used across a broad range of applications as well as by multiple users.



#### **Genetic Analyzers 3500 and 3500 xL Series**

The 3500 (8-capillary) and the 3500 (24-capillary) Genetic Analyzers are new standard in capillary electrophoresis. The 3500 DX series instruments are the first genetic analyzers designed with a specific feature set and workflow. The complete product combines the instrument with Applied Biosystems® reagents, consumables and software.



### NGS Ion PGM System

The Ion PGM™ System makes affordable, high-quality next generation sequencing accessible to scientists around the world. The Ion PGM™ System is a reliable sequencing platform that combines simple sample preparation and data analysis solutions with scalable chip output, for ultimate project flexibility. With this system, human disease researchers can perform a variety of targeted gene sequencing applications, such as variant detection in cancer and genetic disorders.



### NGS Ion Chef™ Instrument

The Ion Chef System is the next generation of workflow simplification products for the Ion S5, Ion Proton, and Ion PGM systems. The Ion Chef System provides automated library preparation, template preparation, and chip loading for users at any experience level. In less than 15 minutes of up-front hands-on time and with the use of pre-packaged library preparation reagent kits.



### Ion GeneStudio S5 System

The Ion GeneStudio S5 Series is flexibly designed to enable a broad range of targeted NGS applications with industry-leading speed and scalability. Select from five different sequencing chips to sequence a throughput range from 2M to 130M reads per run. Simply choose the chip size and the instrument that matches your throughput and application needs. Comes in 3 models Ion GeneStudio S5 System, Ion GeneStudio S5 Plus System and Ion GeneStudio S5 Prime System



### Ion GeneStudio S5 Plus System

With cartridge-based reagents, the system is simple to use and offers scalability and flexibility. It uses Ion 5 Series chips to support a broad range of high-throughput sequencing for clinical research and research applications from microbial genomes and gene panels to exomes and transcriptomes.



### Ion GeneStudio S5 Prime System

The Ion GeneStudio S5 Prime System enables unparalleled breadth and depth, from large panels or exomes to clinical oncology research focused on low allele frequency applications. With cartridge-based reagents, the system is simple to use and offers scalability and flexibility. It uses Ion 5 Series chips to support a broad range of high-throughput sequencing for clinical research and research applications from microbial genomes and gene panels to exomes and transcriptomes.





#### **Thermal Cyclers MiniAmp Plus and MiniAmp**

The Applied Biosystems MiniAmp Thermal Cycler is a compact, accurate, and economical thermal cycler designed to fit your lab's basic thermal cycling needs. The MiniAmp Thermal Cycler has a 5-inch color touchscreen, making it easy to control, and it can also be accessed through Thermo Fisher Connect, giving you the freedom to design and securely upload your methods from any mobile device or desktop computer.



#### **Thermal Cycler SimpliAmp**

Elegant design, smart choice. Compact design saves bench space. Easy to operate—large, color LCD touch-screen that simplifies operations. Three independent temperature zones for PCR optimization—features VeriFlex Blocks.



#### **Thermal Cycler Veriti**

Easy-to-program, robust thermal cycling. Six temperature zones for PCR optimization features Applied Biosystems™ VeriFlex™ Blocks. Easy to operate—easy-to-use graphical interface, fast protocol setup, and convenient protocol transfer with a USB memory stick.



#### **PCR System ProFlex**

High-performance thermal cycler with advanced flexibility and control, Multiuser accessible run three experiments at once with three independently controlled blocks. Flexible block configuration accepts five different block formats for optimization and throughput, including the triple 32-well block with independent control



#### **3500 & 3500xL Series Genetic Analyzers**

The Applied Biosystems™ 3500 Series Genetic Analyzer is designed to maintain the unsurpassed application versatility that life science researchers . The versatile throughput system (48–1200 samples per day) supports a wide variety of applications using its DNA sequencing and fragment-sizing capabilities and, unlike its predecessors, has been designed with a specific feature set and workflow for Human Identification (HID) applications.



#### **7500 Real-Time PCR System for Human Identification**

The Applied Biosystems® 7500 Real-Time PCR System for Human Identification provides an advanced, validated solution for casework, databasing, and paternity applications.



#### **HID Veriti™ 96-Well Thermal Cycler, 0.2 mL**

The HID Veriti® Thermal Cycler features a 96-well (0.2 mL) format with six independent temperature zones to provide precise temperature control and rapid temperature changes for conducting polymerase chain reactions (PCR). Each HID Veriti® 96-Well Thermal Cycler features a powerful color touch screen and a USB port to simplify instrument setup and use.



#### **HID Instruments for QuantStudio 5 Real-Time-PCR**

The QuantStudio 5 Real-Time PCR System is ideal for all levels of users who need a high-performance instrument with features for maximum experiment control. With built-in security features, locked workflows, user account management and options for Web browser-based or desktop analysis, the QuantStudio 5 Real-Time PCR System helps connect you to your data more easily than ever before and offers uncompromising performance and quality.



#### **AutoMate Express™ Forensic DNA Extraction HID System**

The AutoMate Express™ Forensic DNA Extraction System is an easy to use, robust bench-top instrument that utilizes the PrepFiler Express™ and PrepFiler Express BTA™ chemistries packaged in pre-filled, foil sealed cartridges. We have designed the PrepFiler chemistry specifically to improve the quantity and quality of DNA isolated from forensic samples, thereby increasing the potential to obtain maximum information from downstream Short Tandem Repeat (STR) analysis.



#### **Ion Chef System Human Identification**

The Ion Chef™ System for human identification (HID) does the repetitive lab work without the need for complex robotics and confusing scripts. Paired with Ion Torrent™ nextgeneration sequencing platforms (Ion PGM™ and Ion S5™ Systems), the Ion Chef System automates Ion AmpliSeq™ library preparation, template generation, and chip loading with push-button simplicity—enabling DNA to data in as little as 45 minutes of hands-on time.

## HUMAN IDENTIFICATION SOLUTIONS

### FLOW CYTOMETRY INSTRUMENTS



#### **Attune NxT Flow Cytometer With Attune NxT Autosample**

The 2018 Invitrogen Attune NxT Flow Cytometer with acoustic focusing technology is now available with 6 fluorescence detectors off the violet laser, allowing measurement of up to 11 fluorescence parameters with a 2-laser instrument, 12 fluorescence parameters with a 3-laser instrument, or 14 fluorescence parameters with a 4-laser instrument (Table 1).

### MICROARRAY INSTRUMENTS



#### **GeneChip™ Scanner 3000 7G System**

The GeneChip™ Instrument System is a fully integrated platform for conducting your research using GeneChip brand probe arrays. We offer three versions of this system: The GeneChip Scanner 3000 7G System, GeneChip Scanner 3000 7G Whole-Genome Association System and the GeneChip Scanner 3000 Targeted Genotyping System.

### SAMPLE PREP INSTRUMENTS FOR SEQUENCING



#### **Pharma KingFisher™ Flex 96 Deep-Well Magnetic Particle Processor**

intended for pharmaceutical analytics applications and is an excellent option for facilities that wish to automate their PrepSEQ™ Residual DNA or PrepSEQ™ 1-2-3 nucleic acid extraction kit protocols. The KingFisher Flex platform is a premier automated platform designed to meet your high-throughput needs. It seamlessly incorporates the rapid, reliable, and cost-effective magnetic bead-based extraction of nucleic acids that you expect from PrepSEQ technology with a 96-well automation system.



#### **pH & ORP measurement**

Meet your pH and ORP needs with an extensive line of pH meters, pH electrodes, buffers, and kits designed to make your complex lab and field measurements routine and reliable.

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#### **Conductivity Measurement**

Our benchtop meters, conductivity probes, conductivity cells, and conductivity standards are designed to offer maximum repeatability and accuracy in your conductivity readings.

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#### **Ion Concentration Measurement (ISE)**

Meters, electrodes, and solutions designed to measure a range of ions, including fluoride, chloride, ammonia, sodium, silver sulfide, bromide, cadmium, calcium, carbon dioxide, cyanide, and more.

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#### **Dissolved Oxygen Measurement**

Dissolved oxygen meters, rugged dissolved oxygen probes, and solutions designed to meet your standards for performance and price for your dissolved oxygen readings.

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#### **Multiparameter Meters**

Measure pH, ion concentration, conductivity, dissolved oxygen, and temperature with a single, powerful meter. Our benchtop and portable multiparameter meters are designed to increase your productivity in the lab and in the field.



#### **pH & ORP measurement**

Meet your pH and ORP needs with an extensive line of pH meters, pH electrodes, buffers, and kits designed to make your complex lab and field measurements routine and reliable.

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#### **Conductivity Measurement**

Our portable conductivity meters, conductivity probes, conductivity cells, and conductivity standards are designed to offer maximum repeatability and accuracy in your conductivity readings.

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#### **Ion Concentration Measurement (ISE)**

Meters, electrodes, and solutions designed to measure a range of ions, including fluoride, chloride, ammonia, sodium, silver sulfide, bromide, cadmium, calcium, carbon dioxide, cyanide, and more.

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#### **Dissolved Oxygen Measurement**

Dissolved oxygen meters, rugged dissolved oxygen probes, and solutions designed to meet your standards for performance and price for your dissolved oxygen readings.

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#### **Multiparameter Meters**

Measure pH, ion concentration, conductivity, dissolved oxygen, and temperature with a single, powerful meter. Our benchtop and portable multiparameter meters are designed to increase your productivity in the lab and in the field.



### **pH Titrator Orion Star T910**

Use the Orion Star T910 pH titrator for dedicated acid-base titrations including titratable acidity of juices and wines, acidity of food products, alkalinity of waters, acidity and alkalinity of consumer products, total acid number (TAN) and total base number (TBN). Titration techniques include equivalence point titrations and preset pH endpoint titrations for versatile sample analysis.



### **Redox Titrator Orion Star T920**

Use the Orion Star T920 redox titrator for dedicated redox titrations including sulfite/SO<sub>2</sub> and reducing sugar in juice and wine, ascorbic acid (vitamin C) and peroxide value in food products, dissolved oxygen in wastewater by Winkler titration and organic matter in soil. Titration techniques include equivalence point titrations and preset mV endpoint titrations for versatile sample analysis.



### **Ion Titrator Orion Star T930**

Use the Orion Star T930 ion titrator for dedicated ion concentration titrations including salt in food products, calcium in juice and milk, total hardness of drinking water and wastewater, chloride in drinking water and wastewater, ammonia and Total Kjeldahl Nitrogen (TKN) of wastewater and surfactants in consumer products. Titration techniques include equivalence point titrations and preset mV endpoint titrations plus multiple known addition (MKA) mode.



### **All-in-One Titrator Orion Star T940**

Use the Orion Star T940 all-in-one titrator for flexible pH, redox and ion concentration titrations including equivalence point titrations, preset pH or mV endpoint titrations plus multiple known addition (MKA) mode for automated known addition of various ions.



#### **GenPure standard water system**

Produce Type 1 ultrapure water with consistent quality for your most demanding and sensitive applications with the Thermo Scientific™ Barnstead™ GenPure™ water purification system. This system offers outstanding control, high-precision and USP-complying conductivity measurement with temperature compensation that can be switched on or off. All GenPure™ systems exceed international standard ASTM Type I, ISO 3696 Grade 1, ASTM D1193 and CLSI-CLRW.



#### **GenPure Pro water system**

Produce Type 1 ultrapure water while conserving space with the compact and flexible Thermo Scientific™ Barnstead™ GenPure™ Pro Water Purification System. Suitable for the most demanding laboratory applications, this system delivers 18.2 megohm-cm water with consistent quality. Gain flexibility with the dispenser that reaches up to 24" (60cm) from the unit. It can be used on a laboratory bench or on a wall. Integrated feed water monitoring helps to maximize cartridge life. Easily change cartridges within seconds with Aquastop quick-connects.



#### **GenPure xCAD Plus water system**

Gain flexibility in the lab with the new Thermo Scientific™ Barnstead™ GenPure™ xCAD Plus Ultrapure Water Purification System. Its advanced technologies allow for simultaneous dispensing from up to three remote dispensers for ease of use in shared laboratory environments. This lab water system comes with leak detection, electronic dispensing for fully automatic volume control and feed water monitoring that alerts users to fluctuations in the feed water quality. All consumables needed for start-up come with the system, allowing for simple ordering and setup.



### HID Quantification Kit

The Quantifiler® Duo DNA Quantification Kit enables forensic laboratories to simultaneously obtain a quantitative and qualitative assessment of total human and human male DNA in a single, highly sensitive real-time PCR reaction. This guides selection of the optimal STR chemistry (autosomal, Y-STR or miniSTR) and streamlines the workflow while increasing downstream analysis success rates.



### Identifiler™ Plus

Optimized for casework, the AmpFLSTR Identifiler Plus PCR Amplification Kit enables forensic analysts to recover more interpretable results from a wider range of DNA evidence samples with increased confidence. The new kit includes the same primers and allelic ladder as the widely used Identifiler Kit and harnesses next-generation PCR amplification technology to help provide enhanced sensitivity, a cleaner baseline, improved performance on mixtures, and the ability to overcome high levels of PCR inhibition.



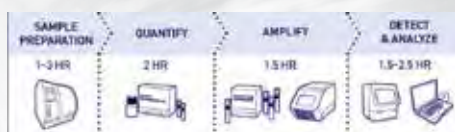
### Yfiler Plus PCR Amplification Kit

Y-STR analysis focuses on short tandem repeats (STRs) found on the Y chromosome, only carried by male individuals. For forensic labs, the most common application of Y-STRs is in criminal cases such as sexual assault, where evidence samples are difficult to resolve with traditional autosomal STR analysis due to low amounts of male DNA present in a high background of female DNA.



### Flow Cytometry Assays and Reagents

Innovative, robust technologies for flow cytometry. We are committed to accelerating your science by providing a comprehensive suite of solutions for the analysis of cells and their function by delivering you our flagship flow cytometry products designed to deliver high-performance results and save you time.



### GlobalFiler STR Kits

Around the world, forensic labs are asked to do more with less. That's why Applied Biosystems GlobalFiler STR kits are tailored to combine maximum data recovery power with reduced amplification time. As part of the only fully integrated and validated forensic workflow, this 6-dye, 24-locus technology is designed to deliver superior lab performance—all facilitated by high-quality manufacturing at our ISO18385 certified facility, along with comprehensive training, service, and support.





## MPS ROBOTIC ARM

## GC &amp; GC/MS

**MPS Robotic Arm for GC and GC/MS**

GERSTEL GC & GC/MS solutions are based on proven GC or GC/MS instrumentation from the market leader Agilent Technologies. The GERSTEL MAESTRO software provides efficient integrated control of sample preparation and GC or GC/MS analysis from one method and one integrated sequence table. GERSTEL is the leading partner of Agilent Technologies world-wide for customer focused solutions. GERSTEL solutions are available on all standard GCs. GERSTEL - Your partner for GC and GC/MS customer focused solutions.

## LC &amp; LC/MS

**MPS Robotic Arm for LC and LC/MS**

The GERSTEL MultiPurpose Sampler MPS is a highly productive LC autosampler and sample preparation robot for up to 3456 samples. In combination with the GERSTEL MAESTRO Software, the MPS provides more performance and higher productivity in sample preparation than any other commercially available LC/MS or LC autosampler. The MPS is compatible with all standard LC Systems.

## MPS LIQUID

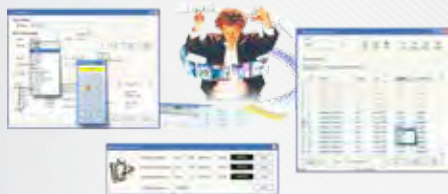
**MPS Liquid for GC/MS and LC/MS Analysis Workflow**

Focusing on the core tasks of an autosampler, the MPS liquid offers large sample capacity, modern intuitive software control, as well as the capability to perform key sample preparation steps such as the addition of internal standards or a derivatization reagent. The MPS helps you ensure that your laboratory offers fast, responsive and productive analyses. Last but not least, the MPS liquid helps to ensure that your results are reliable and accurate.

## MPS ROBOTIC WORKSTATION

**MPS Robotic WorkStation**

The stand-alone MPS robotic Work- Station operates independent of the analysis instrumentation enabling it to prepare samples for multiple analysis techniques. The modular concept of the MPS makes it easy to change to other sample preparation methods enabling you to react quickly and flexibly to changes in lab requirements.



### MAESTRO Software

The MAESTRO software operates all GERSTEL modules and system solutions in a simple and efficient manner. MAESTRO can be operated as stand-alone software or fully integrated with the Agilent Technologies ChemStation. Just one method and one sequence table run the complete system from Sample Prep and Sample Introduction to GC/MS or LC/MS analysis. Set-up is performed in a very simple manner: By mouse-click.



### Headspace Syringe Kit

GERSTEL Headspace Syringe kit consisting of GERSTEL universal headspace syringe holder; plunger holder; 2 syringes



### Microliter Syringes for LC & LC/MS

The needle types 22 and 22S have the same outer diameter: 0.72 mm OD and a straight needle tip (Type LC or 3). Type 22 and 22S differ only by their internal diameter (0.41 mm and 0.15 mm ID respectively); Due to the larger ID, a type 22 needle enables faster syringe filling: Up to 200  $\mu\text{L}/\text{sec}$  for type 22 as opposed to 10 – 20  $\mu\text{L}/\text{sec}$  for the 22S.



### Crimp Caps with Septum for Vials

If vials need to be reopened and emptied after analysis, magnetic vial caps with aluminum edges (Bi-metal) offer the best solution. The softer edges allow easy crimping and decrimping using a hand-crimper. If steel caps are used, it is recommended to use a bench-top crimper.



### Crimp Cap Vials

Minimize contamination from handling with Crimp Cap Vials; compatible with most HPLC and GC autosamplers. with low metal content, to protect your sample from destabilizing or leaching. By choosing our caps and septa, you provide your sample with a the best containment solution available.



### TriStar Syringes

Autosampler Syringes for the MPS You need an excellent autosampler syringe in order to perform complex sample preparation methods and reliably inject large series of samples to a chromatography system. Lowest possible sample to sample carryover and highest accuracy are required. Modern mass spectrometers detect every trace contamination placing high demands on rinsing, solvent quality and syringe quality.



### Jaw Crusher BB 50

The Jaw Crusher BB 50 has been specially designed for sample preparation in the laboratory. It is used for the rapid, effective crushing and pre-crushing of medium-hard, hard, brittle and tough materials. The space-saving, dust-tight instrument fits on any laboratory bench and is ideally suited to crush small amounts of sample with large feed sizes gently and without loss.



### Ultra Centrifugal Mill ZM 200

The Ultra Centrifugal Mill ZM 200 is a high-speed rotor mill with unmatched performance. It is used for the rapid size reduction of soft to medium-hard and fibrous materials. Because of the efficient technique it employs, the ZM 200 ensures the gentle preparation of analytical samples in a very short time.



### Cutting Mill SM 100

Cutting mills are suitable for the grinding of soft, medium-hard, elastic, fibrous, and heterogeneous mixes of products. The SM 100 is the budget-priced basic model among the RETSCH cutting mills. With its strong 1.5 kW drive and 1,500 rpm rotor speed the mill is particularly suitable for routine applications. Cleaning is made particularly easy.



### Knife Mill GRINDOMIX GM 200

The knife mill GRINDOMIX GM 200 is the ideal instrument for grinding and homogenizing foods and feeds. It allows to process sample volumes up to 0.7 liters quickly and reproducibly. With two sharp, robust blades and a powerful 1000 W motor, it is ideal for homogenizing substances with a high water, oil or fat content as well as for grinding dry, soft and medium-hard products.



### Mortar Grinder RM 200

Mortar Grinder can mix and homogenize powders, suspension and pastes even with high viscosity. The RM 200 is suitable for the proper and reproducible sample preparation to analytical fineness.



### Vibratory Disc Mill RS 200

The Vibratory Disc Mill RS 200 is suitable for the extremely quick, loss-free and reproducible grinding of medium-hard, brittle and fibrous materials to analytical fineness. The instrument runs steadily and smoothly, even with heavy grinding sets, at maximum speed thanks to the new Stabilized-Plane-Drive.

## LABORATORY MILLS, GRINDERS & CRUSHERS



### High Energy Ball Mill E<sub>max</sub>

The E<sub>max</sub> is an entirely new type of ball mill for high energy milling. The unique combination of high friction and impact results in extremely fine particles within the shortest amount of time. The high energy input is a result of an unrivaled speed of 2000 min<sup>-1</sup> and the optimized jar design.



### Planetary Ball Mill PM 100

Planetary Ball Mills are used wherever the highest degree of fineness is required. In addition to well-proven mixing and size reduction processes, these mills also meet all technical requirements for colloidal grinding and provide the energy input necessary for mechanical alloying. The extremely high centrifugal forces of a planetary ball mill result in very high pulverization energy and therefore short grinding times.



### Mixer Mill MM 200

The mixer mill MM 200 is a compact versatile benchtop unit, which has been developed specially for dry grinding of small amounts of sample. It can mix and homogenize powders in only a few seconds. It is also perfectly suitable for the disruption of biological cells as well as for DNA/RNA extraction. With its high performance and great flexibility the mixer mill MM 200 is a unique product in the market.

## SIEVING & FRACTIONING



### Vibratory Sieve Shaker AS 200 basic/ AS 200 digit cA/ AS 200 control

The vibratory sieve shakers of the series AS 200 are used in research & development, quality control of raw materials, interim and finished products as well as in production monitoring. The controllable electromagnetic drive offers an optimal adaption for every product. Sharp fractions are obtained even after short sieving times. The AS 200 basic sieve shaker is the economical alternative of the series with familiar RETSCH quality and reliability.



### Tap Sieve Shaker AS 200 tap

The analytical sieve shaker AS 200 tap is used in research & development, quality control of raw materials, interim and finished products as well as in production monitoring. Its tapping motion supports the sieve analysis of certain products such as activated carbon, abrasives, metal powder, spices and diamonds, as specified in the corresponding standards.



### Test Sieves

The well-proven RETSCH sieves consist of a solid stainless-steel sieve frame of high stability for reliable sieving results. Paying close attention to mesh-specific requirements, the sieve fabric is precisely joined into the frame and tautened. The individual laser engraving of each RETSCH test sieve provides a clear and accurate labeling with full traceability.



### EasySieve / EasySieve CFR Evaluation Software

EasySieve, the software for particle size analyses, exceeds manual evaluation in many aspects, due to the fact that the software is able to automatically control the necessary measurement and weighing procedures – from the registration of the weight of the sieve up to the evaluation of the data. It is more simple and more comfortable to use than ever before, and, to put it simply, “easy”. The new EasySieve CFR version offers compliance with FDA 21 CFR Part 11.



### Dynamic Image Analysis CAMSIZER X2

The quality control of fine powders can be substantially improved with the new CAMSIZER X2: More precise and faster analysis of particle size and particle shape helps to improve the product quality, reduce rejects and save labor costs, energy and raw materials. The design of the CAMSIZER X2 is based on the well-proven optical particle measurement system Camsizer but is optimized for finer samples (from 0.8 µm to 8 mm).

## SAMPLE PREPARATION - DIVIDING, FEEDING, DRYING & PELLETIZING SAMPLES



### Sample Divider PT 100

The sample divider PT 100 divides a sample so exactly that the composition of each fraction of the sample corresponds exactly to that of the original bulk sample. This applies both for fine-powdered & coarse materials. The material feed and dividing processes take place automatically without interruption and without loss of material.

## SAMPLE PREPARATION - DIVIDING, FEEDING, DRYING & PELLETIZING SAMPLES



### **Pellet Press PP 25**

Solid, high-quality pellets are an important precondition for reliable and meaningful XRF analysis. The PP 25 is a compact benchtop unit with particularly simple and safe operation. With a pressure force of 25 t it is ideally suited for the preparation of solid samples for XRF analysis. The pellets produced are of high quality and are characterized by their high degree of stability.



### **Bond Index Tester BT 100 XL**

A detailed overview and knowledge of the characteristics of a raw material is of utmost importance, especially when planning the layout of a crushing plant. In order to minimize all possible risks extensive trials are necessary to obtain information on the properties of the raw materials. A clear definition of the required crushing capacities and the desired product quality can be precisely determined by using the Bond Index test methods.



### **Fluid Bed Dryer TG 200**

The fluid bed dryer TG 200 is used in quality control, sample preparation and R&D departments. It permits the gentle drying of organic, inorganic, chemical or pharmaceutical bulk materials without localized overheating. Suitable materials can be coarse, fine, crystalline, fibrous or leafy. The powerful fan of the fluid bed dryer ensures optimal air throughput so that the products to be dried are loosened up and thoroughly mixed resulting in short drying times.



### **Vibratory Feeder DR 100**

The vibratory feeder DR 100 is used for the uniform, continuous feeding and conveyance of pourable bulk materials and fine powders. The DR 100 feeds RETSCH mills, sample dividers, and particle measuring devices, and it is also suitable for other feeding tasks.



### **Ultrasonic Baths UR 1 & UR 3**

The ultrasonic bath range UR includes three sizes for cleaning test sieves and grinding tools quickly and easily. UR 1 is for test sieves up to 203 mm dia., UR 2 for test sieves up to 450 mm dia., and the UR 3 for the simultaneous cleaning of up to 5 test sieves 200/203 mm dia. The gentle yet thorough cleaning of test sieves in an ultrasonic bath increases their working lives as damage which could occur during manual cleaning is avoided.

## DIFFERENTIAL SCANNING CALORIMETRY (DSC)

**DSC 204 F1 Phoenix**

The DSC measuring cell consists of a cylindrical high-conductivity silver block with an embedded heating coil for broad thermal symmetry (3D symmetry) in the sample chamber, the cooling ports for liquid nitrogen or compressed air cooling and a cooling ring for connection of the intracooler (also with simultaneous liquid nitrogen cooling). The gas-tight construction and integrated mass flow controllers for the purge and protective gases allow coupling to an FT-IR or MS for gas analysis.

**Photo-DSC 204 F1 Phoenix**

The main advantage of light-curing systems is their fast reaction time. Monomer solutions which are mostly free of solvents can be cured within only a few seconds and already at low temperatures. A combination of thermal and light curing reactions is often applied to dual cure adhesives or paints. The NETZSCH Photo-DSC 204 F1 Phoenix®, Differential Photocalorimeter, works in the temperature range from -100°C to 200°C.

## SIMULTANEOUS THERMOGRAVIMETRY ANALYSIS (STA)

**STA 449 F3 Jupiter**

The simultaneous thermal analyzer NETZSCH STA 449 F3 Jupiter® allows the measurement of mass changes and thermal effects between -150°C and 2400°C. The high flexibility caused by the various sensors, the great variety of sample crucibles and the wide TGA-measuring range make the system applicable for analysis of all kinds of materials including also inhomogenous substances.

**STA 2500 Regulus**

The natural gas flow in the top-loading system guarantees automatic protection of the balance against condensation and contamination. The tailor-made differential balance system cancels out buoyancy and convection influences over a broad temperature range. This provides easy operation without the need for timeconsuming baseline runs.

### THERMOGRAVIMETRIC ANALYSIS (TGA)



#### **TG 209 F1 Libra**

In contrast with other thermobalances, no time-consuming baseline determinations need normally to be carried out with the TG 209 F1 Libra® prior to a measurement. The unique BeFlat® function of the Libra automatically compensates for any external factors influencing the measurement. This cut work hours by up to 50%, leaving more time available, for example, for further measurements.



#### **TG 209 F3 Tarsus**

The easy-to-use and cost-effective thermo-microbalance the thermo-microbalance, TG 209 F3 Tarsus®, represents a cost-effective overall concept, tailored not only to the quality assurance of polymers, but also to routine applications in the fields of organic, chemistry, pharmaceuticals, cosmetics and food.

### DILATOMETRY (DIL)



#### **DIL 402 Expedis Classic**

The dilatometer DIL 402 Expedis Classic offers state-of-the-art dilatometer technology and is designed for sophisticated applications. Like all instruments of the DIL Expedis series, the Classic version features the revolutionary NanoEye measuring cell; a new dimension in measuring range and accuracy.



#### **DIL 402 Expedis Select & Supreme**

The dilatometer DIL 402 Expedis Select and Supreme offer state-of-the-art dilatometer technology and are designed for a wide range of sophisticated applications. All instruments of the DIL Expedis series feature the revolutionary NanoEye measuring cell; a new dimension in measuring range and accuracy.



## THERMOMECHANICAL ANALYSIS (TMA)

**TMA 402 F1/F3 Hyperion®**

The heart of the TMA 402 Hyperion® is a highly precise inductive displacement transducer (LVDT). This technology has stood the test of time; it is also used for dilatometers and allows measurement of even the smallest of length changes, into the nanometer range (digital resolution of 0.125 nm).

## DYNAMIC-MECHANICAL ANALYSIS (DMA)

**DMA 242 E Artemis**

The new DMA 242 E Artemis combines ease of handling with the user-friendly Proteus® measurement and evaluation software. This makes it fast and easy to characterize the dynamic mechanical properties as a function of frequency, temperature and time. Its modular design along with a wide variety of sample holders and cooling systems allow the DMA 242 E Artemis to handle a broad range of applications and samples. Various add-on options make it the ideal device for any laboratory and a safe investment for the long-term.

**EPLEXOR Series Up to ±500 N.**

The testing instruments of the EPLEXOR® series up to ±500 N enable the dynamic mechanical (or static) characterization of a wide range of different materials including elastomers and polymers, composites, metals, glasses, ceramics, biomaterials and foods, adhesives, and liquids.

## SEEBECK COEFFICIENT AND ELECTRICAL CONDUCTIVITY (SBA)

**SBA 458 Nemesis**

The SBA 458 Nemesis® is heralded for its unique measurement setup, which accommodates more sample geometries than usually for this technique. Measurements can be carried out at temperatures up to 1100°C. The SBA 458 Nemesis® has two heavy systems that are employed in an alternating manner for each temperature step. Deviations from linearity and hysteresis due to inaccurate measurement can be immediately observed before and during the measurement.

## MULTIPLE MODE CALORIMETRY (MMC)

**MMC 274 Nexus Multiple Module Calorimeter**

The MMC 274 Nexus<sup>®</sup> consists of two parts: the base unit with electronics and the exchangeable calorimeter module. This guarantees maximum flexibility. Exchangeable calorimeter modules are available for different applications. The Accelerating Rate Calorimeter (ARC<sup>®</sup>) module can be used for standard process safety work. The External heater module can be employed for more sophisticated measurements. The HT Coin Cell Module can be used to characterize coin cell as a whole.

**MMC 274 Nexus for High Temperature Coin Cell Module**

The High Temperature Coin Cell Module is a new exchangeable calorimeter module for the MMC 274 Nexus<sup>®</sup> specially dedicated to coin cell battery studies. It is the only coin cell DSC module available. The instrument can be coupled with a fully featured battery analyzer. Data generated from the MMC run is merged with the data generated from the cycler/analyzer allowing for battery data and thermal data to be plotted and analyzed on the same axis.

## ACCELERATING RATE CALORIMETRY (ARC)

**Accelerating Rate Calorimeter 254 (ARC<sup>®</sup>)**

The easy-to-use and cost-effective thermo-microbalance The thermo-microbalance, TG 209 F3 Tarsus<sup>®</sup>, represents a cost-effective overall concept, tailored not only to the quality assurance of polymers, but also to routine applications in the fields of organic, chemistry, pharmaceuticals, cosmetics and food.

**IBC 284 – Isothermal Battery Calorimeter**

The instrument is designed to test the performance and safety of energy storage devices such as large format lithium ion batteries used extensively in electric vehicles and airplanes, as well as stationary power back-up and storage applications. The instrumentation is able to safely and accurately characterize heat output and efficiency of the batteries in varying temperature, pressure, load and use conditions, providing precise and critical information previously unavailable. Temperature has a strong impact on performance, safety, and life of batteries.



### DEA 288 Ionic - Dielectric Analyzer

The multi-functional design of the DEA 288 Ionic allows for the application of a great variety of different test conditions such as heat, cold or UV light. This enables the user to easily and conveniently determine the best parameters for processing the material



### PERSEUS® TG 209 F1 Libra®

The Perfect TGA-FT-IR Coupling Solution. Evolved Gas Analysis (EGA) is the perfect tool for characterizing the thermal behavior of organics, inorganics, or polymers in more detail, elucidating the chemistry behind the processes. The PERSEUS® TGA 209 F1 Libra® is robust and stands out by virtue of its high performance, compactness and attractive price. This instrument integrates the small but powerful FT-IR with the TGA and has the potential to fit into any laboratory – be it in universities or industry, quality assurance or development. Any existing NETZSCH TG 209 F1 Libra® system can be upgraded with the PERSEUS® coupling.

### TGA/STA-GC-MS Coupling

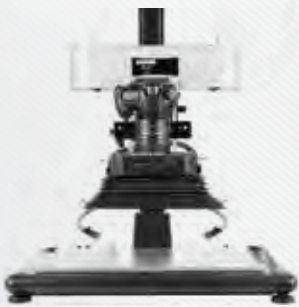
GC is a high-resolution method for separating volatile and semi-volatile compounds. The gas mixtures are separated based on the differences in component distribution between a stationary phase (e.g. inner coating of a capillary) and a mobile phase (purge gas, e.g. helium). Since this gas separation in the GC column takes a certain amount of time – the duration of which depends upon sample characteristics, column flow rate, column length, and stationary and mobile phase – it is not possible to couple directly into the GC with a continuous online sample gas flow.



### Proteus® Software for Thermal Analysis

First-rate software achievements that have been highly praised among experts, particularly in the area of evaluation (such as reaction kinetics or multicomponent analysis), attest to our high degree of technical progress and warrants the superiority of our products and services.

## FINGERPRINT EVIDENCE



### **Fingerprint Photography Workstations, DCS®5**

DCS 5 is a comprehensive imaging system for the detection, capture and enhancement of almost any type of fingerprint on any surface or background to ensure that maximum detail is revealed. Not only does the DCS 5 high resolution, 36.3MP camera fitted with application specific macro lenses produce images of exceptional quality, advanced digital enhancement, applied simply, maximises print detail to improve the value of evidence.



### **Fingerprint Imaging Accessory, Cylindrical Surface Unwrapper (CSU)**

'Un-wrap' 2D images of fingerprints on 3D objects including bullets, pens, tools & syringes etc. An innovative new accessory for use with the Crime-lite Imager and DCS fingerprint imaging systems, the Cylindrical Surface Un-wrapper (CSU) enables the forensic examiner to extract 2D images of fingerprints from a 3D cylindrical surface.



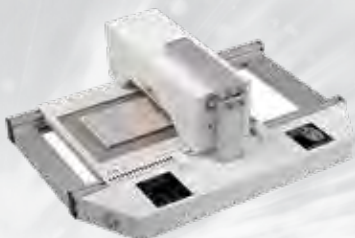
### **Fingerprint Fuming Systems, SUPERfume®**

SUPERfume is a cyanoacrylate fuming system for developing latent fingerprints in situ at major scenes of crime. Designed to treat domestic rooms, offices, garages, and vehicles, the kit eliminates the need for dismantling fixtures and fittings and transporting items back to the laboratory for processing.



### **Novel Fingerprint Enhancement Techniques, Crime-lite® ASV**

The Crime-lite ASV is a bench-top viewing enclosure for the stimulation of infrared activated anti-Stokes fingerprint dusting powders. Anti-Stokes powders absorb invisible infrared radiation and re-emit the energy at visible wavelengths, a process that is the reverse of standard fluorescence.



### **Thermal Fingerprint Developer, TFD-2**

Designed and manufactured by Foster + Freeman, the TFD-2 marks a breakthrough in the detection and enhancement of latent fingerprints using non-destructive thermal development. The first of its kind, the TFD-2 is an automated, high-throughput device capable of developing fingerprints on large quantities of documents, dramatically reducing examination time and manpower requirements.



### **Fingerprint Treatments, fpNATURAL® Powders**

IR fluorescent fingerprint powders fpNATURAL® reveal high contrast fingermarks whilst suppressing background interference. Despite the vast quantity of fingerprint treatments currently available, examiners continue to be frustrated by a number of 'difficult' substrates.

## LIGHT SOURCES



### Handheld Forensic Light Sources, Crime-lite®82S

Each Crime-lite 82S features 16 LEDs hand-picked for brightness and wavelength accuracy, ensuring consistent performance and effectiveness. The range includes UV, Violet, Blue, Blue/Green, Green, Orange, Red and Infrared narrow bandwidth illumination for detecting blood, body fluids, drugs, and fibers as well as for examining chemically treated fingerprints.



### Handheld Forensic Light Sources, Crime-lite®82L

16 high-intensity white LEDs mounted behind a cylindrical lens give a wide floor level light beam that is ideal for detecting surface debris and shoe prints. A concept developed by Foster + Freeman, the Crime-lite 82L produces a 'sheet' of variable intensity (10%, 50%, 100%) white light to reveal floor level evidence and is supplied with blue, green and red clip-on filters to enhance contrast on colored backgrounds.



### Handheld Forensic Light Sources, Crime-lite®2

A range of lightweight LED forensic light sources effective at short range providing intense, even and shadow free illumination for locating and examining evidence. The range includes a white light model for general search and eight narrow band light sources with wavelengths in UV, violet, blue, blue-green, green, orange, and red for detecting fluorescent stains.



### Handheld Forensic Light Sources, Crime-lite®XL

96 high power LEDs providing 115 Watts of narrowband illumination. Fully portable and robust, the XL has been optimized for wide area examination of crime scenes and emulates the power density and effectiveness of a forensic laser at a fraction of the cost.



### Forensic Laboratory Light Sources, Crime-lite®8x4MK2

The Crime-lite 8x4MK2 is designed to meet the varying demands of forensic photography enabling the operator to create the optimum illumination for all types of evidence and backgrounds, enhancing image contrast and definition.



### UV-Vis-IR Examination Systems, Crime Scene Investigation

Crime-lite® Beyond Visible is a unique range of products designed to search for evidence in the UV and IR wavebands - beyond the limits of human vision- in order to detect the presence of blood and other body fluids, and to reveal fingerprints while greatly suppressing backgrounds.

## DOCUMENT EXAMINATION



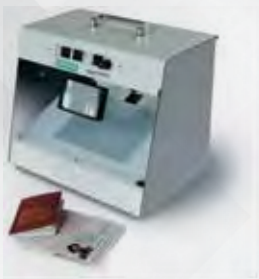
### VSC®8000/ VSC®80 & VSC®80i Workstations

The VSC®8000/ VSC®80 & VSC®80i Workstations combines sophisticated digital imaging and multi-wavelength LED technology with a clear and efficient software interface, to provide a complete solution to the examination of all forms of questioned documents.



### 2nd Line Document Examination, VSC®QC1+

Far more than a desktop scanner, the touchscreen VSC®QC1+ enables a series of high-level checks to be carried out on a passport or ID card in seconds, combining ease of use with rapid examination, facial comparison, and data capture.



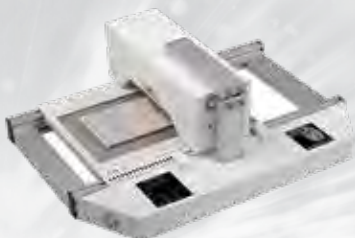
### 2nd Line Document Examination, eye-D®

Designed for checking standard security features of travel documents, the eye-D® is a low-cost system that can be deployed in large numbers to improve national and border security. Compact, lightweight, and with a padded carrying case that unfolds to provide light shielding, the eye-D® is designed for use in any location from either standard AC power source or 12V DC from a vehicle.



### Reveal Indented Writing, ESDA® 2 & ESDA®lite

ESDA® works by creating an electrostatic image of indented writing, which is then visualized by the application of charge sensitive toners. The sensitive imaging process reacts to sites of microscopic damages to fibers at the surface of a document, which have been created by abrasive interaction with overlying surfaces during the act of handwriting.



### Advanced Document Analysis, ECCO®2

With a large sample chamber, ECCO 2 is designed for the analysis of paper, glass, metals, paint, fibres, minerals and gunshot residues by laser induced breakdown spectroscopy (LIBS) providing elemental analysis on materials as small as 300 microns.



### Raman Spectrometers, FORAM®3

Fast, non-destructive and highly effective, Raman spectroscopy is an ideal technique for identifying and comparing substances of forensic value. Unlike other Raman systems, the foram3 has been developed specifically for forensic examinations and includes dedicated casework management software providing automatic spectral comparisons and data archiving with search and match facilities.

## TRACE EVIDENCE



### **Multi-Examination System Workstation, ffTAM**

The ffTA is a powerful and flexible multi-functional system that provides the crime laboratory with a range of analytical facilities on a single microscope operated through a single PC. By switching from module to module the operator can perform a wide range of analytical tasks to extract the maximum amount of forensic evidence in the shortest possible time.



### **Raman Spectra Databases**

A comprehensive collection of libraries has been compiled by S.T. Japan and formatted for use with the Forum and ffTA systems. In total over 9,000 spectra of common and specialist materials are available divided into 20 categories. In addition to identification databases provide information on manufacturer, lot number, appearance, purity, IUPAC name etc.



### **Forensic Laser-Induced Breakdown Spectroscopy (LIBS), ECCO®2**

With a large sample chamber, ECCO 2 is designed for the analysis of paper, glass, metals, paint, fibers, minerals and gunshot residues by laser-induced breakdown spectroscopy (LIBS) providing elemental analysis on materials as small as 300 microns.



### **Footwear Identification, SICAR®6**

SICAR 6, in conjunction with the SoleMate footwear database, is a complete solution for the identification of shoe prints recovered from crime scenes and the management of shoeprint evidence. A sole pattern coding technique is used to characterize a shoe print. The code set is then searched for in the footwear database for matches.



### **Footwear Identification, SoleMate®**

The SoleMate database contains details of more than 37,000 items of footwear including sample shoe prints. Updated four times per year with information and images of the latest sports, work and casual footwear from all major brands, SoleMate® provides users with the ability to identify shoe prints from crime scenes.



### **FPX VIEWER, Footwear Identification, SoleMate®**

SoleMate® FPX VIEWER allows users to quickly and easily identify footwear marks discovered at the crime scene using 'visual coding' method employed by SICAR 6. Using combinations of shapes, patterns, text and logos to describe the visible characteristics found on a scene of crime shoeprint, it is possible to identify matching items of footwear in SoleMate® in a matter of minutes via the intuitive search interface



### Electrochemical Detector - DECADE Elite

The DECADE Elite uses Antec's workstation concept, keeping the column and flow cell (separation and detection) at a very accurate and stable temperature. Stable working conditions are a prerequisite for trace analysis, without stability no sensitivity! In addition, the DECADE Elite has ADF (advanced digital filter) which is a noise elimination algorithm specially developed for electrochemical data. It further improves the detection limit, depending on conditions up to a factor 200. Detection sensitivity is especially eminent in neurotransmitter analysis. Together with the new SenCell bottom line detection limits down to 30 pmol/L have been obtained in 2  $\mu$ L sample. Antec provides a number of amperometric flow cells with different features for specific applications.



### Electrochemical Detector - DECADE Lite - The Entry Model

The DECADE Lite is a typical low cost entry model of an electrochemical detector and has therefore fewer features than the DECADE Elite. It can control only one flow cell (single cell control) and can be operated only in DC (direct current) mode. No pulse or scan mode are available. Furthermore, it has no keyboard and is operated by PC control. Sensitivity wise there is no difference between DECADE Lite and Elite. It has an integrated oven with Faraday cage, is equipped with the superior ADF (advanced digital filter) and is compatible with all Antec Scientific flow cells.

### Applications for Detection

For over 25 years, Antec is known for its electrochemical detectors (ECD), providing unprecedented sensitivity in HPLC analyses. In almost any kind of application in conventional HPLC, UHPLC, Micro-, Capillary- and Nano HPLC, ECD is extremely selective and sensitive. It is applied routinely in a number of analyses such as neurotransmitters, (poly)phenols, carbohydrates, and a large variety of pharmaceutical compounds.

The DECADE Elite detector with its advanced electronics provides an enormous linear dynamic range of more than 6 orders of magnitude. The DECADE Elite is used in Antec's ALEXYS systems and is compatible with any commercial HPLC or UHPLC system such as Waters, Agilent, Thermo-Fisher, Shimadzu, Jasco, Perkin Elmer, and Knauer.



Clinical & Diagnostics

Food and Environment

Neuroscience

Drugs & Pharmaceuticals





### OrigaStat - OGS080

- Potentiostat
- Galvanostat
- Impedancemeter
- Speed Controller for RDE
- 17V 100mA USB



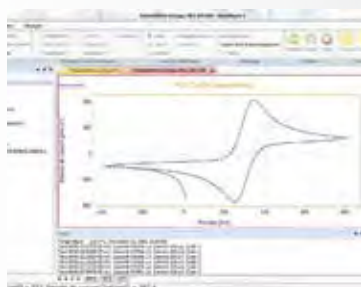
### OrigaStat - OGS100

- Potentiostat
- Galvanostat
- Impedancemeter
- pH-meter
- Temperature probe
- Speed Controller for RDE
- Control of external devices
- 17V and 100mA



### OrigaStat - OGS200

- Potentiostat
- Galvanostat
- Impedancemeter
- pH-meter
- Temperature probe
- Speed Controller for RDE
- Control of external devices
- 35V 2A USB



### OrigaMaster 5 Software

In addition to the usual methods it also features graphic programming of the sequence, the possibility of running conditional loops, cycle tests, and insertion of a mathematical equation. OrigaMaster automatically records all data obtained. OrigaMaster is fully compatible with VoltaMaster 4 (from Radiometer Analytical). Thus, all the curves and results you have obtained with VoltaMaster 4 can be used and processed with OrigaMaster. All the data from impedance measurement can be exported to be used with ZView.



### LandStat - 1 channel

- Potentiostat
- Galvanostat
- Impedancemeter :
  - o 100  $\mu$ Hz-1 KHz
- pH-meter
- Temperature probe
- Speed Controller for RDE
- Control of External devices
- 17,5V 100mA USB



### Origaflex - OGF01A

- Potentiostat
- Galvanostat
- Temperature Probe
- Connector for Battery holder
- 20V 1A USB



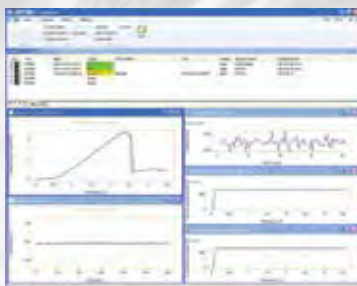
### Origaflex - OGF500

- Potentiostat
- Galvanostat
- Temperature probe
- Connector for Battery holder
- 20V 5A USB



### Origaflex - OGF05A

- Potentiostat
- Galvanostat
- Temperature probe
- Connector for Battery holder
- 20V 500mA USB



### OrigaViewer PC Software - OrigaSoft

All the OrigalyS' software include standard Electrochemical methods. Moreover, it offers a graphical display of your measurement sequence. Thanks to its Data base, OrigaViewer automatically saves all the results you obtained via Ethernet. De plus, OrigaViewer is a secure software, according to three levels of users: Administrator, Supervisors and Operator. Thus, all your data are protected and available only to the authorized people. OrigaViewer works together with OrigaMaster. The sequence of measurements ("flowchart") can be created with OrigaMaster and then used with OrigaViewer. De même, the results obtained with OrigaViewer can be exported and so process with OrigaMaster.



# OUR SERVICES



# H. A. SHAH & SONS

## CERTIFIED SERVICE - WORKING FOR YOU

When you purchase your instrument from H. A. Shah & Sons, you choose a high quality product that you rely upon for its accuracy and stability. Given the proper care, your instrument should provide years of reliable operation. H. A. Shah & Sons has several service programs designed to meet your needs. From the recommended preventive maintenance programs to repair coverage and emergency service, H. A. Shah & Sons will ensure you get the most out of your investment.

TO SERVICE YOUR INSTRUMENT CONTACT

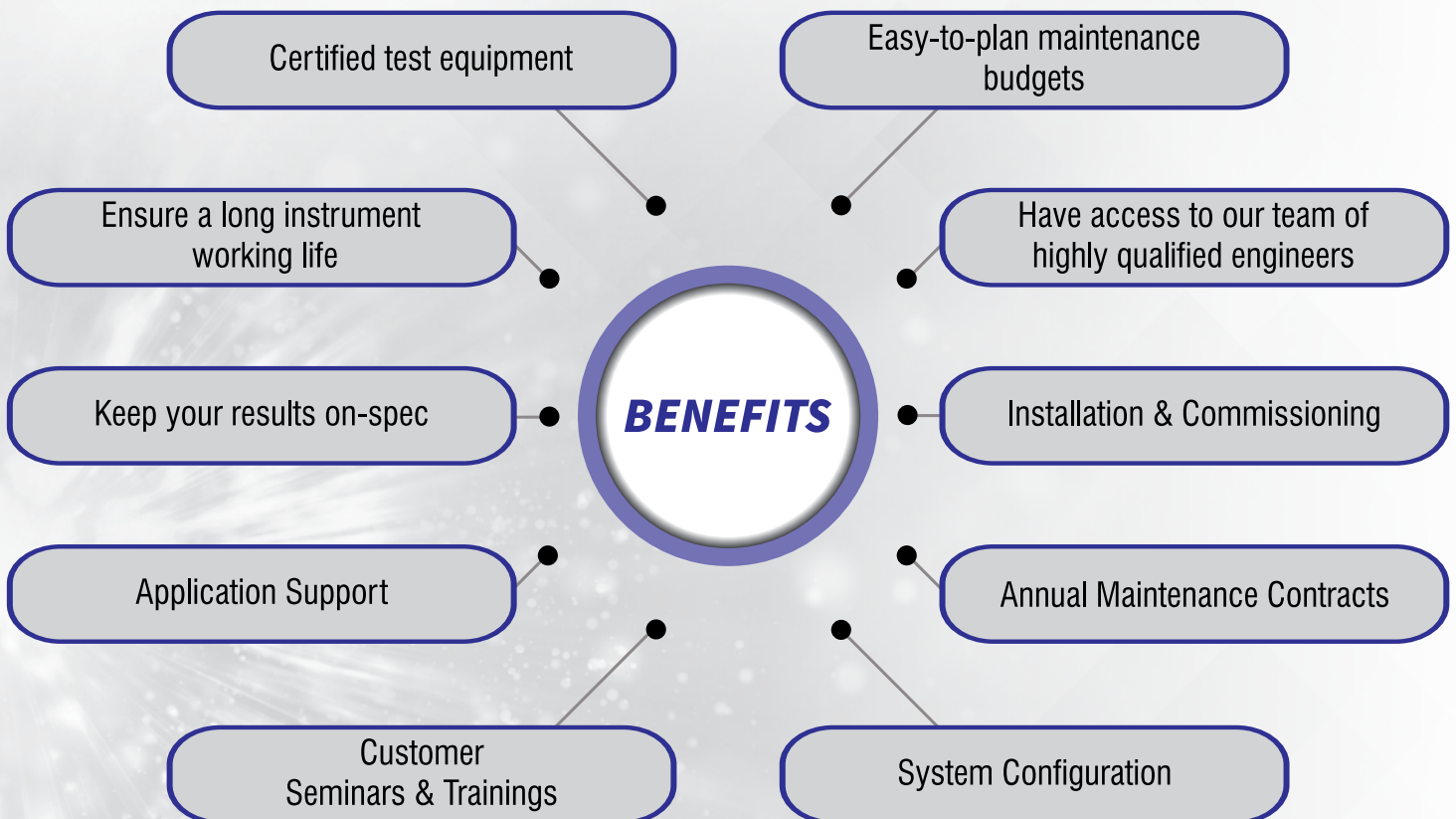
**Customer Service Center**

TOLL FREE: **0800-22753**

E-MAIL: [customer.service@hashah.com](mailto:customer.service@hashah.com)



## BENEFITS & OTHER SERVICES





To meet the growing demand for professional and qualified technical services, H. A. Shah & Sons Technical Service Department has a team of highly qualified and skilled service professionals with a wide-ranging expertise in installation, configuration and commissioning. Our staff is fully trained and equipped to meet the service requirements of our clients.

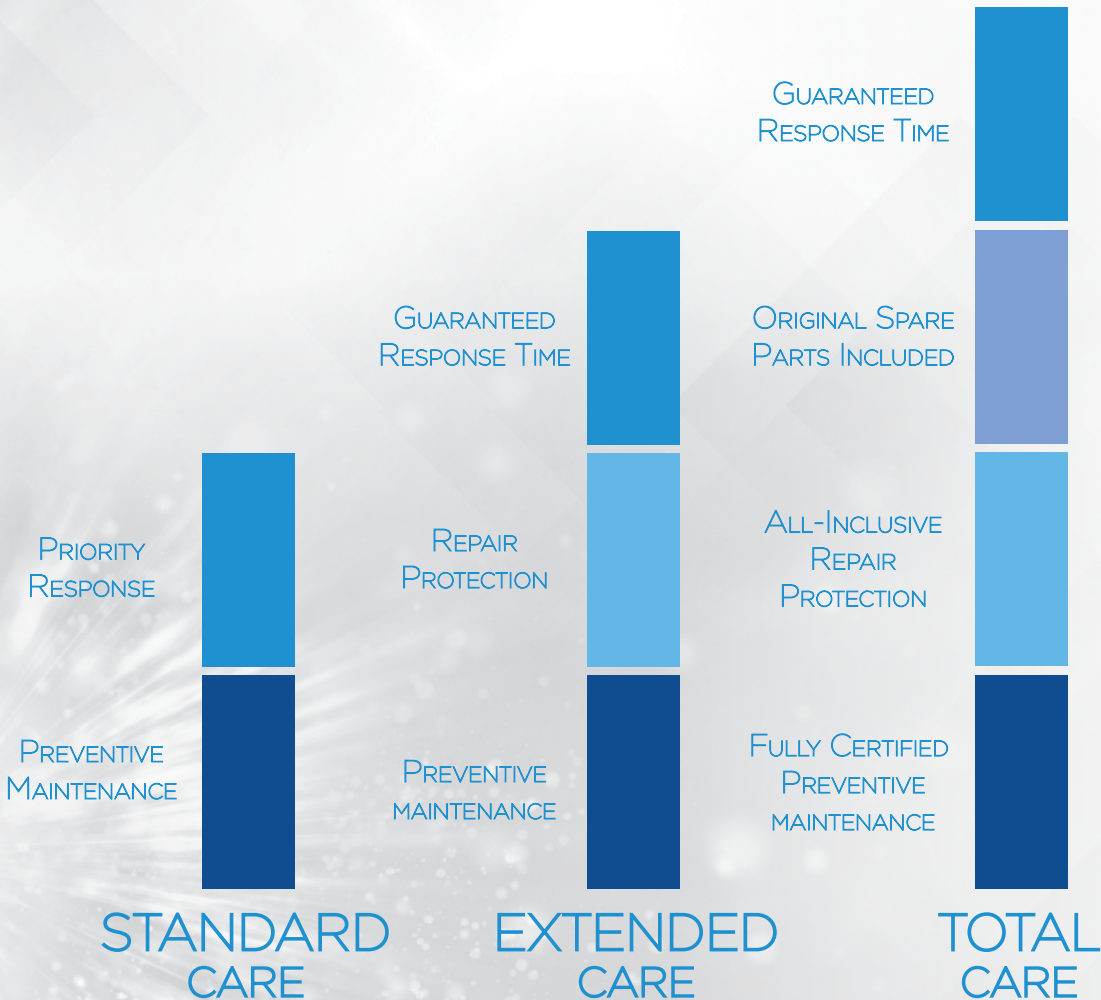
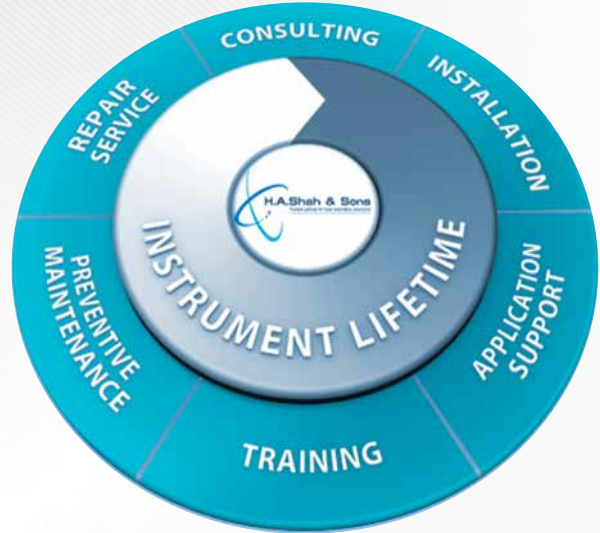
H. A. Shah & Sons proposes annual contracts with the objective of reducing or even eliminating the need for remedial interventions which are frequently penalizing for a laboratory. Excellent results under testing conditions have allowed us to establish a dynamic and efficient service structure. Our service engineers and application chemists are fully equipped to provide immediate on-location backup services to our customers. Similarly, the after sales services personnel of H. A. Shah & Sons are fully trained to not only intervene for preventive or remedial maintenance on all laboratory equipment, but also for installation and training needs.

## OTHER SERVICES

- Application Support
- Installation & Commissioning
- Warranty Service
- Repairs & Maintenance
- Annual Maintenance Contracts
- System Configuration
- Customer Seminars & Training

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A PLATFORM WHERE OUR FOREIGN-TRAINED EXPERTS  
SHARE THEIR BEST APPLICATION SKILLS & KNOWLEDGE

- Dissolution
- High Performance Liquid Chromatography
- Gas Chromatography
- Spectrophotometry
- OpenLAB Chromatography Data Systems
- Spectrometer
- Real-Time PCR
- Atomic Absorption
- Thermal Cycler
- Genetic Analyzer
- Density Meter
- Polarimeter
- Microwave Digestion
- MP-AES, ICP-OES & ICP-MS
- Raman Spectroscopy

## COURSES OFFERED

1. Chromatography theory.
  - Separations and resolution.
  - Factors influencing separations.
2. Spectroscopy techniques.
3. Understanding the influencing factors of separations.
  - The carrier and mobile phase.
  - The science of columns and stationary phase.
  - Influence of temperature.
4. Detectors specificity and selectivity.
5. Establishing a strategy for chromatography method optimization.
6. Evaluation of chromatography method robustness.



# SOUTH ASIA CENTRE OF EXCELLENCE LAB IN SRI LANKA

H. A. Shah & Sons proudly announce inauguration of South Asia Centre of Excellence lab. While remaining rooted to our core values of continuously striving to create excellence, we are now successfully expanding our scope of services and area of operations.

Located in Sri Lanka, the South Asia Centre of Excellence will give customers in the region easier access to training and demonstrations of how Agilent systems and workflow solutions can make their laboratories more efficient.





# ANALYTICAL EXCELLENCE CENTER - SRI LANKA

A PLATFORM WHERE OUR FOREIGN-TRAINED EXPERTS  
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- Dissolution
- High Performance Liquid Chromatography
- Gas Chromatography
- Spectrophotometry
- OpenLAB Chromatography Data Systems
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