



GC CONNECTIONS

New GC Instruments and Accessories at the 57th Pittsburgh Conference

This month in "GC Connections," John Hinshaw reports on new gas chromatography instruments and accessories exhibited at the 57th Pittsburgh Conference in Orlando, Florida.

The 57th annual Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (Pittcon) was held again this year in Orlando, Florida, March 12–17, 2006, at the Orange County Convention Center. After some confusion about my hotel, which had almost exactly the same name as last year's but was located on the opposite side of the convention center, I had time on Sunday to take in a few oral presentations in the expanded technical sessions on that day, as well as to peruse the poster session on new instrumentation. This year, I noted that although the overall conference attendance continued to decline, by about 2% from last year, the number of papers presented actually has steadily increased over the past few years. Another trend that continued this year is the shift from preconference postal distribution of product announcements, flyers, and invitations to visit booths to what is now a majority distribution via the world-wide web. I received a large number of exhibitor e-mail messages — more than 100 — many of which were informative and all of which saved a lot of paper and mailing expense for the originators. An additional welcome development was the deployment of a conference-wide wireless networking system — actually a number of them in parallel, according to my laptop — that made it a lot easier to stay in touch while in the convention center. After careful consideration, the Pittcon Committee has decided to hold next year's conference in Chicago, Illinois, from February 25 to March 1, 2007. Pittcon is scheduled to return to New Orleans in 2008.

This annual "GC Connections" installment reviews new gas chromatog-

raphy (GC) instrumentation and accessories shown at this year's Pittcon; some of the entries were introduced earlier in 2005. For a review of new chromatography columns and accessories, please see "Column Watch" in the March and April 2006 issues of *LCGC* (1,2). The information presented here is based on manufacturers' replies to questionnaires received up until a few weeks before the conference, as well as on additional information from manufacturers' press releases, websites and product literature. During the conference, I took time to walk around the convention aisles and see some of the new products firsthand as well as discover a number of items that were not covered by the questionnaires. Every effort has been made to collect accurate information, but due to the preliminary nature of some of the material *LCGC* cannot be responsible for errors or omissions. This article cannot be considered to be a complete record of all new GC products shown at this year's Pittcon because not all manufacturers chose to respond to the questionnaire, nor is all of the submitted information included here due to the limited available space and the editor's judgment as to the suitability.

GC at Pittcon 2006

Gas chromatography continued to play a strong role on the exhibition floor and in conference papers and posters this year. The products shown represented steady growth and incremental improvement to existing GC instruments accessories, and software. There were significant new instrument system introductions of miniaturized GCs and detectors, standard benchtop lab systems, high-performance GC–mass spectrometry (MS) and GC–MS–MS instruments, and a

Table I: GC instrument systems		
Product name	Manufacturer	Description
Csi 300-Series Fast GC	Advanced Chromatography Systems	The 300-Series Fast GC is a benchtop GC system (240 × 370 × 330 mm) that features a directly heated capillary column with a split-splitless inlet and autoignition flame ionization detection (FID). The column and heater assembly is mounted and dismounted from the inlet and detector automatically by a unique motorized door arrangement. The instrument checks that the column inlet and exit are properly sealed. Direct heating of the low thermal mass column assembly gives rapid heatup and cool down rates ideal for fast GC operation.
QP-2010 Plus GC-MS system	Shimadzu Scientific Instruments, Inc.	The new QP-2010 Plus GC/MS from Shimadzu features an extended mass range of 1.5–1090 <i>m/z</i> that allows analysis of higher mass compounds as well as an extended ion source temperature range of 100–300 °C. With dual 200 L/s turbomolecular vacuum pumps, the system delivers increased sensitivity and column flow rate capacity and produces three times the sensitivity of its predecessor QP-2010 in electron impact (EI) and negative chemical ionization (NCI) modes. In addition, the system accommodates simultaneous scan and single ion monitoring (SIM) spectral acquisition, intelligent sequencing for sample screening applications, and retention index correction of retention times in SIM and compound tables.
GC7900 gas chromatograph	Techcomp, Ltd.	The model 7900 gas chromatograph is the latest GC model developed by Techcomp. It features a nine-step temperature program ranging from ambient+5 °C to 399 °C with rates of 0.1–40 °C/min up to 200 °C and 0.1–20 °C/min above 200 °C. The system will accommodate three inlets and three detectors at once, including packed, wide-bore, and capillary column inlets plus FID, thermal conductivity (TCD), electron capture (ECD), nitrogen-phosphorus (NPD), and flame photometric (FPD) detectors. Flows are manually controlled with on-screen pressure readouts. An LCD screen and keypad control the instrument. A built-in data acquisition system conveys chromatographic data through an RS-232 C data port. The instrument can be coupled with a mass spectrometer or infrared spectrophotometer.
Detailed Hydrocarbon	Arnel	Arnel's Detailed Hydrocarbon Analyzer (DHA) for the analysis of petroleum products in the range of gasoline is based on the PerkinElmer Clarus 500 gas chromatograph and TotalChrom workstation. The analyzer includes PC-based software with a graphical interface that provides a one-screen display for real-time viewing of the chromatogram and adjusting the integration parameters in order to obtain the optimum results for analysis and data presentation. New features include support for automated postacquisition reporting and transfer to a laboratory information system (LIMS) supporting AIA file formats.
CP-4900 Differential (μ -DMD)	Varian	The CP-4900 DMD is a version of Varian's CP-4900 micro-GC with TCD and micro differential mobility detection (μ -DMD). The instrument uses dual detection modes where the μ -TCD and μ -DMD detectors are connected in series. The workstation software processes both signals of the system, providing trace component information (μ -DMD), as well as matrix information (μ -TCD) within one analysis. The micro-machined DMD is a tunable ion filter, which selects the ion species allowed to pass through the filter. The DMD has a lower detection limit of 100 ppb for MES and a dynamic range of 10^3 . It has a ^{63}Ni ionization source and uses nitrogen or "zero" air as a transport gas.
DFS GC-MS System	Thermo Electron	The DFS High Resolution GC-MS system combines one or two of the company's Trace GC Ultra high performance gas chromatographs, a Tri-Plus autosampler, and their new DFS mass spectrometer. The DFS features a high resolution magnetic sector mass spectrometer with exchangeable EI/CI ion sources. The mass analyzer has a static resolution of greater than 60,000 (at 10% valley), scan rates of 0.1–10,000 s/decade (continuously variable), and mass accuracy of better than 2 ppm. Rated sensitivity for EI GC/MS is a signal-to-noise (S/N) ratio of more than 800:1 for 100 fg of 2,3,7,8-TCDD at <i>m/z</i> 322 with resolution equal to 10,000. The mass range is 2–6000 Da, or 2–1200 Da at full acceleration voltage.
Focus PolarisQ	Thermo Electron	This new GC-MS system from Thermo combines the Focus GC with the PolarisQ Ion Trap mass spectrometer to provide a highly capable fully featured system in a small footprint. The Focus GC has multiple-level temperature programs, a maximum oven temperature of 350 °C, and oven cool down times of 350–50 °C in 270 s. Inlet capabilities include capillary split-splitless injectors with digital pressure and flow control and a split gas-saving option. The GC system is compatible with the company's AI/AS 3000 liquid autosampler or TriPlus liquid or headspace autosampler. The PolarisQ mass spectrometer features an external ion source that is designed to greatly suppress unwanted ion-molecule reactions, EI and optional CI or EI-CI sources with exchangeable ion volumes, electron beam collimating magnets that provide high ionization efficiency, an electron lens that improves filament efficiency and increases source life, and independently controlled source heating from 125 °C to 300 °C. It has a quadrupole ion trap mass analyzer with unit mass resolution from 10 to 1000 amu and a scan rate of 5555 amu/s. An inlet/vacuum interlock option allows easy removal of ion volumes. Vacuum system options include a 70 L/s or 250 L/s turbomolecular pump, or a 100 L/s diffusion pump with Peltier (electronically cooled) pump baffle.

Companies Listed in This Column

Advanced Chromatography, Charleston, South Carolina
 Agilent Technologies, Wilmington, Delaware
 Airsense Analytics, Schwerin, Germany
 Applied Biosystems, Foster City, California
 Arnel, Parlin, New Jersey
 Brechbuler AG, Houston, Texas
 CDS Analytical / Dynatherm, Oxford, Pennsylvania
 Chromsys LLC, Alexandria, Virginia
 CTC Analytics, Zwingen, Switzerland
 DETector Engineering & Technology, Walnut Creek, California
 Domnick Hunter, Gateshead, UK
 EST Analytical, Cincinnati, Ohio
 Gerstel, Baltimore, Maryland
 Horizon Technology, Atkinson, New Hampshire
 John Wiley & Sons, New York, New York
 Parker Hannifin Corp., Twerksbury, Massachusetts
 PerkinElmer, Shelton, Connecticut
 Restek Corp., Bellefonte, Pennsylvania
 Rexarc International, West Alexandria, Ohio
 Scientific Glass Technology, Middleburg, The Netherlands
 SGE International Pty Ltd, Austin, Texas
 Shimadzu Scientific, Columbia, Maryland
 Techcomp Ltd, Hong Kong
 Teldyne - Tekmar, Cincinnati, Ohio
 Thermo Electron, Waltham, Massachusetts
 Varian, Walnut Creek, California

couple of application-specific analyzers. A number of companies exhibited sample preparation accessories for specific analytical challenges in the pharmaceutical, environmental, and food processing industries, with classical headspace and thermal desorption devices leading the pack. The software arena was characterized by the usual updates to data-handling and LIMS packages, an expanded mass-spectral library, software to manage sample preparation, and some application-specific offerings.

New Instrument System Introductions

Two of the new instrument system introductions this year, shown in Table I, represent ongoing trends in gas chromatography. Domestic instrument companies have manufactured GC instruments and components in China for a number of

years; the new GC7900 from Techcomp Ltd is a fully featured laboratory bench-top system that's manufactured in China by a foreign company and marketed in the United States. Clearly targeted at the QA/QC market, yet having high-performance specifications, this instrument is the latest example of the transfer of GC technology into a routine analytical tool. The other completely new instrument system of note is the Csi 300-Series Fast GC from Advanced Chromatography Systems with automated insertion and removal of a resistance-heated column module. This small instrument requires no tools to make and break the low dead-volume inlet and detector connections that are required with high-speed GC. Also in the fast GC world, the Varian CP4900 was enhanced with a new micro-sized differential ion mobility detector (μ -DMD) that runs in parallel with the existing micro thermal conductivity detector.

Other companies showed new instruments that are improved or updated versions of existing GCs or that combine components in new ways to obtain higher performance. The QP-2010 Plus from Shimadzu is an upgraded version of the QP-2010S, shown at last year's conference, with extended mass and source temperature ranges, larger available turbomolecular pump, and simultaneous scan-SIM modes. Thermo Electron showed two new GC-MS systems. The Focus PolarisQ combines the company's Focus GC with the PolarisQ Ion Trap mass spectrometer to provide a highly capable fully featured system in a small footprint, while the DFS GC-MS system provides the very high performance mass spectral detection capabilities of a high-resolution magnetic sector instrument. In the application-specific area, Arnel showed a Detailed Hydrocarbon Analyzer (DHA) for gasoline-range samples, and DETector Engineering & Technology exhibited a portable GC analyzer for oxygenates.

Sampling and Injection

The movement towards more highly automated sample preparation systems continues to influence GC sampling and injection, as illustrated by the products listed in Table II. Robotic systems were abundant on the exhibit floor, such as

Table I Continued:

Product name	Manufacturer	Description
Portable GC Analyzer For Oxygenates	DEtector Engineering & Technology	DEtector Engineering & Technology has combined its TID-1 thermionic ionization detector with a compact SRI Instruments GC to provide selective analyses of oxygenates with excellent discrimination against hydrocarbons. Analysis of ethanol in gasoline is accomplished in minutes using nitrogen for both carrier and detector gases. Detector equipment includes precision control of heating power for the ionization surface, and the GC includes data processing software that can be accessed with a laptop computer. Other selective detection applications include volatile boxylic acids in wine, phenols and glycols in environmental samples, and nitro-compounds like TNT, methyl parathion, and 4-nitrophenol. The portable system is easily reconfigured to nitrogen-phosphorus selective detection by changing the ion source and supplying hydrogen and air as detector gases.

the automated solid-phase extraction (SPE) option for the Gerstel MPS Multi-Purpose Sampler, and the DryVap concentrator system from Horizon Technology. These devices automate the sometimes tedious tasks of repetitive sample preparation prior to injection. The ITEX option for the CTC Analytics CombiPAL autosampler adds headspace sample concentration capability to the versatile sample preparation system, while the TurboMatrix ATD 650 thermal desorber from PerkinElmer includes a new sample trapping and concentration capability with optional re-injection of analytes from thermal desorption tubes.

Two headspace sampling systems appeared this year that emphasize the prominence of this sampling technique for GC. The Markelov HS9000 from EST Analytical is a versatile automated headspace sampler capable of static or dynamic sampling into a concentration trap for subsequent desorption and injection; the unit uses a unique sample stirring method that rolls the sample vials at an angle as they are heated to equilibrium. The HT3 Static and Dynamic headspace system from Teledyne-Tekmar also features an adsorbent trap, and permits switching between static and dynamic modes inside a single sampling schedule. Meanwhile, CDS Analytical/Dynatherm introduced the new model 5250 pyrolysis autosampler that greatly speeds sample throughput by automatically loading, pyrolyzing, and ejecting up to 36 samples in a single sequence. In the micro-GC world, Airsense Analytics showed the μ -TID3 micro-trap for thermal desorption that functions as a high sensitivity front-end for Agilent micro gas chromatographs. For air samples, the Teledyne-Tekmar AUTOCAN-12 is a freestanding 12-sample concentrator that accepts Tedlar bags

and standard air canisters.

Completing this category are a new series of liners from SGE that feature a new fluorinated chemical deactivation process that does not require preconditioning, and the Restek EZ Twist Top split-splitless injection port that facilitates rapid inlet liner exchange for Agilent GC systems.

Detectors and General Accessories

Agilent had an interesting fluidic switching device that has been applied to a dual-detector GC-flame photometric detection-mass-selective detection system for hazardous compound screening. The variable switch, which is machined from metal and then deactivated with an inert coating, controls the flow of column effluent to either detector. The system is targeted for food safety, chemical hazards, homeland security, and forensics. Chromsys LLC showed an add-on dual quadrupole mass spectrometer for the Agilent 5973/5975 series of quadrupole mass-selective detectors. The result is a versatile triple-quad detection system that uses an ion-rail collision cell and another quadrupole section to enable multiple reaction monitoring (MRM) for very high sensitivities and selectivities especially against a high-level background matrix.

The general accessory items all fell into the realm of gas delivery and purification, a topic that deserves more attention than many gas chromatographers give it. A new leak detector from Restek has a number of improved features including its sensitivity, display, and probe design. The NitroVap nitrogen generators from Parker Hannifin Corp. are intended for sample concentrators and replace the nitrogen tanks or dewars commonly used in this application.

Rexarc International announced a new line of gas handling equipment including manifolds, valves, and regulators, suitable for high-sensitivity GC applications. The Super Clean Click-On in-line gas filters from Scientific Glass Technology appeared in a number of companies' booths. These are a version of the company's existing filter line that do not require a dedicated base but rather use specialized in-line fittings to achieve the same leak-tight and purged filter installation and replacement. And domnick hunter showed the Hydrogen MD generator, an updated version of their hydrogen generator that features a miniaturized, fully regenerative pressure-swing adsorption dryer that both increases the purity of hydrogen produced and reduces the maintenance requirements of the generator.

Software

Software continues to play a critical role in connecting instruments, data, and those who produce and consume the results. Leading the software category is the latest release of Applied Biosystems laboratory information management system SQL* LIMS® v5. This is a web-based, fully featured system that manages laboratory data and workflow processes for pharmaceutical and other R&D and manufacturing QA/QC operations. John Wiley & Sons has released the latest update to their library of mass spectral data, the 8th edition, which increases in size to nearly 400,000 spectra with over 183,000 chemical structures. The GC Espresso from Brechbuler AG is a quality-control system that is easily deployed in a process environment once the methodology has been developed in the lab. From Gerstel, Maestro Sample Prep software controls the company's sample preparation equipment, including the

Table II: Autosamplers, injectors, and accessories

Product name	Manufacturer	Description
TurboMatrix 650 ATD automated thermal desorber	PerkinElmer	This updated version of the company's automated thermal desorption (ATD) sampler includes sample recollection that enables repeat sampling on the same or different tubes for sample auditing and confirmatory analyses. Tube-trap impedance testing helps ensure packing integrity and engenders enhanced accuracy and precision. The sampler incorporates programmed pneumatic control (PPC) for pressures and flows, including the GC column. A new manifold design reduces the number of fittings in the system for optimum GC-MS performance.
HT3 Static and Dynamic headspace system	Teldyne-Tekmar	The HT3 Static and Dynamic headspace system offers significant sensitivity improvements with a new dynamic headspace option. The HT3 allows the analyst to switch between static and dynamic sampling within a single schedule. The sampler offers electronic flow and pressure control with automatic leak checking. The company's TekLink software controls the unit and features enhanced method optimization and method setup safeguards. The sample and sample pathway can be heated up to 300 °C. A dynamic analysis option continually sweeps and concentrates analytes into an adsorbent trap for low-level detection.
AUTOCAN 12 Canister autosampler	Teldyne-Tekmar	The AUTOCAN Canister autosampler is a freestanding canister autosampler designed specifically for concentrating VOCs from whole air samples. The autosampler can accommodate up to 16 samples using either air sampling canisters or Tedlar bags. The 16 autosampler positions allow a combination of 6-L canisters, 15-L canisters, or sampling bags to be used on the tower. The sampler also has three positions for external standards, internal standards, blanks, or surrogates. These positions allow standards to be analyzed throughout the day for continuing calibration or to monitor the performance of the entire air analysis system. Common interferences like CO ₂ and H ₂ O are selectively removed through the use of built-in adsorbent traps and a moisture control system. System cleanliness and carryover are enhanced by the heated Silcosteel tubing sample path.
ITEX Sample Preparation	CTC Analytics	The ITEX option for the company's CombiPAL autosampler consists of an add-on module that performs enrichment of volatile or semi-volatile compounds during headspace analysis. A microtrap filled with adsorbent material, such as Tenax or activated charcoal is placed between the CombiPAL headspace syringe and the syringe needle. Using the headspace syringe as a pump, a part of the gaseous phase of the sample vial is pumped repeatedly through the microtrap. The loaded ITEX trap is then flash heated up to 350 °C and the sample is desorbed into the hot GC injector.
Automated SPE for the MPS Multi-Purpose Sampler	Gerstel	The new automated solid-phase extraction (SPE) option for the MultiPurpose sampler (MPS) uses standard SPE cartridges, which enables simple transfer of existing methods. The cartridges are fitted with disposable needles for liquid transfer, eliminating sample carryover. Sample preparation and analysis are overlapped for increased productivity. The sampler also can be used as a standalone robotic sample preparation system. Automated liquid handling in the sampler provides delivery of defined, reproducible liquid volumes for conditioning, extraction, and elution of SPE cartridges. Standard addition and sample introduction are performed automatically, and gas drying is available as an option.
μ-TD3	Airsense Analytics	The μ-TD3 micro-trap for thermal desorption is specifically designed as a high sensitivity front-end for Agilent micro gas chromatographs. The system features a range of adsorbent materials that are quickly replaced, control of flows, temperature, and timing, and either standalone or PC-connected operation. Single analysis, continuous operation, and cyclic sampling are possible.
Model 5250 Pyrolysis Autosampler	CDS Analytical/Dynatherm	The CDS 5250 allows the operator to pyrolyze multiple samples to increase sample throughput. The company's 5000-series instruments can be upgraded to the new autosampler. The model 5250 will take 36 samples and can be integrated with all major GC brands. New instrument features include a new more easily serviceable instrument, Windows-based instrument programming and improved low level temperature control for volatile and semivolatile work. The model 5250 may be mounted directly above the injection port or with a heated sample line allowing easy installations. The model 5250 is fully programmable in 1 °C increments to 1300 °C and allows up to eight-step programming for each sample run. Optional accessories include polymer identification library and trapping capabilities.
Markelov HS9000 Headspace	EST Analytical	The HS 9000 incorporates multiple sample injection modes including loop injection, pressure balanced injection, and dynamic sweeping of analytes to a built in adsorbent trap for increased sensitivity. The system is configured in a unique way which keeps the headspace vials nearly horizontal. While in the 12-position platen, samples can be mixed by rolling the vial, thereby increasing the surface area of the sample exposed to the headspace and decreasing equilibration times. The system comes with a 90-position carousel, constant heat mode and expanded temperature range of up to 300 °C.

Table II Continued:

Product name	Manufacturer	Description
DryVap concentrator system	Horizon Technology	The DryVap concentrator system automates the drying and evaporation of organic extracts before GC and GC-MS analysis. Designed to emulate the traditional Kuderna-Danish method, the DryVap concentrator combines manual steps into one automated process. When equipped with the optional in-line DryDisk, the DryVap concentrator can dry and concentrate samples in less than 30 min. Using a combination of vacuum, heat, and sparge gas, the DryVap system rapidly and gently concentrates the extraction to precisely 0.9 mL. The system features automatic extraction drying, automatic heater shutoff, precise endpoint shutoff, five selectable rinse methods, and individually sealed vessels that eliminate cross contamination.
EZ Twist Top split-splitless injection port	Restek Corp.	This replacement inlet port for Agilent 5890 and 6890 GC systems features gas lines located on the shell weldment to prevent twisting or tangling. Warm liner exchange is possible with the company's tools designed for this inlet port, speeding the time required to change liners and preventing burned fingers as well.
Fluoroliners	SGE International Pty Ltd.	SGE introduced its new FluoroLiner range of GC inlet liners. The newly developed "fluorinated" deactivation process complements the company's premium deactivation process, which is applied to 100% of its GC inlet liners. The new deactivation has now been made available for the select range of Fluoroliner liners. The deactivation treatment is fully bonded for stability and like all of the company's liners, Fluoroliners do not need preconditioning.

Table III: Detectors and accessories

Product name	Manufacturer	Description
Hazardous Compound Screener GC system	Agilent Technologies	This GC-MSD system features microfluidic splitting to both a flame photometric detector and a mass-selective detector for rapid identification and quantitation of hazardous compounds, including pesticides, chemical weapons, and toxic industrial chemicals. It includes deconvolution software with appropriate databases for the industry of use and is configured and tested at the factory before shipping. Applications include food safety, chemical demilitarization, homeland security, and forensics.
Evolution GC-MS/MS Triple Quad	Chromsys LLC	The Evolution GC-MS/MS Triple Quad system is built upon the Agilent 5973/5975 mass selective detector. Keeping the original inert ion source, the true hyperbolic quadrupole and the highly sensitive HED detector provides MS-MS capability by adding a proprietary IonRail collision cell and another high precision quadrupole that serves as a third mass filter.

Table IV: General accessories

Product name	Manufacturer	Description
Electronic leak detector	Restek Corp.	This thermal conductivity based leak detector is both sensitive and small. It detects helium leaks down to 1.0×10^{-5} cc/s. and features a rechargeable battery, different color indicator lights for helium or nitrogen leaks, and a probe tip design that prevents debris from entering the unit.
NitroVap nitrogen generators for sample concentrators	Parker Hannifin Corp.	Intended for use with sample evaporators having up to 100 nozzles, the NitroVap nitrogen generator produces clean, dry (to -20 °F) dew point evaporator grade nitrogen from standard laboratory grade compressed air. The generators can eliminate liquid nitrogen dewars or nitrogen tanks that currently are used for this purpose.
Specialty gas equipment	Rexarc International	New specialty gas equipment including high-purity regulators and gas delivery components suitable for 99.9999% pure gases for routine and high-sensitivity GC applications.
Super Clean Click-On in line gas filters	Scientific Glass Technology	These high-purity in-line traps can output 99.9999% pure gas. The traps utilize separate Click-On fittings that ensure purged and leak-free replacement. The traps are available in several versions including a helium-specific trap for GC-MS applications, a Triple Trap for general carrier gas use, and a fuel gas trap for FID fuel gases. Offered for sale in the US by various suppliers including Restek, Supelco, and Matheson Tri-Gas.
Hydrogen MD gas generator	domnick hunter	These new generators incorporate a number of design improvements such as the replacement of the single-pass, consumable desiccant cartridge in previous hydrogen generators with a miniaturized, fully regenerative pressure-swing adsorption dryer. This both increases the purity of hydrogen produced from 99.999% to 99.9999% and reduces the maintenance requirements of the generator by removing the need to periodically replace the desiccant cartridge. The desiccant cartridge visible in the front panel window is replaced by a LED-illuminated water level gauge. The Hydrogen MD generator is available in three flow capacities: 160, 250, and 500 mL/min.

MultiPurpose Sampler, and is fully integrated with Agilent's ChemStation software. PerkinElmer unveiled the Turbo-Mass 5.2 Environmental Reporting Software that includes both reporting templates as well as methods, compound

lists, and required tuning capabilities. From Arnel, the improved and updated Simulated Distillation calculation and reporting software package supports common ASTM methodology.

Summary

Pittcon 2006 was another conference in the long line of annual meetings that extends back 57 years. Although attendance has fallen back to pre-1990 levels, the number of papers has steadily

Table V: Software Accessories

Product name	Manufacturer	Description
SQL* LIMS v5	Applied Biosystems	SQL* LIMS v5 software is an open platform web-based informatics solution that integrates, automates, and manages laboratory data and workflow processes for pharmaceutical and other R&D and manufacturing QA/QC operations. The application was built using industry standard technology including the Oracle Application Server 10g plus Oracle9i database. It provides an extensible application that runs on a J2EE 1.3 compatible platform without the need to install on local user machines. Some of the significant features include: instrument calibration management; analyst training and qualification tracking; reagent inventory tracking; streamlined, two mouse-click navigation; enhanced fill-down and pop-ups for data entry and approvals; save and distribute commonly used queries; newly designed, fully configurable grid-based result entry; and secure single user password for users of multiple databases. Modular add-ons include SQL Stability software, SQL Schedule software, SL Solution software, and LIMSLink software.
Wiley Registry of Mass Spectral Data, 8th Edition	John Wiley & Sons	The latest edition of John Wiley & Sons mass spectral data includes nearly 400,000 spectra with over 183,000 chemical structures sourced from leading laboratories worldwide. Most spectra are accompanied by the structure, trivial name, molecular formula and weight, nominal mass, and base peak. The 8th addition adds chemical warfare precursors; combinatorial compounds; high molecular diversity for fragmentation analysis; high resolution organics; structure and substructure search capability; and more spectra with retention index data.
GC Expresso	Brechtbuler AG	The GC Expresso is designed for process control using a few peaks of interest as markers for desired conditions in a process sample. After lab method development the GC Expresso system is moved to the production line where it evaluates the selected peaks and conditions to give a simple stop-go indication for the process under control. The system includes a maintenance scheduler for routine items such as septa, filters, and so-on. The system is compatible with Thermo's Trace GC and Focus GC systems as well as CTC autosamplers.
Maestro sample prep software	Gerstel	Gerstel's Maestro sample preparation software is fully integrated with Agilent's ChemStation software. All steps from sample preparation to sample injection are controlled from the ChemStation sequence list and ChemStation method, reducing the risk of operator error and improving efficiency. In combination with the company's MultiPurpose sampler, the Maestro software performs liquid standard addition, derivatization, or extraction while analysis of the previous sample is in progress. The system supports sampling techniques such as automated liner exchange, thermal desorption, Twister stir-bar sorptive extraction (SBSE) analysis, headspace sampling, and solid-phase microextraction (SPME).
TurboMass 5.2 GC/MS software for environmental reporting	PerkinElmer	The company's new TurboMass 5.2 reporting software ensures method compliance and increased productivity for environmental labs. The software features include interactive data review; custom compound lists; complete environmental compliance methods; multiple ion ratio capability; complete volatile and semivolatile projects; UltraTune automated tuning; and a wide variety of report templates.
Simulated distillation calculation and reporting software package	Arnel	Arnel's improved and updated simulated distillation calculation and reporting software package supports common ASTM methodology including D2887, D5307, D3710, D6352 and D5307. Also included is the ability to perform D86 and D1160 correlations. Custom %-Off, cut-point, and QC reporting functions extend the software's capability. Result files stored in AIA file format ensure quick access by third party applications. The calculation and reporting software package may also be combined with the PerkinElmer Clarus 500 gas chromatograph and TotalChrom workstation for a complete turnkey system.

increased over the years, as have the quality and capability of GC instruments, accessories, and software — imagine what this year's micro GC systems, robotic samplers, high-performance detectors, and web-integrated software would have looked like to the attendees of even five years ago, and you can gain some perspective into the real advances that have been made in all areas. I look forward to Pittcon 2007 to see what the latest innovations will be.

Acknowledgment

I would like to thank the manufacturers

and distributors that kindly furnished the requested information before, during, and after Pittcon 2006, allowing a timely report on new product introductions. For those manufacturers who would like to be considered for inclusion into Pittcon 2007 coverage, please send the name of the primary company contact, the mailing address, fax number, and e-mail address to Patrick Kempf, Managing Editor, *LCGC North America*, c/o Advanstar Communications, 485 Rte. 1 South, Bldg. F, Iselin, New Jersey 08830, Attn.: Pittcon 2007 "New GC Products."

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- (1) R. Majors, *LCGC* 24(3), 248–266 (2006).
- (2) R. Majors, *LCGC* 24(4), 356–373 (2006).



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