

new products

Focus on software and data acquisition

The descriptions of the new products listed in this section are based on information supplied to us by the manufacturers. PHYSICS TODAY can assume no responsibility for their accuracy. For more information about a particular product, visit the website at the end of the product description.

Andreas Mandelis

Data acquisition modules

Data Translation has added three new USB-powered data acquisition modules to its ECONseries. The DT9812A, DT9813A, and DT9814A offer the multi-function capability of the ECONseries with the benefits of USB 2.0 compliance and faster sampling rates of up to 100 kS/s. According to Data Translation, the latter represents a twofold increase over existing models. The new devices are USB powered for portable measurements and offer 12-bit resolution for analog input/output (I/O) and two analog output channels to generate sine, rectangle, triangle, or DC waveforms. One counter/timer performs event counting, frequency, and edge-to-edge measurements and generates continuous pulse output operations. The I/O lines are digital; software and drivers compatible with Windows XP, Vista, and 7 are included. *Data Translation Inc, 100 Locke Drive, Marlboro, MA 01752-1192, <http://www.datatranslation.com>*

Software for atomic force microscopes

The MFP-3D and Cypher atomic force microscopes from Asylum Research can perform advanced imaging and measurements with no programming required. However, Asylum also provides a user-driven programming language called IGOR for certain automated experiments. The company's new MacroBuilder interface allows users to customize IGOR without writing code. Instead, they drag MacroBuilder modules together to form macros that can automate many measurements and analyses and can be saved for repeated use. Each module performs a specific operation, such as collecting thermal data or displaying the next saved force plot. Automation can range from making a sequence of measurements to procedures in which the MacroBuilder software makes intel-



ligent decisions—for example, changing subsequent measurement routines depending on the outcome of previous experiments. *Asylum Research, 6310 Hollister Avenue, Santa Barbara, CA 93117, <http://www.asylumresearch.com>*

Particle trajectory analysis simulation

Integrated Engineering Software has released version 9.0 of Lorentz, a simulation tool for fast and accurate modeling of boundaries and easy analysis of open region problems. Available in 2D rotationally symmetric and 3D packages, Lorentz uses proven field solver technology to achieve effective simulation for applications requiring charged-particle and beam analysis. The improved workflow is more intuitive, and the trajectory menu is arranged in the same manner as the rest of the program. Due to the improved ray-tracing code, beam analysis is faster, often by a factor of two. A notable change to the program is the single ordinary differential equation setup, which replaces the per emission setup. The emitters setup has been simplified, with a single dialog box to enable the group definition of emitters. *Integrated Engineering Software, 220-1821 Wellington Avenue, Winnipeg, Manitoba R3H 0G4, Canada, <http://www.integratedsoft.com>*

Scientific model development software

Maplesoft has announced a new release of MapleSim, the company's physical and engineering modeling and simulation software. MapleSim 5 has more than 150 new components, including libraries for magnetics and thermal fluids. The new features allow users to quickly develop a wider range of applications such as fuel injection systems and heat exchangers for machine cooling systems. New and improved features in the interface can reduce model development time and help users manage the complexity of their models. Enhanced diagnostic tools provide early feedback related to the definition of the model itself by, for example, identifying inconsistent initial conditions. The improved simulation engine can generate highly optimized C code for all MapleSim models. That royalty-free code can be incorporated into other software in the tool chain. *Maplesoft, 615 Kumpf Drive, Waterloo, Ontario N2V 1K8, Canada, <http://www.maplesoft.com>*

Raman spectrometer and software

B&W Tek has enhanced its *i*-Raman, a high-resolution, thermoelectrically (TE)-cooled Raman spectrometer. It features 3-cm⁻¹ spectral resolution, wide Raman shift coverage up to 4000 cm⁻¹, and a TE-cooled 2048-pixel CCD array. The *i*-Raman offers 830-, 785-, and 532-nm excitation wavelength configurations. The company has also released the BWIQ chemometrics software package for use with the spectrometer. The multivariate analysis software analyzes spectral data to discover internal relationships between spectra and response data and spectra and sample classes. BWIQ combines traditional chemometric methods such as partial least squares regression and principal component analysis with new methods such as the adaptive, iteratively reweighted penalized least squares algorithm for automatic baseline correction and support vector machine algorithms for nonlinear data sets. *B&W Tek Inc, 19 Shea Way, Newark, DE 19713, <http://www.bwtek.com>*

Nuclear magnetic spectroscopy software

Agilent Technologies has enhanced its VnmrJ 3.2 software for nuclear magnetic spectroscopy in a number of significant ways. The company now offers a data station version that runs on Windows and Mac OS in addition to Linux. The software enables users to analyze nuclear magnetic resonance (NMR) data anywhere in offline mode. A simplified sample-centric workflow interface lets users easily design both simple and complex experiments. Also new is the seamless integration with NMR Pipe, the plug-in for analyzing proteins and other large biomolecules. The VnmrJ 3.2 software supports a wide range of Agilent and Varian NMR systems, including small molecules in solution, protein and nucleic-acid solutions, solid-state biological samples, tissues, beads, and gels. It also features accessories for static and spinning solid-state spectroscopy, liquid chromatography, mass spectrometry, and imaging. *Agilent Technologies, 5301 Stevens Creek Boulevard, Santa Clara, CA 95051, <http://www.chem.agilent.com>*

Geophysical visualization software

Exelis Visual Information Solutions (formerly ITT Visual Information Solutions) has released E3De, an interactive software environment for visualizing and extracting 3D features and products from light detection and ranging (LIDAR) data. The software allows users to understand a geographic area of interest from all angles by creating realistic 3D visualizations of manmade and natural features from point cloud data. The resulting products and visualizations add useful information to various geospatial and geophysical applications, including assessing forest inventories, mapping urban growth, and visualizing terrain. The advanced software technology allows users to ingest native Log ASCII Standard, National Imagery Transmission Format LAS, and ASCII files; prepare the LIDAR data; identify and extract features; and refine the resulting products. *Exelis Visual Information Solutions, 4990 Pearl East Circle, Boulder, CO 80301, <http://www.ittois.com>*

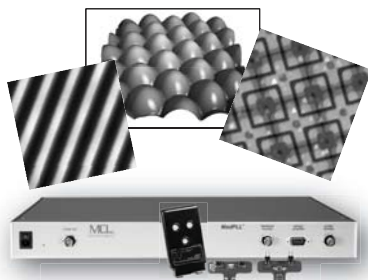
Real-time test and simulation software

VeriStand 2011 is the latest version of National Instruments' configuration-based software environment for creating real-time test and simulation applications, including hardware-in-the-loop simulators and test cells. In addition to a new stimulus profile editor, the software has been updated with Wineman Technology's Inertia add-on module, which offers a suite of tools for optimized closed-loop control of dynamometer and servo-hydraulic-based test cells. It also provides expanded native support for 14 modeling environments. The real-time stimulus profile tool expands deterministic test execution with looping and branching structures and composable arithmetic functions. According to the company, VeriStand 2011's library of structures and operators can significantly decrease test development time and increase test coverage. The tool also furnishes templates for common test routines such as multitasking and data logging. *National Instruments Corporation, 11500 North Mopac Expressway, Austin, TX 78759-3504, <http://www.ni.com>*

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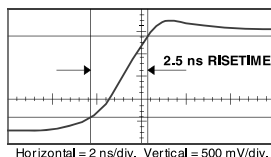
Noise: <100 e⁻ RMS (Room Temp.)

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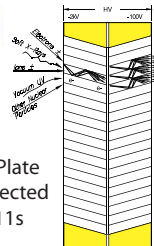
Power: 19 mW typical

Slew rate: >475 V/ μ s



THE INDUSTRY STANDARD

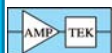
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Multiphysics software

Comsol has unveiled Multiphysics version 4.2a, a major update of its modeling and simulation environment. According to the company, the updated software is a tightly integrated analysis platform with breadth and depth that extends the reach of multiphysics analyses. With its application-specific add-on modules, version 4.2a brings greater modeling power to users. Image data can be used to represent 2D material distributions or to identify regions with different materials by their color or gray scale. Engineers and scientists are now able to represent 2D material distributions by imaging data from various origins such as scanning electron microscopy, computed tomography, and magnetic resonance imaging.

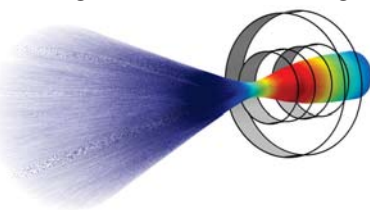


Image-to-material conversion can significantly shorten time to solution for image-based simulation. *Comsol Inc, 1 New England Executive Park, Suite 350, Burlington, MA 01803, <http://www.comsol.com>*

Terahertz time-domain spectroscopy software

Menlo Systems has introduced TeraLyzer, a terahertz data-evaluation software developed by Lytera that enables advanced data analysis in terahertz time-domain spectroscopy (TDS) experiments. The methodology for the extraction of sample thickness enables the investigation of sub-100- μ m samples without the need for a differential measuring setup. The new software also promotes the analysis of multilayer systems in a standard terahertz-TDS setup. TeraLyzer incorporates multiple steps. First, the terahertz-TDS data are imported and prepared for evaluation by a preprocessor. Second, the sample thickness is estimated, and the parameters— n , α , κ , ϵ' , and ϵ'' —and error bars are evaluated. Finally, a precise determination of the sample thickness is made using an approach that considers

Fabry-Perot reflections. Various samples can be measured, including thin films. *Menlo Systems Inc, 69 Stickles Pond Road, Newton, NJ 07860, <http://www.menlosystems.com>*

Wireless temperature loggers

T&D Corp designed its RTR-505 remote wireless data recorders to measure and record items using various types of sensors and measuring devices depending on the input module. Additions to the RTR-505 series are the RTR-505-TC and the RTR-505-Pt. The RTR-505-TC data recorders can measure and record temperatures from -199 °C to 1700 °C; are compatible with J-, K-, S-, and T-type thermocouples; and accept industry-standard miniature connectors. The RTR-505-Pt wireless temperature loggers are compatible with industry-standard three-wire Pt-100 sensors and have a possible temperature range from -199 °C to 650 °C depending on the sensor selected. Both units have a large LCD display, the capacity to store 16 000 readings, IP64 water resistance, and a communication range up to 500 feet. They are compatible with all T&D RTR-500 series wireless data collectors, which can act as base units and allow for data retrieval to a PC, over a network or the internet, or through a cellular phone system. *T&D Corporation, P. O. Box 321, Saratoga Springs, NY 12866, <http://www.tandd.com>*

Protein interaction software

ProteOn Manager 3.0, Bio-Rad Laboratories' new software for the ProteOn XPR36 protein interaction array system, uses surface plasmon resonance to enhance researchers' ability to analyze protein interactions. Version 3.0 is a free upgrade for ProteOn system users. The software automatically creates a protocol as users import their sample data layout. They can then quickly review all sample and injection parameters in one table view. ProteOn Manager software 3.0 includes off-rate only kinetic analysis that allows kinetic data to be determined independent of analyte concentration and location-independent double reference that gives researchers the flexibility to choose multiple reference locations in a single experiment and increases data quality. *Bio-Rad Laboratories, Life Science Research, 2000 Alfred Nobel Drive, Hercules, CA 94547, <http://www.bio-rad.com>* ■