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Focus on software and data acquisition

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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.

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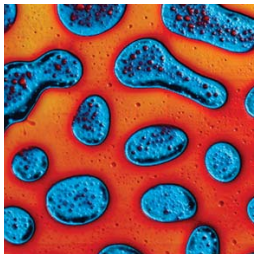
Tapping mode imaging software

A new software feature on Asylum Research's MFP-3D Infinity and Cypher atomic force microscopes (AFMs) automatically determines tapping mode parameters—set point, gain, and scan rate—for imaging in air. To produce a high-quality image from the first scan line without putting the tip or sample at risk, GetStarted uses a predictive algorithm to calculate the best imaging parameters before scanning. Users select a scan size and resolution and estimate the order-of-magnitude sample roughness—from nanometers to hundreds of nanometers. GetStarted then prompts them to load a probe and adjust the laser and detector. With Asylum's GetReal feature, the software tunes and calibrates the small cantilevers used with the fast-scanning Cypher. GetStarted also is available free to owners of current Asylum AFMs. *Asylum Research, 6310 Hollister Avenue, Santa Barbara, CA 93117, https://www.asylumresearch.com*



Data acquisition module

Data Translation's DT7816, a simultaneous data acquisition module for embedded applications, uses an open-source Linux platform and is designed for real-time processing of analog signals in scientific, medical, and industrial applications. The high-throughput, high-accuracy module has eight simultaneous 400-kHz analog-to-digital converter inputs; two simultaneous 400-kHz digital-to-analog converter outputs; and 16 digital input/output (I/O), counter/timer, tachometer, and measure-counter digital functions. The ARM Cortex A-8 processor runs at 1 GHz with 2 GB of onboard Flash memory. It has interfaces for a USB host and client, Ethernet, and a secure digital card. Because the DT7816 can perform all I/O functions at the same time, data can be acquired while output functions are carrying out their tasks. That allows for real-time performance without limitation for signal acquisition and generation. *Data Translation Inc, 100 Locke Drive, Marlboro, MA 01752-1192, http://www.datatranslation.com*

Scientific word processing software

MacKichan Software has made version 6 of its Scientific WorkPlace, Scientific Word, and Scientific Notebook software available for Windows or OS X operating systems. Designed for writing, sharing, and typesetting mathematical and scientific text for publishing and education, the software now uses a Mozilla-based architecture to allow saving and exporting documents in multiple formats. Its flexibility has been enhanced by new document production features, such as importing files from earlier versions and previewing and printing directly from the program window. It also offers improved and scalable fonts. Version 6 allows users to draw 2D and 3D plots with options to enhance and animate the graphs. Word processing products export directly to HTML, with mathematics exported as graphics or as MathML. Scientific WorkPlace and Scientific Word use LaTeX, the industry standard for mathematics typesetting. Scientific WorkPlace and Scientific Notebook add the MuPAD computer algebra engine for symbolic and numeric computation. *MacKichan Software Inc, 19307 8th Avenue, Suite C, Poulsbo, WA 98370-7370, http://www.mackichan.com*

Wireless LAN system test software

MathWorks' WLAN System Toolbox expands the capabilities of MATLAB for the development of wireless local area network communications systems. It enables users to explore algorithms and internet protocol, develop WLAN IP, and perform signal analysis and simulation. According to the company, it lets users focus on designing unique IP instead of spending time creating reference models and generating test signals. The toolbox provides reference designs so users can explore baseband specifications and demodulate and recover signals, and the MATLAB source code allows them to customize algorithms and analyses. It generates unencrypted, hardware-independent waveforms for simulation and over-the-air testing and provides end-to-end system simulation, a golden standard for design verification, measurement and analysis of system performance, and C-code generation support. *The MathWorks Inc, 3 Apple Hill Drive, Natick, MA 01760-2098, http://www.mathworks.com*

System design software

While LabVIEW 2015, the latest version of National Instruments' (NI) LabVIEW system design software, continues to standardize how its users interact with almost any hardware by reusing the same code and engineering processes across systems, it also improves speed and provides development shortcuts.

The software supports advanced hardware such as the quad-core Performance CompactRIO and CompactDAQ controllers, and it includes features that allow users to open, write, debug, and deploy code faster. Developers can open large libraries quickly, save time on common programming tasks with seven new right-click plug-ins, develop their own additional plug-ins, and examine arrays and strings in auto-scaling probe watch windows. The LabVIEW Tools Network has been enriched by internet protocol from NI and third-party providers, such as the new Advanced Plotting Toolkit by Heliosphere Research. *National Instruments Corporation, 11500 North Mopac Expressway, Austin, TX 78759-3504, http://www.ni.com*

Temperature data logger

Omega Engineering has introduced its OM-21 data logger with an accurate thermistor sensor for use in cold-chain applications. The economical, single-use device monitors the transportation of temperature-sensitive products. Users can program the sampling interval, start and alarm delay, temperature units, alarm type and range, and other parameters. The data logger is compact, lightweight, and waterproof and can fit inside any package. No special software or driver is required for setup or for downloading data. The logger has a temperature range of −30 °C to 70 °C, an accuracy of ±0.5 °C, a resolution of 0.1 °C, and a memory of 8192 readings. A PDF report with a data summary, graph, and tabular results is automatically generated on completion of data logging. The data logger has a USB interface and appears as a mass storage device when connected to a PC. *Omega Engineering Inc, One Omega Drive, P. O. Box 4047, Stamford, CT 06907-0047, http://www.omega.com*

Data analysis and graphing software

The 2016 version of OriginLab's Origin and OriginPro data analysis and graphing software application for scientists and engineers is now available. OriginPro offers all the features of Origin plus extended analysis tools. New features and enhancements include apps in Origin that provide graphing and analysis functionality. Smart plotting with cloneable templates allows users to quickly create multilayer graphs with complex mapping of data plots to worksheet columns. Users can use batch analysis to clone a current workbook during multifile import and to produce professional reports using Microsoft Word templates. Other new features include tab-based dialogs for common analysis tools and easier customization of annotation labels. A free, fully functional evaluation version is available for download at http://www.originlab.com/demodownload.aspx. *OriginLab Corporation, One Roundhouse Plaza, Suite 303, Northampton, MA 01060, http://www.originlab.com*

Thin-film thickness measurements

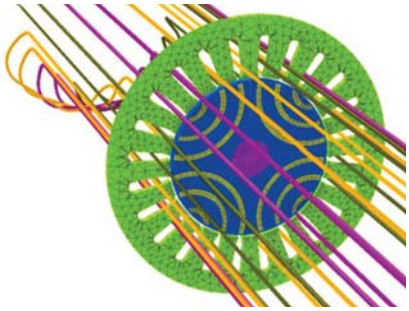
Craic Technologies designed its FilmPro film-thickness measurement software package to plug into its microspectrophotometers and their controlling Lambdafire software. FilmPro users can rapidly and nondestructively measure the thickness of thin films by either transmission or reflectance microspectroscopy. They can analyze films of many materials on both transparent and opaque substrates and determine thin-film thickness on semiconductors, MEMS devices, disk drives, and more. Sampling areas can range from more than 100 μm across to less than 1 μm. Designed for both research and production environments, the flexible software incorporates easily modified processing recipes, the ability to create new film recipes, and sophisticated tools for data analysis. With the addition of Craic spectral mapping, film-thickness maps of entire devices can be created. *Craic Technologies Inc, 948 North Amelia Avenue, San Dimas, CA 91773, http://www.microspectra.com*

Data acquisition software

An upgraded version of Perception, HBM's high-speed data acquisition software, can process 100 GB of memory within 10 s. According to the company, no other software package can perform live torque and rotational speed measurements and calculations so quickly. Version 6.60 has new user customization features and an eDrive application to simplify measurements on electric inverters and drive systems. It lets users more easily visualize torque and rotational speed as live curves. Other new live computations include total harmonic distortion and fundamental rms. Because of Perception's high-speed data processing capability, users can access and work with their data live while a measurement is running. The software allows users to create individual "workbenches" that can be defined with specific restrictions, test functions, capabilities, and passwords. *HBM Inc, 19 Bartlett Street, Marlborough, MA 01752, http://www.hbm.com*

Physics design software

Cobham Technical Services has launched a new version of its Opera electromagnetic and multiphysics design software. The finite-element analysis and simulation software incorporates enhancements to boost functionality, speed, and accuracy and improve ease of use. New features in version 18 include an analytic tool to quickly assess different winding configurations in rotating electrical machines. A new graphical analysis setup tool brings drag-and-drop editing simplicity to complex evaluation sequences that involve multiphysics simulation. The modeling of materials with very small skin depths is simplified by a new surface impedance boundary condition for transient electromagnetic analysis. Expanding Opera's interoperability, version 18 extends the optional links already available to a wider variety of third-party computer-aided design packages. *Cobham Technical Services, Vector Fields Simulation Software, 1700 North Farnsworth Avenue, Aurora, IL 60505-1186, http://www.cobham.com*



Temperature calibration software

Fluke Calibration has upgraded its MET/TEMP II temperature calibration software for testing batches of sensors, calculating characterization of coefficients, and generating calibration reports. Version 5.0 adds compatibility with Microsoft Windows 7 and 8 operating systems and support for Fluke's most recent temperature calibration sources, the 9190A Ultra-Cool Field Metrology Well and 9118A Thermocouple Calibration Furnace. To standardize testing for consistent results,

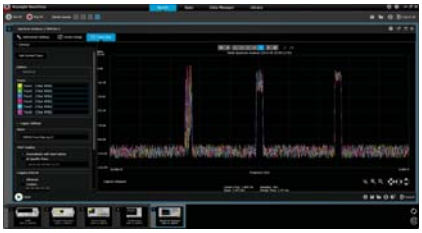
MET/TEMP II automates batch calibrations of platinum resistance, liquid-in-glass, and bimetallic thermometers; thermistors; and numerous thermocouple sensors. It can test up to 100 sensors at a time, and virtually any sensor with a resistance or voltage output can be tested. With MET/TEMP II, hours of testing can be performed while users do other work. *Fluke Corporation, 6920 Seaway Boulevard, Everett, WA 98203, http://us.flukecal.com*

Gridding and contour mapping software

Golden Software has released Surfer 13, a gridding and contour mapping software package for geologists, hydrologists, and engineers. It offers 13 gridding methods, including Kriging with variograms, to convert irregularly spaced XYZ data into a uniform grid. A grid or digital elevation model can be displayed in one of nine customizable 2D and 3D grid-based map types: contour, watershed, viewshed, image, shaded relief, one- and two-grid vector, 3D wireframe, and 3D surface. The software contains more than 250 new features and improvements, such as the ability to display latitude and longitude graticule lines over a projected map. It allows users to view their maps and data in various coordinate units. Two other time-saving upgrades perform queries on features in base maps and use new vector editing options. *Golden Software Inc, 809 14th Street, Golden, CO 80401-1866, http://www.goldensoftware.com*

Software for automated testing

Keysight Technologies now offers version 3.0 of its BenchVue software, which provides multiple-instrument measurement visibility and data capture



and eliminates the need for instrument programming when creating custom, automated tests. Users simply plug an instrument—for example, a digital multimeter, oscilloscope, or network analyzer—into a PC over a local area network, GPIB, or USB, and it is automatically configured for use in BenchVue. A new test flow app features an intuitive drag-and-drop interface that allows for rapid prototyping of test sequences. A network analyzer app and additional model support have been added, bringing the number of supported instruments to more than 300. Version 3.0's internal architecture allows for independent updates and downloads of individual applications, and application software releases are no longer tied to BenchVue platform releases. *Keysight Technologies Inc, 1400 Fountaingrove Parkway, Santa Rosa, CA 95403-1738, http://www.keysight.com* ■