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. For all new products submissions, please send to Rnanna@aip.org.

Andreas Mandelis

High-density arbitrary waveform generator

Zurich Instruments designed its multichannel arbitrary waveform generator, the HDAWG, for advanced signal generation in quantum research, spectroscopy applications, and component testing. According to the company, it offers the highest channel density and lowest trigger latency—less than 50 ns—available on the market. Both the four- and eight-channel models have 16 bits of vertical resolution at a sampling rate of up to 2.4 GSa/s and a signal bandwidth of 750 MHz. The maximum output amplitude is ±5 V. LabOne software provides state-of-the-art programming with the performance and flexibility of an AWG and the ease of use of a function generator. The LabOne sequencer combines waveform and sequence definition in a single editor and enables the use of parameterized control sequence and internal oscillators. ***Zurich Instruments AG**, Technoparkstrasse 1, 8005 Zurich, Switzerland, www.zhinst.com*

Real-time chemical imaging

Oxford Instruments' real-time navigation and imaging system for micro- and nanoanalysis, Navigation by Chemistry, uses a scanning electron microscope. The system is enabled by a combination of two new products: the fast, high-sensitivity Ultim Max silicon drift detector and AZtecLive real-time energy dispersive x-ray spectroscopy analysis software. Users can move their sample in any direction and explore it by means of video-rate x-ray maps colored by element rather than the black-and-white electron image alone. That approach adds greater specificity to sample investigation compared with secondary and backscatter imaging. AZtecLive records the elements and provides the tools to accurately turn data collected at hundreds of thousands of counts per second into useful information. ***Oxford Instruments NanoAnalysis USA**, 300 Baker Ave, Ste 150, Concord, MA 01742, www.oxford-instruments.com*

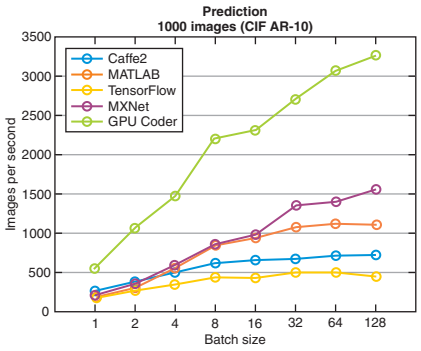
Software for spectrometers

McPherson and Princeton Instruments (PI) have introduced an add-in for PI's 64-bit LightField software, which controls McPherson's deep UV and soft x-ray spectrometers and PI's soft x-ray cameras. LightField is easy to set up and includes beneficial features such as a real-time math engine, a smart search function, and a virtual optical bench for conveniently managing multiple experimental setups. New and existing McPherson deep UV and soft x-ray instruments can now more easily be used with PI's soft x-ray detectors. Captured data can be exported in formats such as TIFF, ASCII, Igor from WaveMetrics, and Origin from OriginLab. ***McPherson**, 7-A Stuart Rd, Chelmsford, MA 01824-4107, http://mcphersoninc.com*

Fluorescence imaging software

PicoQuant has released a new version of the SymPhoTime 64 fluorescence imaging and correlation software package for data acquisition and analysis performed with its time-resolved microscopy platform, MicroTime 200. Beyond regular fixes and improvements, the update has novel reconvolution fitting models for correcting detector pulse pileup in fluorescence lifetime imaging (FLIM) experiments performed at high count rates. The models extend accurate fitting and analysis of rapidFLIM data to cases that involve multiexponential lifetime decays. RapidFLIM enables imaging of dynamic processes at very high detector count rates. Among those processes are protein interactions, chemical reactions, ion fluxes, and highly mobile species. ***PicoQuant**, Rudower Chaussee 29, 12489 Berlin, Germany, www.picoquant.com*

Mathematical programming software



Version R2017b of the MathWorks' MATLAB and Simulink is now available. MATLAB is a programming environment for algorithm development, data analysis, and numeric computation; Simulink is a graphical environment for simulation and model-based design for multidomain dynamic and embedded systems. The release offers updates, new features, six new products, and bug fixes to 86 products. Examples include a new text analytics toolbox, an extensible data store, more big data plots and algorithms for machine learning, and real-time software modeling with Simulink. Deep-learning capabilities have been added to simplify how users design, train, and deploy models. For example, the Neural Network Toolbox has added support for complex architectures and provides access to pretrained models such as GoogLeNet. ***The MathWorks Inc**, 1 Apple Hill Dr, Natick, MA 01760-2098, www.mathworks.com*

Data management software

National Instruments has incorporated new server-based software features and the Analysis Server product into its Data Management Software Suite to make it a complete workflow for product testing and analysis. Built on the company's DIAdem and DataFinder Server software, the Analysis Server data management solution allows the suite to be expanded to automated data processing, which can reduce the time and cost required for testing cycles. It can standardize large amounts of measurement data across teams, mine the data for useful information, transform them through automated analysis, and deliver comprehensive reports. The flexible suite can integrate with users' existing data formats and information technology infrastructures. ***National Instruments Corporation**, 11500 N Mopac Expy, Austin, TX 78759-3504, www.ni.com*

Software for wireless R&D

According to Keysight, the latest release of its SystemVue electronic-system-level simulation software offers the first design and verification process for the 5G telecommunication standard. It is part of Keysight's EEsof EDA (electronic engineering software electronic design automation) software. SystemVue 2017 provides 5G functionality and enables users to combine existing baseband, RF, and channel models to evaluate an entire system and design phased-array antennas for 5G mobile networks. Users can characterize an array's radiation of spurious intermodulation signals in terms of direction and power. That characterization can help avoid interference with nearby antennas and comply with Federal Communications Commission spectral emission rules. ***Keysight Technologies Inc**, 1400 Fountaingrove Pkwy, Santa Rosa, CA 95403-1738, www.keysight.com*

Time controller

The digital processing engine in the ID900 time controller from ID Quantique can be reconfigured to improve functionality from within the same chassis and thus will not need to be replaced. The ID900 is based on a field-programmable gate array (FPGA). However, because the timing resolution associated with an FPGA is around 5 ns and is not as accurate as needed, ID Quantique developed reconfigurable picosecond timing logic. It allows FPGA reconfigurability to be combined with timing accuracy on the picosecond scale. The arrival time of a pulse on each input is digitized to high resolution (about 10 ps) with a time-to-digital converter. The data are transferred to the FPGA and processed in parallel. The processing may involve real-time data acquisition or signal processing, such as generating a delay or a pulse pattern. ***ID Quantique SA**, Chemin de la Marbrerie 3, 1227 Carouge, Geneva, Switzerland, www.idquantique.com* PT