Biological Sciences Division

Imaging system success story featured on journal cover

How a team of PNNL and Utah State University scientists and programmers overcame problems with a unique microscope developed for obtaining live images and cells and proteins is the topic of a cover story in the October 2005 issue of *Scientific Computing & Instrumentation*. The story, “Pixel Perfect - A real-time image processing system for biology,” describes how a multi-spectral confocal microscope developed at PNNL works (see figure), and how the instrument’s image registration problems were solved by 1) developing a comprehensive, in-house user interface to operate the scope, 2) developing a new kind of calibration procedure, and 3) creating a real-time image “warper” in the instrument hardware.

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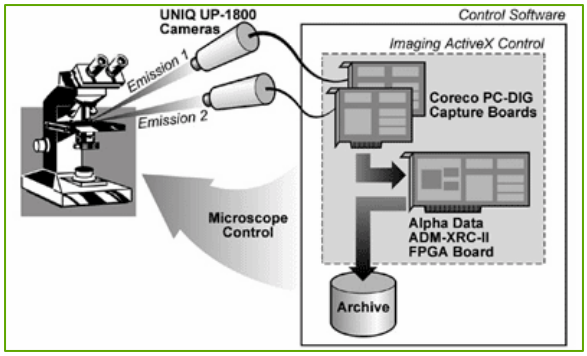
The team consists of Marianne Sowa, Kenneth Perrine, Derek Hopkins, and Brian LaMarche, PNNL; and Scott Budge, Utah State University. PNNL chief scientist Steven Wiley developed the microscope and the work was sponsored by the Biomolecular Systems Initiative at PNNL. Part of the work took place in DOE’s W.R. Wiley Environmental Molecular Sciences Laboratory located at PNNL.

The journal article can be accessed on the http://www.scimag.com/ShowPR.aspx?PUBCODE=030&ACCT=3000000100&ISSUE=0509&RELTYPE=FE&PRODCODE=00000000&PRODLETT=L.

Reference

Perrine KA, DF Hopkins, BL LaMarche, SE Budge, and MB Sowa. 2005. “Pixel Perfect - A real-time image processing system for biology.” *Scientific Computing & Instrumentation* September 2005, 16-20.



The control system of the dual-camera confocal microscope coordinates image acquisition, processing, and data archiving, as well as instrument control The system is intended to facilitate high-speed image capture and processing, involving pairs of 800 x 600 images taken at a rate of 15 frames per second, or 14.4 million pixels per second.