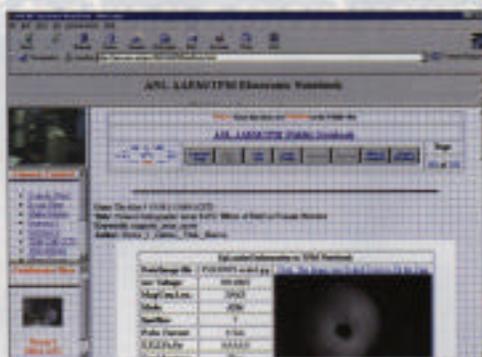


Systems, Philips Electronic Instruments, Hitachi Scientific Instruments, JEOL USA, and Graham Technology Solutions.

TPM works well with electron microscopes because many of the remote control capabilities are already embedded in the system by the manufacturers, says Zaluzec. A generic TPM system consists of software and hardware that operate in a client-server relationship. The workstation client software is platform independent, and runs on simple PCs and Macs, as well as high-end UNIX workstations.

At the Argonne TPM site, users enter an online microscopy laboratory. Using a graphical user interface, they navigate through the laboratory, adjusting their window into the virtual laboratory space. Each window presents real-time information that is updated at the user-selected rate. The navigation controls allow the user to select the laboratory view or "win-



An electronic notebook created by developers at Oak Ridge National Laboratory can be used on the TPM interface to collect and analyze data during remote controlled microscopy experiments.

dows" to the instrument. If the user has the appropriate authorization, they can control the instrument via their Web interface. Data collected at the TPM can be put into an electronic notebook created by developers at ORNL.

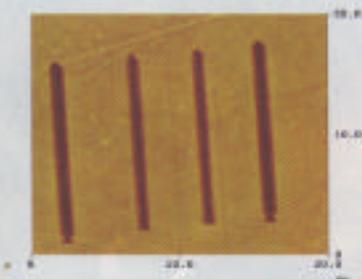
Zaluzec sees his research as building an environment for collaboration.

"Telepresence won't eliminate all travel by researchers, but it will make you more efficient once you get there," says Zaluzec. He notes that the costs and implementation time limit the systems to which TPM can be applied. He doesn't see any sense in putting automatic loading systems in place for the microscopes, for example, because it probably would be too expensive. And while implementation of the Argonne TPM system at a new remote site has become fairly easy—a couple of weeks for the Univ. of Western Australia installation, for example—simple optical microscopes are probably too basic to have these types of automation systems applied to them. "Here, the old philosophy of if its analog, 'it's not worth it' applies. And again if you want too much detailed automation capabilities, you probably should get your own instrument."

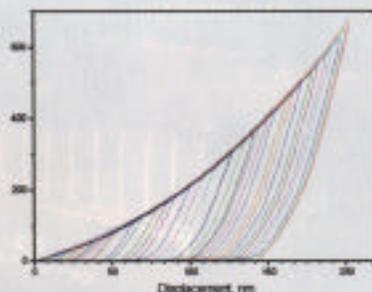
—Tim Studt

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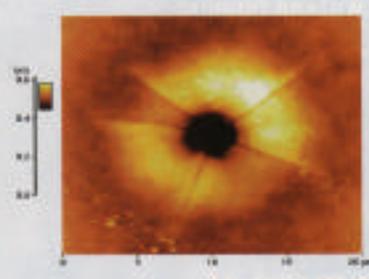
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