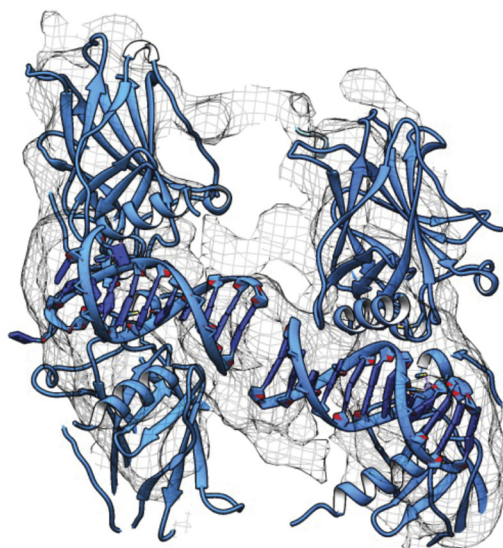
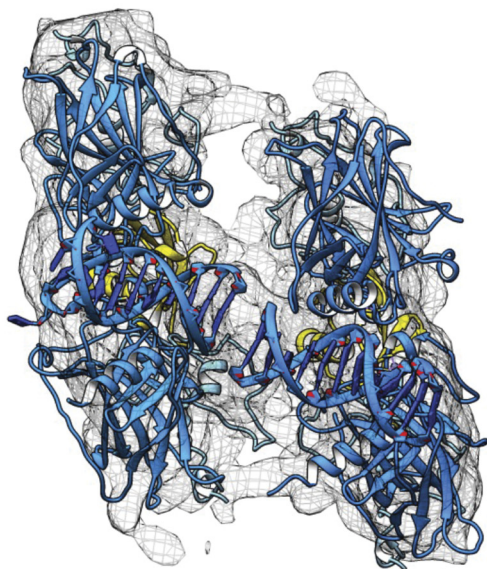
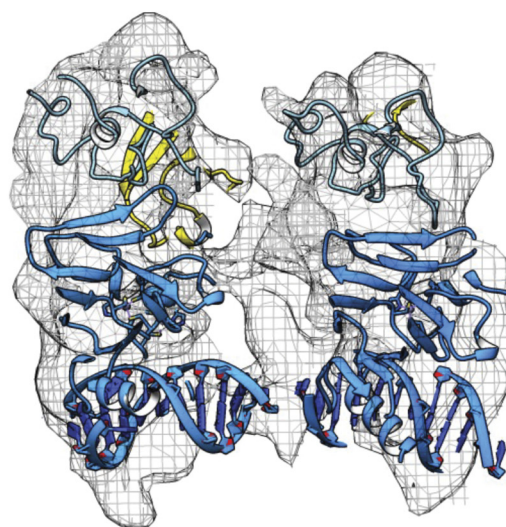
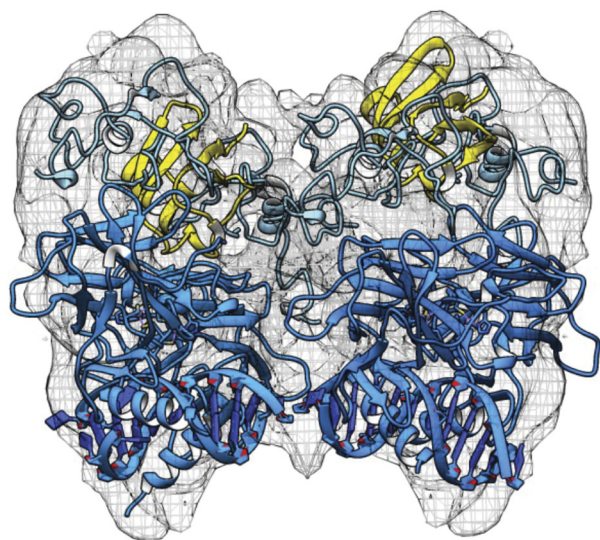


Microscopy TODAY

Volume 30 Number 2 2022 March





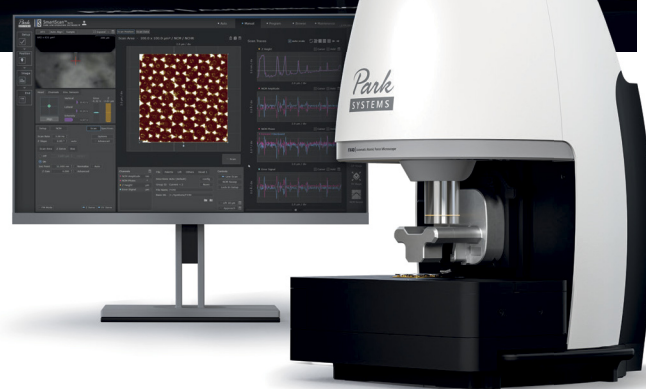
Park FX40

The Automatic AFM

Accelerate Your Research

Built-in Intelligence - It does all your set up and scanning so that you can focus on your research.

parksystems.com/fx40



SCAN ME!
Watch the video

Park
SYSTEMS

Expand your Knowledge of Microscopy with MSA Membership!

Whether your primary focus is in light, electron, or scanning probe microscopy, or the biological or the physical sciences, MSA takes your knowledge to the next level!

Members Receive:

- A personal subscription to MSA's official journal, *Microscopy and Microanalysis*, and MSA's popular bi-monthly magazine, *Microscopy Today*.
- Peer Networking through the Society's Focused Interest Groups and Local Affiliated Societies.
- Discounts on books, journals and other educational materials.
- MSA Awards Programs, Scholarships, Speaker Opportunities, and more!



Join MSA Today!
Visit www.microscopy.org

DiATOME

the incomparable Diamond Knife for all fields of research...

DiATOME Diamond Knives are the premier knife for biological and materials applications, compatible with all ultramicrotomes.

For decades, researchers have relied on DiATOME Diamond Knives superior quality, reliability, and durability. And with proper use, they require far less resharpening than any other knife, making them economical as well. Resharpened DiATOME knives undergo the same stringent optical checking and sectioning test as new knives. The same flawless quality is guaranteed.

Applications are numerous and include sectioning of hard or soft industrial samples, embedded biological samples, alternating ultrathin/semithin, and frozen hydrated samples. Please see our website for a complete applications guide.

Get them from **THE** source...

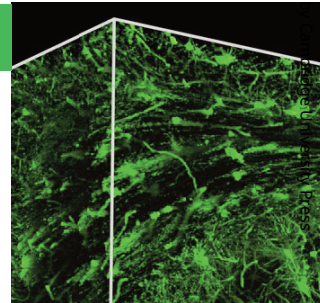
DiATOME U.S.

P.O. Box 410 • 1560 Industry Rd.
Hatfield, Pa 19440
Tel: (215) 412-8390
Fax: (215) 412-8450
email: info@diatomeknives.com

NEUROSCIENCE

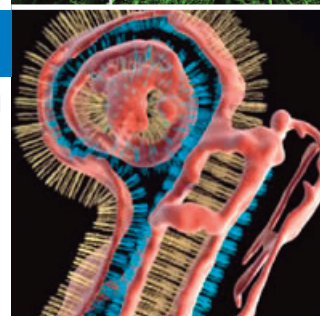
Micro-Optical Sectioning Tomography to Obtain a High-Resolution Atlas of the Mouse Brain Anan Li, Hui Gong, Bin Zhang, Qingdi Wang, Cheng Yan, Jingpeng Wu, Qian Liu, Shaoqun Zeng, Qingming Luo

Britton Chance Center for Biomedical Photonics, Wuhan National Laboratory for Optoelectronics—Huazhong University of Science and Technology, Wuhan 430074, P. R. China.



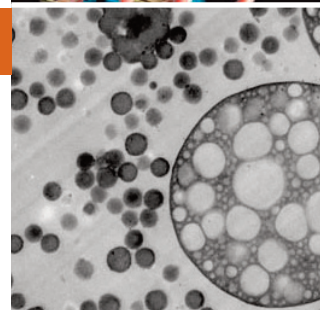
CRYO

A single slice of a tomogram of an aldehyde fixed and sucrose infiltrated cryosection with a 3D reconstruction. Erik Bos and Peter J. Peters, Netherlands Cancer Institute, Amsterdam. (see: J. Lefman, P. Zhang, T. Hirai, RM. Weis, J. Juliani, D. Bliss, M. Kessel, E. Bos, P.J. Peters, S. Subramaniam: Three-dimensional electron microscopic imaging of membrane invaginations in Echerichia coli overproducing the chemotaxis receptor Tsr. J. Bacteriol. 2004 Aug; 186(15): 5052-61.)



MATERIALS

ABS, stained with OsO4, sectioned at room temperature with the ultra sonic knife, section thickness 50nm. Note the almost perfect spherical shape of the large rubber particles and the preservation of the inclusions inside. Also the smaller dense rubber particles are well preserved. B.Vastenhou, Dow Benelux N.V. Terneuzen, The Netherlands.

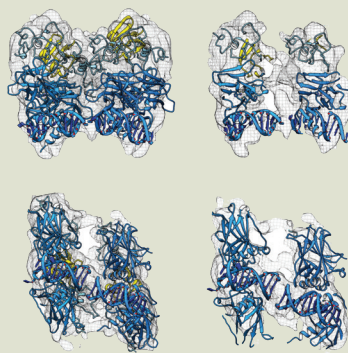


- Ultra-Wet 35° • Ultra-Dry 35° • Ultra-Semi 35° • Ultra Maxi 35°
- Ultra Jumbo 35° • Ultra Sonic 35° Ultra ATS 35° Ultra-AFM 35°
- Ultra-Wet 45° • Ultra Jumbo 45° • Cryo 25° • Cryo Immuno 35°
- Cryo-Dry 35° • Cryo-Wet 35° • Cryo-Dry 45° • Cryo-Wet 45°
- Cryo-AFM Histo 45° • Histo Jumbo 45° • Histo-Cryo Dry 45°
- Histo-Cryo Wet 45° • Trimtool 20 • Trimtool 45 • Static Line II



Contents

About the Cover



Cryo-EM structure of the tumor suppressor P53 from human cancer cells. For further information, please see Solares and Kelly, page 10.

General Interest

- 10 Harnessing the Power of Structural Oncology**
Maria J. Solares and Deborah F. Kelly
- 18 The Association of Biomolecular Resource Facilities**
Richard W. Cole, Kristopher E. Kubow, and Jane Catherine Ngila

Techniques and Equipment Development

- 24 Low-Z FIB Grids for Reducing Spurious Fluorescence and X-ray Overlaps**
Lucille A. Giannuzzi, Nicolaie Moldovan, Jamie A. Trindell, and Joshua D. Sugar
- 30 Customizable Automated High Content Image Acquisition and Analysis for Tissue Biopsies**
Christopher A. Neal, Jacob G. Hodge, David S. Zamierowski, and Adam J. Mellott
- 40 The Story behind the First Automatic Atomic Force Microscope**
Ryan YK Yoo

Pioneers

- 46 Pioneers in Optics: Ernst Ruska (1906–1988)**
Cameron Varano

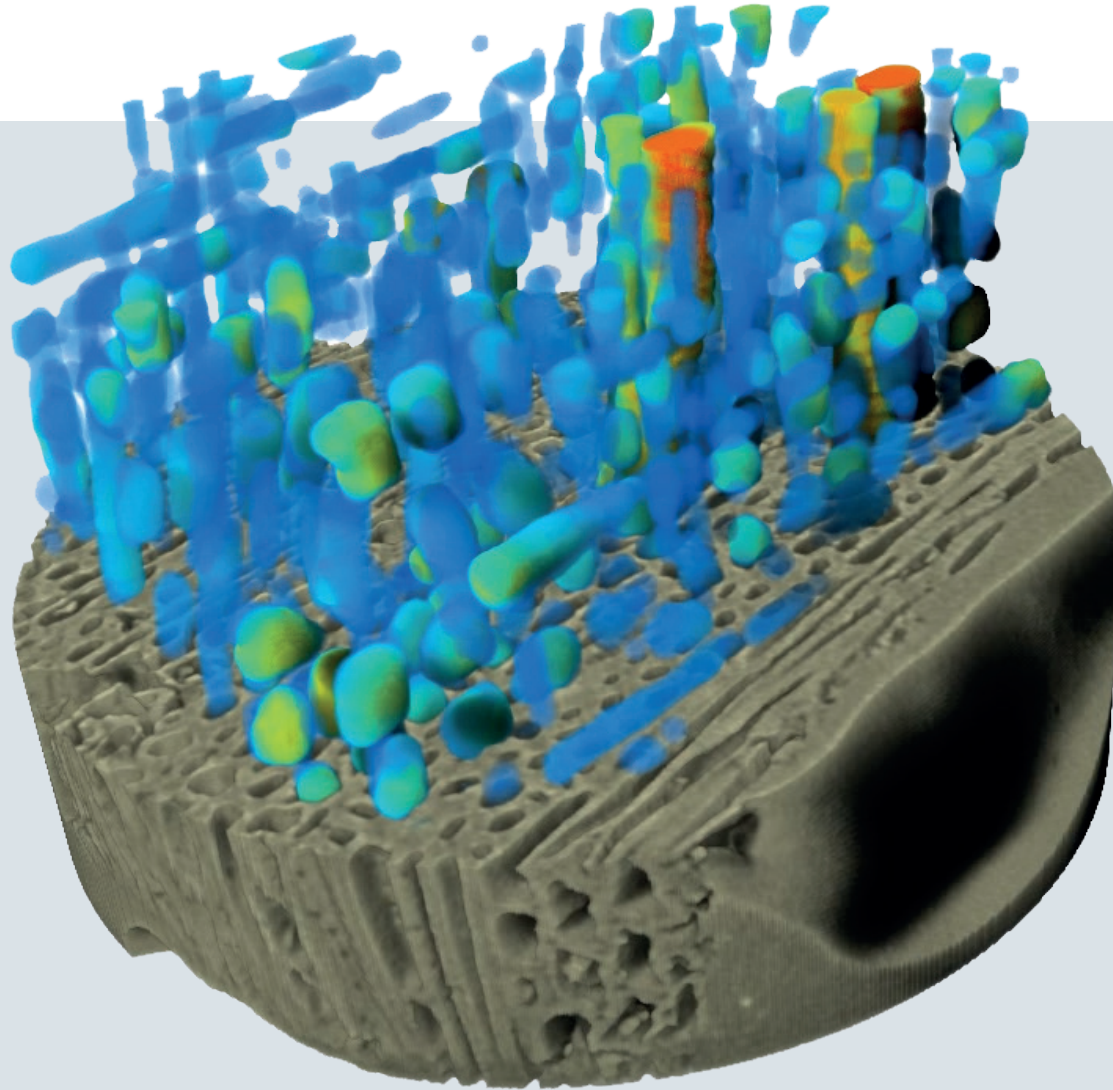
Highlights from *Microscopy and Microanalysis*

- 52 The Relevance of Ultrastructural Studies of Metastatic Cells from Women with Breast Cancer History**
- 52 Composition Analysis by STEM-EDX of Ternary Semiconductors by Internal References**
- 53 Strategies for EELS Data Analysis. Introducing UMAP and HDBSCAN for Dimensionality Reduction and Clustering**
- 53 Cells and Tissue Imaging by TOF-SIMS and MALDI-TOF: An Overview for Biological and Pharmaceutical Analysis**

Departments

- 7 Editorial**
- 8 Carmichael's Concise Review**
- 48 Industry News**
- 50 Product News**
- 54 Crossword Puzzle**

- 56 NetNotes**
- 62 Calendar of Meetings**
- 65 Dear Abbe**
- 66 Index of Advertisers**



Wood sample scanned at 280 nm voxel size - vessels are color-coded to thickness.

TESCAN UniTOM HR

The first micro-CT system to provide sub-micron spatial resolution and high temporal resolution dynamic CT in a single, highly versatile system.

**What can you do with TESCOAN UniTOM HR?
Contact us today to find out:**

