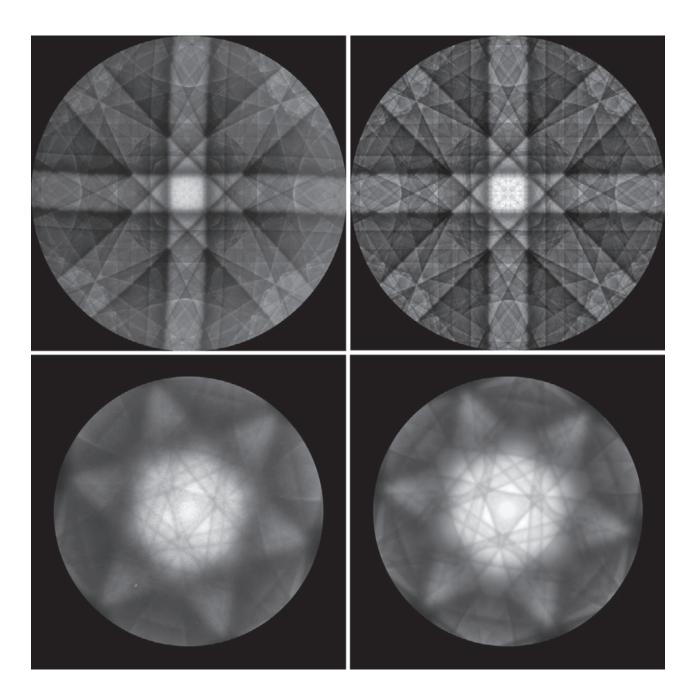
Volume 20 Number 2 2012 March SCOOL TODAY Volume 20 Number 2 2012 March TODAY







org/10.1017/S1551929512000132 Published online by Cambridge University Press

Don't Compromise

The HITACHI HT7700 120kV TEM High-contrast and high-resolution TEM



- ♦ High-stability 5-axis side-entry Hiper stage
- ♦ Clean turbo-pumped vacuum system
- ♦ Fast pumpdown and sample exchange
- ♦ Low magnification/wide field of view
- ♦ Automated digital montage and auto-tuning functions
- ♦ Tomography, EDS, and STEM capabilities

When it counts, think Hitachi

*Offer valid in the United States only. Requires acceptance of additional Terms & Conditions. Hitachi High Technologies America reserves the right to terminate or modify this warranty promotion at any time. Contact us for details.

Hitachi High Technologies America, Inc. toll free: 800-548-9001 (US & Canada) email: sales-LS@hitachi-hta.com

www.hitachi-hta.com/ht7700 www.youtube.com/user/HitachiHTA

HITACHI Inspire the Next

select SEM and TEM

models!*

Visit www.microscopy.org/MandM/2012/ for:

Abstract Submissions

(Deadline is February 15, 2012)

Hotel & Meeting Information

Program Details

Four full days of paper and poster presentations

Registration

(Online registration begins February 1, 2012)

Register Early and Save!







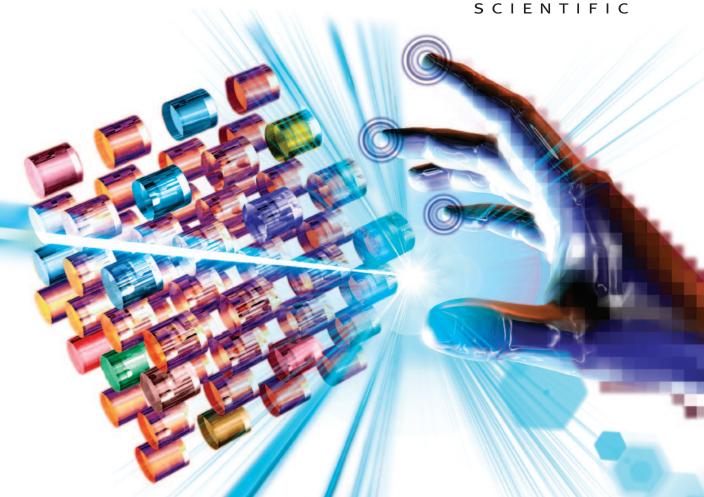
True system integration.

Electron microscopy laboratories seek maximum productivity and accuracy from microanalysis. Systems need to be intuitive, easy to use and eliminate operator bias. Our long history of innovation has led to the first truly integrated microanalysis system, providing the optimal combination of **EBSD**, **WDS** and **EDS** detectors, software and electronics. Collect large amounts of data in the shortest amount of time. Identify phases confidently with a minimum amount of spectra. Move seamlessly through your analysis with one common interface.

Fast. Easy. Precise. Microanalysis.

driving bold progress in spectroscopy
 www.thermoscientific.com/microanalysis







Feature Article

12 Future Prospects for Defect and Strain Analysis in the SEM via Electron Channeling

Yoosuf N. Picard, Ranga Kamaladasa, Marc De Graef, Noel T. Nuhfer, William J. Mershon, Tony Owens, Libor Sedlacek, and Filip Lopour

Contents Instrumentation

18 Ergonomics for the Invisible

Vadim Val-Khvalabov and Mike Nelson

24 Running Digital Micrograph on Linux and Mac OSX Robert Hovden

Biological Application

28 Biological Sample Preparation for SEM Imaging of Porcine Retina Patrick Moran and Brittany Coats

Materials Application

32 Distinguishing between Mineral Paint and Carbon Paint on Ancestral Puebloan Pottery

M. W. Pendleton, D. K. Washburn, E. A. Ellis, and B. B. Pendleton

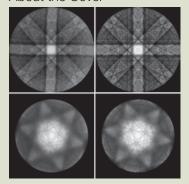
Microscopy Pioneers

38 Early Days of Electron DiffractionWilbur C. Bigelow

Microscopy 101

46 Preparation Methods for EM Studies of Polymers
Helen Hassander

About the Cover



Experimental and simulated electron channeling zone axis patterns of Si [100] and Si [111] showing HOLZ lines in the centers.

See article by Picard et al.

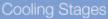
Departments

- 7 Editorial
- 8 Carmichael's Concise Review
- 50 Industry News
- **52** Product News

54 NetNotes

- 62 Calendar of Meetings
- 65 Dear Abbe
- 66 Index to Advertisers





Recirculating Heaters and Chillers

Sputter Coaters

SEM/TEM Carbon Coaters

Vacuum Evaporators

Glow Discharge Systems

RF Plasma Etchers/ Plasma Reactors

Critical Point Dryers

Freeze Dryers

Cryo-SEM Preparation Systems

Vacuum Pumps & Accessories

Evaporation Supplies

and more...

well equipped...

Electron Microscopy Sciences is pleased to announce our new full line catalog, your comprehensive source for high-end Vacuum Equipment. EMS is committed to providing the highest quality products along with competitive pricing, prompt delivery and outstanding customer service.



and more...

Not just Vacuum Equipment, EMS also offers:

Laboratory Microwave Ovens • Automated Tissue Processors • Oscillating Tissue Slicers • Vibrating Microtomes • Rapid Immersion Freezers • Tissue Choppers • Desiccators and Desiccants • Centrifuges, Tubes, and Racks • Stirrers, Stirring Hotplates, and Digital Hotplates • Stirring Bars, Stirring Rods, and Hand Mixers • Vortex Mixers, Microplate Mixers, and Magnetic Stirrers • Tissue Rotators, Mixer Vortexes, and Rotator/Rockers • Dri Baths • Oven/Incubators • Cooling Chambers • Ultraviolet Lamps • Lab Jacks

For catalog requests, please visit our website at www.emsdiasum.com



