







www.microscopy-today.com

## **The Ultimate SEM Is Here!** All New Hitachi SU8200 Series Next-Generation CFE-SEM

Hitachi's next generation Cold Field Emission SEM offers unmatched low-voltage imaging and comprehensive analytical microanalysis with the uncompromised performance of CFE.

- Increased probe current for S/N and analytical performance.
- Unparalleled imaging throughput with improved CFE beam stability.
- Enhanced deceleration and new selective energy filter provide fine contrast differentiation of similar atomic number materials at low accelerating voltages.



**Energy Filter OFF** 



**Energy Filter ON** 

Sample: Carbon Nanotube (CNT) and Polytetrafluoroethylene (PTFE) composite film (protective film used for fuel cell) Sample Courtesy of Prof. Yoshiyuki SHOW, School of Engineering, Tokai University, Japan

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

Copyright © 2013 Hitachi High Technologies America, Inc. All rights re



10.1017/S1551929513001211 Published online by Cambridge Univ



# **4 FULL DAYS** Symposia, tutorials, exhibits, posters, short courses & workshops

## **Visit Often for Updates!**

### http://microscopy.org/MandM/2014

Call for Papers Paper Submission Open: November 15, 2013

**Program Details** 

Hartford Area & Hotel Information Hotel reservations available January 2014





Paper Submission Portal Paper Submission Deadline: February 8, 2014

**Awards Information** 

Online Registration Opens February 2014







Image at Top: Cathodoluminescence image of composite SiC-diamond cutting tool; Colin MacRae, CSIRO-Minerals, Clayton, Victoria, Australia

Whether it's the latest innovative products, or the necessities you depend on every day, EMS has it.

SILICON WAFER CLEAVING EQUIPMENT **CRYO-SEM PREPARATION DIGITAL MICROSCOPES** SPECIMEN STAGES MICROSCOPE PLATFORMS VACUUM GREASES SLIDE PRINTING HOLEY CARBON GRIDS FLUORESCENCE VIEWING SYSTEMS FLUOROPOLYMER FILMS FLUORESCENCE ENHANCING SLIDES FREEZE SUBSTITUTION KIT NANOMANIPULATION SYSTEMS **INCUBATORS** VACUUM PUMPS

### and much more.

#### Electron Microscopy Sciences

P.O. Box 550 • 1560 Industry Rd. Hatfield, Pa 19440 **Tel:** (215) 412-8400 **Fax:** (215) 412-8450 **email:** sgkcck@aol.com www.emsdiasum.com







## THE NEW EMS FULL LINE CATALOG IS COMING SOON IN 2014, WITH MORE NEW PRODUCTS THAN EVER.







#### **Light Microscopy**

- 12 Color Integrity: Is What You See What You Saw? Barbara Foster and Jerry Sedgewick
- **18** Preparing Monochromatic Images for Publication: Theoretical Considerations and Practical Implications Jörg Piper
- **26** An Inexpensive Fluorescent Graticule Safraz Khan and Joshua C. Brumberg

#### **Electron Microscopy**

28 Downstream Plasma Technology for Cleaning TEM Samples on Carbon Films

Lianfeng Fu, Haifeng Wang, Christopher G. Morgan, and Vincent Carlino

**34** SEM Measurement of Microporous Film Pore Distributions Dave Biggs, Shawn Jenkins, and Rich Brown

#### Meetings

- **38** Microscopy & Microanalysis 2014 in Hartford David C. Bell, Program Chair
- **42** Microscopy & Microanalysis 2013 Teresa Ruiz, Program Chair

#### Microscopy 101

**46 Increased User Safety from Glass-Free Liquid Nitrogen Dewars** Steven Barlow

#### Opinion

- 65 When is Z-Contrast D-Contrast?
  - L. D. Marks and P. M. Voyles

#### Departments

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

- 56 NetNotes
- 60 Calendar of Meetings
  - 64 Dear Abbe
  - 66 Index to Advertisers

#### About the Cover



Contents

Color measurement and correction for light microscopy. Image width = 750  $\mu$ m.

See article by Foster and Sedgewick.

## X-Max<sup>N</sup> 100TLE SDD for TEM

#### Solid angle. Sensitivity. Speed.



The **X-Max**<sup>N</sup> 100TLE is the perfect solution for field emission and aberration corrected TEMs working at the frontiers of nanoanalysis.

- 100 mm<sup>2</sup> active sensor area
- Special sensor design optimises solid angle
- Windowless configuration maximises low energy sensitivity

X-Max<sup>№</sup> 100TLE is the clear choice for the characterisation of nanostructures, nanoparticles, semiconductors, and beam sensitive materials.

>12x effective solid angle for N K $\alpha$  compared to 30 mm<sup>2</sup> SDD

Atomic column mapping of SrTiO<sub>3</sub>

100 TLE

For more on our flagship SDD please visit: www.oxford-instruments.com/100TLE



The Business of Science®