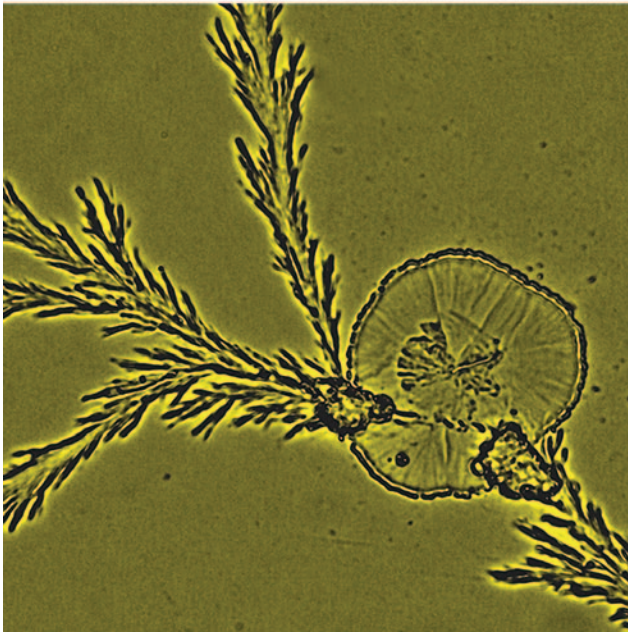
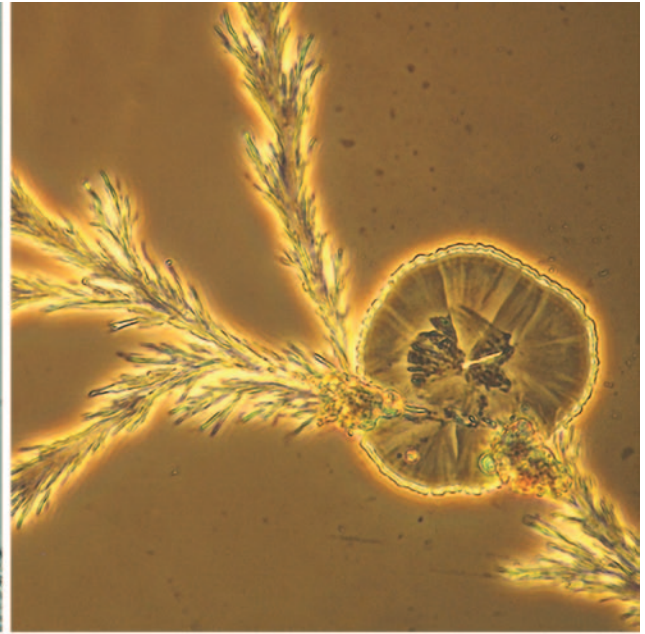


Microscopy TODAY

Volume 18 Number 3 2010 May



Introducing the new Hitachi SU8000 UHR FESEM

Another First from Hitachi

For over 35 years, Hitachi has been a worldwide leader in Field Emission Microscopy surpassing all other manufacturers. Year after year each new product sets the industry standard for innovation, performance, and field proven reliability. The SU8000 is no exception. A new *Triple Detector System* provides more flexibility and optimization of signal detection to reveal surface information never seen before in any high resolution electron microscope. For the first time three high speed detectors separate, mix and control SE, low angle BSE and high angle BSE to reveal surface information and Z contrast only possible on the Hitachi SU8000 UHR FESEM.

Standard Feature

- ◆ Patented Triple Detector System
- ◆ Beam Deceleration for increased resolution and decreased radiation damage to the sample
- ◆ ExB energy filter system for enhanced signal collection and beam alignment memory
- ◆ 5 axis computer eucentric stage with quick specimen exchange and image navigation function
- ◆ Completely dry vacuum system, less than 30 second specimen exchange time
- ◆ 24.1" wide screen LCD monitor with stunning 1280 x 960 screen resolution
- ◆ Designed and manufactured in Japan with ISO 9000 standards
- ◆ Integrated PCI image archival and image processing system
- ◆ Large analytical chamber with EDS ready hardware
- ◆ Easy operation with onscreen help functions
- ◆ Fast and accurate auto functions



Call or email today for more information or to schedule a hands on demonstration

925-218-2800 (ask for Steve) or e-mail request at sales@hitachi-hta.com

Contents

Feature Article

- 10 Ultra-high Contrast Amplification in Bright-field Images**
Joerg Piper

Geological Applications

- 18 Microscopy and Microanalysis of Magmatic and Metamorphic Minerals—Part 2: Feldspar**
Robert Sturm

Instrumentation

- 26 Notes on Electron Gun Saturation and Stabilization...An Older Man's Lectures**
Wilbur C. Bigelow
- 32 Contamination-Free TEM for High-Resolution Imaging of Soft Materials**
Shin Horiuchi and Takeshi Hanada
- 36 The Preparation of Porous Materials Using Liquid Metal Impregnation for BSE Characterization with a Scanning Electron Microscope**
James H. Steele Jr.

Microscopy Education

- 44 Virtual SEM (VSEM)—Ongoing Development of Teaching Resources**
N.H.M. Caldwell, G.C. Martin, A.L. Mitchell, D.M. Holburn, and B.C. Breton

Microscopy Pioneers

- 50 Pioneers in Optics: Giovanni Battista Amici and Girolamo Cardano**
Michael W. Davidson

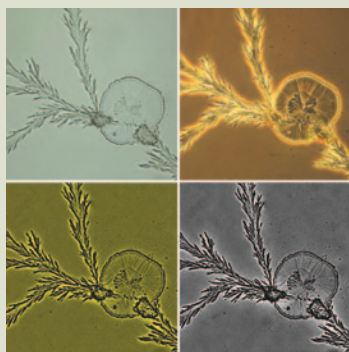
Microscopy 101

- 54 Looking Inside—Having a Cracking Time**
Steve Chapman

Departments

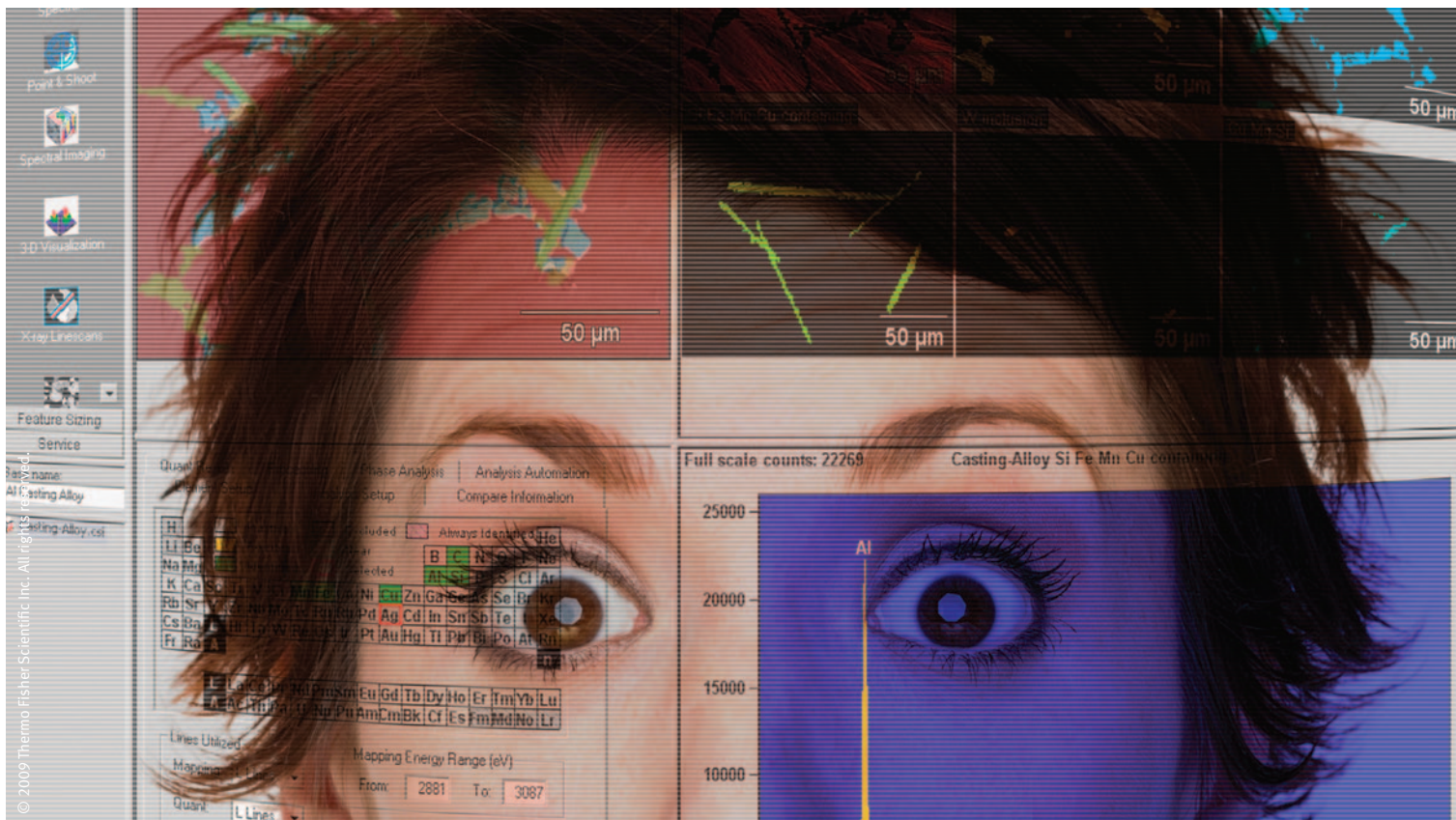
- | | |
|--------------------------------------|--------------------------------|
| 5 Editorial | 60 NetNotes |
| 6 Carmichael's Concise Review | 70 Calendar of Meetings |
| 58 Industry News | 73 Dear Abbe |
| 59 Product News | 74 Index to Advertisers |

About the Cover



Unstained thin-layer crystallization in four bright-field light microscopy modes. Image width = 74 μm .

See article by Piper.



Get the correct answer up to 100x faster. Really.

Precision and Speed The Thermo Scientific NORAN System 7 speeds you to answers with blazing fast processing at more than 1,000,000 counts per second. Our new integrated Wavelength Dispersive Spectroscopy (WDS) offers automatic confirmation of Energy Dispersive Spectroscopy (EDS) peak identification.

Seamless EDS & WDS In one system you get the ultimate in automation using both EDS and WDS. You gain the time saving convenience of automatic quantitative mapping and Point & Shoot analysis without sacrificing control.

A Pleasure to Use Included with the powerful spectral and imaging hardware is a suite of software unparalleled in the industry. Just one click to create a report or analyze samples outside the lab with network ready data analysis.

www.thermo.com/microanalysis



Thermo Scientific EDS & WDS

The optimum combination of detectors, analyzer and software for all X-ray microanalysis needs.

Moving science forward

Thermo
SCIENTIFIC

Part of Thermo Fisher Scientific