

table of contents preview

## Materials Applications

Microfluorescence Analysis of Nanostructuring Inhomogeneity in Optical Fibers with Embedded Gallium Oxide Nanocrystals

Valery M. Mashinsky, Nikita M. Karatun, Vladimir A. Bogatyrev, Vladimir N. Sigaev, Nikita V. Golubev, Elena S. Ignat'eva, Roberto Lorenzi, Maria Cristina Mozzati, Alberto Paleari, and Evgeny M. Dianov

Three-Dimensional Characterization of Pigment Dispersion in Dried Paint Films

Using Focused Ion Beam-Scanning Electron Microscopy

Jui-Ching Lin, William Heesch, John Reffner, and John Hook

Microstructural Characterization of Next Generation Nuclear Graphites

Chinnathambi Karthik, Joshua Kane, Darryl P. Butt, William E. Windes, and Rick Ubc

## Biological and Biomedical Applications

Characterization of Micro- and Nanophase Separation of Dentin Bonding Agents by Stereoscopy and Atomic Force Microscopy

Manuel Toledano, Monica Yamauti, Estrella Osorio, Francesca Monticelli, and Raquel Osorio

Scanning Electron Microscopy and Roughness Study of Dental Composite Degradation

Luís Eduardo Silva Soares, Louise Ribeiro Cortez, Raquel de Oliveira Zarur, and Airton Abrahão Martin

Microstructural Evaluation of Boron Free and Boron Containing Heat-Treated Ti-35Nb-7.2Zr-5.7Ta Alloy

Pallab Majumdar

Bee (*Apis mellifera*) Venom Produced Toxic Effects of Higher Amplitude in Rat Thoracic Aorta than in Skeletal Muscle—An Ultrastructural Study

Adrian Florea and Constantin Crăciun

Alterations in the Fat Body Cells of *Rhinocricus padbergi* (Diplopoda) Resulting from Exposure to Substrate Containing Sewage Sludge

Raphael Bastão de Souza and Carmem Silvia Fontanetti

Bioconjugated and Cross-Linked Bionanostructures for Bifunctional Immunohistochemical Labeling

Rıdvan Say, Gözde Aydoğan Kılıç, Ayça Atılır Özcan, Deniz Hür, Filiz Yılmaz, Adil Denizli, and Arzu Ersöz

A Negative Stain for Electron Microscopic Tomography

Andrea Fera, Jane E. Farrington, Joshua Zimmerberg, and Thomas S. Reese

## Techniques and Software Development

Fully Automated Measurement of the Modulation Transfer Function of Charged Coupled Devices above the Nyquist Frequency

Wouter Van den Broek, Sandra Van Aert, and Dirk Van Dyck

Variable Phase Dark-Field Contrast—A Variant Illumination Technique for Improved Visualizations of Transparent Specimens

Timm Piper and Jörg Piper

Calibration of Piezoelectric Positioning Actuators Using a Reference Voltage-to-Displacement Transducer Based on Quartz Tuning Forks

Andres Castellanos-Gomez, Carlos R. Arroyo, Nicolás Agrait, and Gabino Rubio-Bollinger

A New Approach to the Determination of Concentration Profiles in Atom Probe Tomography

Peter J. Felfel, Baptiste Gault, Gang Sha, Leigh Stephenson, Simon P. Ringer, and Julie M. Cairney

Possibility of SEM Observation and EDX Analysis in Microscale Region of Insulating Samples Using Diluted Ionic Liquid

Susumu Imashuku, Tetsuo Kawakami, Long Ze, and Jun Kawai

Dependence of the Electron Beam Energy and Types of Surface to Determine EBSD Indexing Reliability in Yttria-Stabilized Zirconia

Laxmikant V. Saraf

Improved Focused Ion Beam Target Preparation of (S)TEM Specimen—A Method for Obtaining Ultrathin Lamellae

Lorenz Lechner, Johannes Biskupek, and Ute Kaiser

Highly Reproducible Secondary Electron Imaging under Electron Irradiation Using High-Pass Energy Filtering in Low-Voltage Scanning Electron Microscopy

Daisuke Tsurumi, Kotaro Hamada, and Yuji Kawasaki

Dimensional Quantification of Embedded Voids or Objects in Three Dimensions Using X-Ray Tomography

Brian M. Patterson, Juan P. Escobedo-Diaz, Darcie Dennis-Koller, and Ellen Cerreta

Improved Signal-to-Noise Ratio in Laboratory-Based Phase Contrast Tomography

Matthieu N. Boone, Yoni De Witte, Manuel Dierick, Ana Almeida, and Luc Van Hoorebeke

Electron Diffraction Based Analysis of Phase Fractions and Texture in Nanocrystalline Thin Films, Part III: Application Examples

J.L. Lábár, M. Adamik, B.P. Barna, Zs. Czigány, Zs. Fogarassy, Z.E. Horváth, O. Geszti, F. Misják, J. Morgiel, G. Radnóczy, G. Sáfrán, L. Székely, and T. Szüti



## Dear Abbe

**Dear Abbe,**

*Our Office of the Vice President for Research has lost so much money investing in real estate that our operations budget has been reduced dramatically. We are looking into alternative means to supplement our revenue stream. Someone suggested taking in outside work. Can you suggest alternatives?*

**Scrimping in Saint Louis**

**Dear Scrimpy,**

Ach du leiber! What a tangled web we weave when academic VPs stray from time-honored traditions of raising money, such as begging the governor and representatives in appropriations committees. Of the many ideas used to secure extra money, one employed by a friend in Athens, Georgia was particularly effective. They renovated their break room into a bistro with espresso, teas, snacks, and scones. With some advertising, students and faculty came to spend \$4.50 for coffee and \$3 on pastries while listening to campus volunteers recite lab poetry or play live jazz. The mood of the lab is more festive, and the profit was used to update equipment and purchase supplies. The number of clients increased as an excuse to frequent the lab. Then things got out of hand. The Health Department visited, the provost got involved, and they started doing confocal workshops there. Now they're back to coffee and occasional snacks for free.

**Dear Abbe,**

*I am about to install an advanced imaging system in a biosafety level-3 facility. To work in the facility, I suit up and wear a rigid face mask because the cells/pathogens will be on the scope and could be open to the environment. Consequently, the oculars are useless. A survey of the full field of view is needed, but a widefield camera won't allow a view of the full field. Can you provide a working solution?*

**Exposed in Edmonton**

**Dear Overexposed,**

I suggest hiring lab techs or post docs who are already infected with the pathogen and don't have much time left (and little to live for). If you hire techs with no known next-of-kin, you could avoid having to fill out all those pesky IACUC forms. They could be kept working in the BSL3 facility indefinitely (or at least until they expire) by passing them sterilized coffee and Little Debbie® snack cakes. One side benefit would be having data on the effects of snack cakes on infection progress. Back in my day, this could be done by hiring convicts or debtors, but this may no longer be an option. You'd have to check on union rules and university policy.

*If you are dying to ask Herr Abbe a question about a professional or personal problem, write to his able and frugal assistant at [jpshield@uga.edu](mailto:jpshield@uga.edu).*