

[table of contents preview](#)

BIOLOGICAL APPLICATIONS

Quantitative Assessment of P-Glycoprotein Expression and Function Using Confocal Image Analysis
Zahra Hamrang, Yamini Arthanari, David Clarke, and Alain Pluen

Chromosome Interior Observation by Focused Ion Beam/Scanning Electron Microscopy (FIB/SEM) Using Ionic Liquid Technique

Tohru Hamano, Astari Dwiranti, Kohei Kaneyoshi, Shota Fukuda, Reo Kometani, Masayuki Nakao, Hideaki Takata, Susumu Uchiyama, Nobuko Ohmido, and Kichi Fukui

Extracellular Matrix Reorganization during Cryo Preparation for Scanning Electron Microscope

Imaging of *Staphylococcus aureus* Biofilms

Yong Wu, Jing Liang, Kim Rensing, Tseng-Ming Chou, and Matthew Libera

High-resolution Episcopic Microscopy (HREM) – A Tool for Visualizing Skin Biopsies

Stefan H. Geyer, Maria M. Nöhmer, Markus Mathä, Lukas Reissig, Ines E. Tinhofer, and Wolfgang J. Weninger

Roughness and Morphology of Composites: Influence of Type of Material, Fluoride Solution, and Time

Ana Luisa Botta Martins de Oliveira, Elisa Maria Aparecida Giro, Patricia Petromilli Nordi Sasso Garia, Juliana Alvares Duarte Bonini Campos, Jin-Ho Park, and Sillas Duarte Jr.

Application of Fractal and Grey Level Co-Occurrence Matrix Analysis in Evaluation of Brain Corpus Callosum and Cingulum Architecture

Igor Pantic, Sanja Dacic, Predrag Brkic, Irena Lavrnja, Senka Pantic, Tomislav Jovanovic, and Sanja Pekovic

Retrospective Non-Uniform Illumination Correction Techniques in Images of Tuberculosis

Ebenzer Priya, Subramanian Srinivasan, and Swaminathan Ramakrishnan

Positional Correlative Anatomy of Invertebrate Model Organisms Increases Efficiency of TEM Data Production

Irina Kolotuev

Micro Structure Analysis of the Ovaries of Common Carp, *Cyprinus Carpio* L. Inhabiting a Polluted Reservoir, Umiam in Meghalaya, India

Bashida Massar, Sudip Dey, and Karabi Dutta

The Effect of Cadmium Under Different Salinity Conditions on the Cellular Architecture and Metabolism in the Red Alga *Pterocladia capillacea* (Rhodophyta Gelidiales)

Marthiellen R. de L. Felix, Luz K. P. Osorio, Luciane C. Ouriques, Francine L. Farias-Souares, Neusa Steiner, Mariangela Kersch, Debora T. Pereira, Carmen Simioni, Giulia B. Costa, Paulo A. Horta, Fungyung Chow, Fernanda Ramlov, Marcelo Maraschin, Zenilda L. Bouzon, and Eder C. Schmidt

Characterization of *Satureja khuzestanica* Leaf as a Herbal Medicine

Maryam Malmir, Rita Serrano, Ahmad Reza Gohari, and Olga Silva

Evaluation of Agave Fiber Delignification by Means of Microscopy Techniques and Image Analysis

Hilda M. Hernández-Hernández, Jorge J. Chanona-Pérez, Georgina Calderón-Domínguez, María J. Perea-Flores, Jorge A. Mendoza-Pérez, Alberto Vega, Pablo Ligeró, Eduardo Palacios-González, and Reynold R. Farrera-Rebollo

MATERIALS APPLICATIONS

Study of Point Spread in the Aberration-Corrected Transmission Electron Microscopy

Binghui Ge, Yumei Wang, Yunjie Chang, and Yuan Yao

Periodic Cation Segregation in $\text{Cs}_{80}\text{Au}_{20}$ [Nb_{2.54}W_{2.46}O₁₄] Quantified by High-Resolution Scanning Transmission Electron Microscopy

Markus Heidelmann, Juri Barthel, Gerhard Cox, and Thomas E. Weirich

Influence of Static Atomic Displacements on Composition Quantification of AlGaIn/GaN

Heterostructures from HAADF-STEM Images

Marco Schwallter, Ingo Stoffers, Florian F. Krause, Thorsten Mehrtens, Knut Müller, Malte Fandrich, Timo Aschenbrenner, Detlef Hommel, and Andreas Rosenauer

Investigation of III-V Nanowires by Plan-View Transmission Electron Microscopy: InN Case Study

Esperanza Luna, Javier Grandal, Eva Gallardo, José M. Calleja, Miguel A. Sánchez-García, Enrique Calleja, and Achim Trampert

Characterization of Functionalized Multichained Carbon Nanotubes for Use in an Enzymatic Sensor

Leonor Guadarrama-Fernández, Jorge Chanona-Pérez, Arturo Manzo-Robledo, Georgina Calderón-Domínguez, Adrián Martínez-Rivas, Jaime Ortiz-López, and Jorge Roberto Vargas-García

Metallographic Assessment of Al-12Si High-Pressure Die Casting Escalator Steps

George Frederic Vander Voort, Beatriz Suárez-Peña, and Juan Asensio-Lozano

Probing and Analyzing Buried Interfaces of Multifunctional Oxides Using a Secondary Electron Energy Analyzer

Avinash Srinivasan and Anjam Khurshid

Microstructure Refinement of Cold-Sprayed Copper Investigated by Electron Channeling

Contrast Imaging

Yinyin Zhang, Nicolas Brodusch, Sylvie Descartes, Richard R. Chromik, and Raynald Gauvin

Visualization of Hierarchical Nanodomains in Polymer/Fullerene Bulk Heterojunction Solar Cells

Jianguo Wen, Dean J. Miller, Wei Chen, Tao Xu, Luping Yu, Seth B. Darling, and Nestor J. Zaluzec

Evaluating Angular Ion Current Density for Atomically Defined Nanotips

Radovan Urban, Robert A. Wolkow, and Jason L. Pitters

Large Area and Depth-Profiling Dislocation Imaging and Strain Analysis in Si/SiGe/Si Heterostructures

Xin Chen, Daniel Zuo, Seongwon Kim, James Mabon, Mauro Sardela, Jianguo G. Wen, and Jian-Min Zuo

Correlation of X-Ray Dark-Field Radiography to Mechanical Sample Properties

Andreas Malecki, Elena Eggl, Florian Schaff, Guillaume Potdevin, Thomas Baum, Eduardo Grande Garcia, Jan S. Bauer, and Franz Pfeiffer

Field-Emission Scanning Electron Microscopy and Energy-Dispersive X-Ray Analysis to Understand the Role of Tannin-Based Dyes in the Degradation of Historical Wool Textiles

Annalaura Restivo, Ilaria Degano, Erika Ribacchini, Josefina Pérez-Arantegui, and Maria Perla Colombini

Enhanced Quantification for 3D Energy Dispersive Spectrometry: Going Beyond the Limitation of Large Volume of X-Ray Emission

Pierre Burdet, Cécile Hébert, and Marco Cantoni

INSTRUMENTATION AND TECHNIQUES DEVELOPMENT

A Method to Test the Performance of an Energy-Dispersive X-Ray Spectrometer (EDS)

Vasilie-Dan Hodoroba and Mathia Procop

Interfacial Energy-Dispersive Spectroscopy Profile X-Ray Resolution Measurements in Variable Pressure SEM

Abdelhalim Zoukel, Lahcen Khouchaf, Jean Di Martino, and David Ruch

An In Situ SEM-FIB-Based Method for Contrast Enhancement and Tomographic Reconstruction for Structural Quantification of Porous Carbon Electrodes

Santhana K. Eswara-Moorthy, Prasanth Balasubramanian, Willem van Mierlo, Jörg Bernhard, Mario Marinaro, Margret Wohlfahrt-Mehrens, Ludwig Jörissen, and Ute Kaiser

Nanopillar Fabrication with Focused Ion Beam Cutting

Oleksii V. Kuzmin, Yutao T. Pei, and Jeff T. M. De Hosson

Optimal Sample Preparation to Characterize Corrosion in Historical Photographs with Analytical TEM

Eva Grieten, Joost Caen, and Dominique Schryvers

Analysis Techniques of Lattice Fringe Images for Quantified Evaluation of Pyrocarbon by Chemical Vapor Infiltration

Miaoliang Li, Hongxia Zhao, Lehua Qi, and Hejun Li

A Proposal for Improved Helium Microscopy

Frederick W. Martin

BOOK REVIEW

The Fluorescent Protein Revolution, by John Murray

Electron Microscopy: Methods and Protocols, by Kath White



DearAbbe

Dear Abbe,

I am excited about attending the International Microscopy Congress in September. A colleague informed me that you would be there! Is this true? Can I get a selfie with you and maybe buy you a round at the local brew house while at the meeting? I'm into CosPlay and have gone to several DragonCon meetings dressed as you.

All Aflutter in Atlanta

Dear Aflutter,

I am glad you let me know you will be at the meeting and would be available to buy me beers! Hopefully, if you are lucky and I am careless, we will bump into each other. I am more than happy to do a selfie with you, although that sounds rather oxymoronic. Yes, it is truly hard to be humble when you have attained my stature in this life. There was even a website for a short time listing my several attributes, although many people thought it was a parody. For example, "Abbe can grind an aspheric lens with the calluses on his hands." Or, "When Abbe walks into the lab, all the inverted microscopes become uprights." My favorite was "Light breaks into its spectra when it strikes Abbe," which explains the aura around me at times. I have seen something similar listed for some guy named Chuck Norris, but that is completely ridiculous. It's not easy being a self-made man such as myself, but fortunately I had an Oedipus complex and a time machine...

Dear Abbe,

I believe you are not a rumormonger, but nevertheless I hope you can help me. I keep hearing a rumor about a new brand of TEM nearing production, with some new and wonderful contrast-imaging mode. Should I wait for this new TEM before I write my next instrument grant?

Wondering in Woonsocket

Dear Wondering,

I am happy that someone doesn't think of me as a mere rumormonger. But since this is my rumor, I suppose I can let you in on the secret. You have heard of Spintronics? Not the name of a Eurotechno band, but the idea that electrons have "spin" as well as charge. Why not use an electric field to control the spin and produce a spin-polarized current? As the beam interacts with the sample, the spinning electrons interact differently depending on what part of the sample they pass through. Some spinning electrons are deflected in the sample instead of going straight through it. Combine the beams and, wunderbar! Spin contrast! Just like Prof. Nomarski's famous contrast (winner of my medal, by the way)—but better! I can't tell you how this is done because I am having trouble reading the napkin I jotted the specs on. So, yes! Wait to spend your millions in grant money on the new wonder: the gyro spin-contrast electron microscope (or SCEM for those who need more acronyms). I get dizzy just thinking about all the possibilities! Next time I will describe, in a quantum way, creating entangled electrons so you can observe images in your office with electrons that never saw a sample (see L van Hook, "Entangled Microscopy," *Microscopy Today* 99(3) (1999) 6–7).

If you feel entangled in your professional life, Herr Abbe is happy to help. To seek his assistance, please inconvenience his assistant at jpsshield@uga.edu.

MT