



Secondary Electron Energy Contrast of Localized Buried Charge in Metal–Insulator–Silicon Structures

Avinash Srinivasan, Weiding Han and Anjam Khursheed

Description of Ore Particles from X-Ray Microtomography (XMT) Images, Supported by Scanning Electron Microscope (SEM)-Based Image Analysis

Orkun Furat, Thomas Leifner, Ralf Ditscherlein, Ondřej Šedivý, Matthias Weber, Kai Bachmann, Jens Gutzmer, Urs Peuker and Volker Schmidt

New Image Texture Analysis, and Application to Polymer Membrane Surface Morphologies and Roughness

Clifford S. Todd and William A. Heeschen

The Relationship Between Magnetism and Microstructure of Ethylene Pyrolysis Furnace Tubes after a Long-term Service

Jingfeng Guo, Tieshan Cao, Congqian Cheng, Xianming Meng and Jie Zhao

First-Surface Scintillator for Low Accelerating Voltage Scanning Electron Microscopy (SEM) Imaging

Marian B. Tzolov, Nicholas C. Barbi, Christopher T. Bowser and Owen Healy

Extracting Grain Orientations from EBSD Patterns of Polycrystalline Materials Using Convolutional Neural Networks

Dipendra Jha, Saransh Singh, Reda Al-Bahrani, Wei-keng Liao, Alok Choudhary, Marc De Graef and Ankit Agrawal

Disparity Surface Reconstruction Based on a Stereo Light Microscope and Laser Fringes

Yuezong Wang

Biomass Pretreatment and Enzymatic Hydrolysis Dynamics Analysis Based on Particle Size Imaging

Dimitrios Kapsokalyvas, Arnold Wilbers, Ilco A. L. A. Boegers, Maaike M. Appeldoorn, Mirjam A. Kabel, Joachim Loos and Marc A.M.J. Van Zandvoort

From Light Microscopy to Analytical Scanning Electron Microscopy (SEM) and Focused Ion Beam (FIB)/SEM in Biology: Fixed Coordinates, Flat Embedding, Absolute References

Manja Luckner and Gerhard Wanner

Localization of α A-Crystallin in Rat Retinal Müller Glial Cells and Photoreceptors

Astrid Zayas-Santiago, David S. Ríos, Lidia V. Zueva and Mikhail Y. Inyushin

Ultrastructural Analysis of Vesicular Transport in Electrotransfection

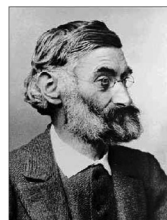
Liangli Wang, Sara E. Miller and Fan Yuan

Ozone Treatment of Grapes During Withering for Amarone Wine: A Multimodal Imaging and Spectroscopic Analysis

Barbara Cisterna, Federico Boschi, Anna C. Croce, Rachele Podda, Serena Zanzoni, Daniele Degl'Innocenti, Paolo Bernardi, Manuela Costanzo, Pasquina Marzola, Viviana Covi, Gabriele Tabaracci and Manuela Malatesta

Spanish and Portuguese Gilding Threads: Characterization Using Microscopic Techniques

Jose Luis Perez-Rodriguez, Antonio Albaronedo, Maria Dolores Robador and Adrian Duran



Dear Abbe

Dear Abbe,

Like any good microscopist I am always trying to understand what's really happening in my TEM and how an image is formed. As a result, I've taken up studying quantum mechanics. It's been confusing, but as a follower of the "shut up and calculate" school, I didn't let it bother me until I considered the "many-worlds" interpretation of quantum mechanics. Now I wonder: why bother with specimen preparation? In some of the infinite universes, the sample will produce the "real" image without any preparation—who's to say it isn't in this universe? Can you say?

Manifold in Manitoba

Dear Manifold,

Ja! Natürlich kann ich! And in some universe—maybe I'll even tell you. What you have run into my friend is the naturally high value of Quantum Confusion (Q.C.) inherent in microscopy. Not only does your sample give the "real" image in some universes without any preparation, but it gives this image without even being in the TEM! After all, quantum mechanics have made superposition computers superposed in both "on" and "off" states that give a correct answer to a calculation in the "off" state, so why shouldn't a TEM—a large instrument producing very large numbers of quantum events—give the correct image without a sample in it? Nicht wahr? Just remember, there are more grant dollars in "2D representations of low-energy fermion interactions" than there are in imaging anything. Whether and where an electron hits your image recording medium is just a matter of statistics and quantum processes, so with the high Q.C. in the TEM, some image will be formed no matter what your sample is, and whether it looks like what you expect...well, of course this all depends on what your definition of "real" is.

If you are worried about what your TEM is telling you, seek the wise advice of Herr Abbe. You may contact him through his quantum-confused assistant at jpshield@uga.edu.

MT



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