Volume 26 Number 6 December 2020

Microscopy AND Microanalysis

preview of some upcoming articles

Materials Science Applications

Revealing solute clusters in coalescence by APT analysis
Hu, Rong; Liu, Jizi; Zhang, Yidong; Sha, Gang

Plasma Focused Ion Beam Serial Sectioning as a Technique to Characterize Nonmetallic Inclusions in Superelastic Nitinol Fine Wires
Gbur, Janet; Kelley, Ronald; Lewandowski, John

Software and Instrumentation

Comparison of Experimental STEM Conditions for Fluctuation Electron Microscopy
Radić, Dražen; Hilke, Sven; Peterlechner, Martin; Posselt, Matthias; Wilde, Gerhard; Bracht, Hartmut

A comparison of a direct electron detector and a high speed video camera for scanning precession electron diffraction phase and orientation mapping
MacLaren, Ian; Frutos Myro, Enrique; McGrouther, Damien; McFazean, Samuel; Weiss, Jon; Cosart, Doug; Portillo, Joaquim; Robins, Alan; Nicolopoulos, Stavros; Nebot del Busto, Eduardo; Skogeby, Richard

Properties of Dipole-Mode Vibrational Energy Losses Recorded from a TEM Specimen
Egerton, Ray; Venkatraman, Kartik; March, Katia; Crozier, Peter

Laboratory soft X-ray microscopy with an integrated visible-light microscope - Correlative workflow for faster 3D cell imaging
Dehlinger, Aurélie; Seim, Christian; Stiel, Holger; Twamley, Shailey; Ludwig, Antje; Kördel, Mikael; Grötzsch, Daniel; Rehbein, Stefan; Kanngießer, Birgit

Dynamic Effects in Voltage Pulsed Atom Probe
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Inelastic scattering in electron backscatter diffraction (EBSD) and electron channeling contrast imaging (ECCI)
Mendis, Budhika; Barthel, Juri; Findlay, Scott; Allen, Les

"You are Not My Type": An Evaluation of Classification Methods for Automatic Phytolith Identification
Zurro, Debora; Díez-Pastor, José-Francisco; Latorre Carmona, Pedro; Arnaiz-González, Alvar; Ruiz-Pérez

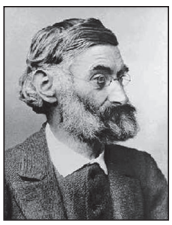
Automated Single Particle Reconstruction of Heterogeneous Inorganic Nanoparticles
Slater, Thomas; Wang, Yi-Chi; Leteba, Gerard; Quiroz, Jhon; Camargo, Pedro; Haigh, Sarah; Allen, Christopher

Biological Applications

Resveratrol Ameliorates the Seminiferous Tubules Damages Induced by Finasteride in Adult Male Rats
Shalaby, Amany; Alabiad, Mohamed; El Shaer, Dina

Galectin-3 Expression in Pancreatic Cell Lines under Distinct Autophagy Inducing Stimulus
Rêgo, Moacyr; Silva-Filho, Antônio; Sousa, Lizandra; Consonni, Silvio; Pitta, Maira; Carvalho, Hernandes

Epithelial Distribution of E-cadherin, p63 and Mitotic Figures in ApoTome Images to Determine the Oncogenic Potentiality of Oral Submucous Fibrosis
Nag, Reetoja; Paul, Ranjan; Pal, Mousumi; Chatterjee, Jyotirmoy; Das, Raunak



Dear Abbe

Dear Abbe,

A question regarding channeling fusion. Having unlimited power from controlled nuclear fusion would be of great benefit. One approach to this is called inertial confinement. A pellet could be hit by suitable beams to compress it enough to get the atoms to fuse. Most research has been focused on using laser beams rather than particle beams (scurrilously, it is supposed that this was because the military wanted powerful lasers to use as weapons, whereas particle beams would be of no use for this purpose). Now it would appear that a very good approach to this problem would be to fire protons at boron. The reaction $p + {}^{11}B$ generates power without producing neutrons. This makes it both safer and more efficient than other methods. However, if protons are fired at a lump of boron, they are scattered at random, and few of them interact with the boron nuclei before losing all of their energy. Nonetheless, we microscopists know that if particles are incident on a single crystal at the right orientation, the particles will travel concentrated down the rows of atoms. Why, I ask you, has research not been done to develop efficient generation of very parallel proton beams to bring this vision to reality?

Enys in Weald

Dear Enys,

Sigh. I get asked this question so often, it gave me a sense of déjà vu. Like that time I ate that really old borscht. I will answer this quandary and hope to never be asked again. First, have you ever tried shooting *anything* at a lump of boron? Nein? Ich dachte nicht. It can be exceedingly tedious. Why do something so boring? Besides, to shoot "particles … incident on a single crystal" requires finding a really big crystal! Most of them have been acquired by New Age enthusiasts around Sedona and have become scarcer than Dita Von Teese's wardrobe. Aiming the protons right—so the "particles … travel concentrated down the rows of atoms"? They'll pass right on through, won't they? Where's your power now, hm? It can be difficult to bring vision to reality when it is so astigmatic.

Feeling bored? Having trouble with your power sources? Shoot it to Herr Abbe at johnshields59@gmail.com. He'll be scurrilous at best.

MT

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