

Monday, August 4, 2008

Microscopy and Analysis of Soft Matter: From the Molecules Up

Session Chairs: DJ Stokes, FEI Company,
The Netherlands
RD Leapman, National Institutes of Health

Platform Session
Monday 9:00 AM Room: Picuris

9:00 AM **1** (Invited) *Off-Axis Electron Holography of Magnetic Fields in Biological Materials*; RE Dunin-Borkowski; Danish Technical University, Denmark; T Kasama; University of Cambridge, United Kingdom; M Pósfai; University of Pannonia, Hungary; RKK Chong, ET Simpson; University of Cambridge, United Kingdom; J Dobson, JF Collingwood; Keele University, United Kingdom

9:30 AM **2** *Megapixel Quantitative EFTEM Imaging of Calcium in Biological Specimens*; MA Aronova; National Institutes of Health, NIBIB; NB Pivovarova, SB Andrews; National Institutes of Health, NINDS; RD Leapman; National Institutes of Health, NIBIB

9:45 AM **3** *Laboratory Sources for Soft-X-Ray Imaging of Hydrated Biological Material*; JA Hunt, PAC Takman, B Frazer, BC Gundrum, A Abbott, C Lee, CR Booth; Gatan Research & Development

10:00 AM *Coffee Break*

10:30 AM **4** *Quantitative 3-D Imaging of Eukaryotic Cells using Soft X-Ray Tomography*; DY Parkinson; Lawrence Berkeley National Laboratory; G McDermott; University of California San Francisco; MA Le Gros, CA Larabell; Lawrence Berkeley National Laboratory

10:45 AM **5** (Invited) *Imaging Carbon Nanoparticles in Cells*; MH Gass; SuperSTEM Laboratory, United Kingdom; AE Porter; Imperial College London, United Kingdom

11:15 AM **6** *Electron Microscopy Characterization of Composite Organic-Inorganic Nanoparticles (COINs) as Raman Labels for Extra-cellular Analyses*; AL Koh, CM Shachaf, S Elchuri, GP Nolan, R Sinclair; Stanford University

11:30 AM **7** *Negative Staining Produces Images of Proteins by Which Contrast Mechanisms?*; WH Massover; Rutgers University

11:45 AM **8** *The Real Carbon K-Edge*; DTL Alexander; Ecole Polytechnique Federale de Lausanne, France; JR Anderson; Arizona State University; L Forro; Ecole Polytechnique Federale de Lausanne, France; PA Crozier; Arizona State University

Scanning Probe Microscopy in the Physical and Biological Sciences

Session Chairs: IH Musselman, University of Texas
at Dallas
VZ Poenitzsch, Southwest Research Institute

Platform Session
Monday 8:30 AM Room: San Miguel

8:30 AM **9** (Invited) *Applications of Scanned Probe Microscopy in Physical Sciences*; PE Russell, DN Leonard; Appalachian State University; J Thorton; Veeco Instruments

9:00 AM **10** (Invited) *Multimodal Atomic Force Microscopy for Nanomedicine: Biological Nanoimaging, Nanomechanics and Nanodevices*; R Lal, S Ramachandran, F Teran Arce, M Allen; The University of Chicago; A Quist; RC Nano Corp

9:30 AM **11** *Single Cell Viability Measured by Scanning Electrochemical Microscopy and Live/Dead Staining*; KM Jeerage, TL Oreskovic, N Goldstein, DS Lauria; National Institute of Standards and Technology

9:45 AM **12** *Contrast Mechanism for Visualization of Ferroelectric Domains with Scanning Force Microscopy*; T Jungk, À Hoffmann, E Soergel; University of Bonn, Germany

10:00 AM *Coffee Break*

10:30 AM **13** (Invited) *Probing Molecular Machines on Surfaces: The Nanocar and Beyond*; K Kelly; Rice University

11:00 AM **14** *Lateral Resolution in Piezoresponse Force Microscopy*; T Jungk, À Hoffmann, E Soergel; University of Bonn, Germany

11:15 AM **15** *Local Potential Imaging of a Multilayer Ceramic Capacitor Using Kelvin Probe Force Microscopy*; T Komatsubara, S Higuchi, K Nishikata; HORIBA; N Satoh, K Kobayashi, H Yamada; Kyoto University

11:30 AM **16** *Dynamic Studies of Nanoscale Thermal and Mechanical Property Development of Automotive Refinish Clearcoats*; L Germinario, D Bhattacharya; Eastman Chemical Company; A Forster; National Institute of Standards and Technology

FIB-Based Applications and Instrumentation Advances for the Physical and Biological Sciences

Session Chairs: LA Giannuzzi, FEI Company
B Gorman, University of North Texas
M Uchic, Wright-Patterson Air Force Base

Platform Session

Monday 8:30 AM Room: Galisteo

8:30 AM **17** (Invited) *FIB Milling of Frozen-hydrated Cells and Tissue for TEM Cryo-Tomography*; M Marko, C Hsieh; Wadsworth Center; N Salmon; Hummingbird Scientific; M Rodriguez; University at Albany; J Frank; Howard Hughes Medical Institute; C Mannella; Wadsworth Center

9:00 AM **18** *DualBeam Electron Microscopy for Targeted Whole Cell Architecture*; BM Humbel, DAM De Winter, CTWM Schneijdenberg; University Utrecht, The Netherlands; B Lich; FEI Company, The Netherlands; AJ Verkleij; University Utrecht, The Netherlands

9:15 AM **19** *Towards Multi-scale 3D Biological Imaging: The Role of Dual-beam Serial Sectioning*; C Gilpin; University of Texas Southwestern Medical Center

9:30 AM **20** (Invited) *3D Imaging of Diatoms with Ion Abrasion Scanning Electron Microscopy*; M Hildebrand; Scripps Institute of Oceanography; S Kim, D Shi, S Subramaniam; National Cancer Institute

10:00 AM *Coffee Break*

10:30 AM **21** *Direct Three-Dimensional Microstructural Characterization and Reconstruction Across Varying Length Scales in a/b Titanium Alloys by Serial Sectioning Using a FEI DualBeam™ (FIB/SEM) and Robo-Met.3D*; REA Williams, V Dixit, P Collins, HL Fraser; The Ohio State University

10:45 AM **22** (Invited) *Low Energy Ga⁺ and Ar⁺ Ion Milling for Improved EBSD Sample Preparation*; JR Michael, PG Kotula; Sandia National Laboratories

11:15 AM **23** (Invited) *Measuring the Five Parameter Grain Boundary Character Distribution From Three-Dimensional Orientation Maps*; S Dillon, S Lee, R Anthony, R Gregory; Carnegie Mellon University

11:45 AM **24** *A 3D Analysis of the Nugget Zone of AA5052 Processed via Friction Stir Processing*; M Adams-Hughes, PN Kalu; Florida A&M University-Florida State University; EL Principe; Carl Zeiss SMT Inc; S Wright; EDAX-TSL

Problem Solving Using Microanalytical Techniques

Session Chairs: PK Carpenter, Washington University
DT Kremser, Battelle Memorial Institute

Platform Session

Monday 8:00 AM Room: Cimarron

8:00 AM **25** (Invited) *Using the Microscopy Lab As A Clearinghouse For Problem Solving In An Industrial Service Laboratory*; V Woodward; Lubrizol Advanced Materials

8:30 AM **26** (Invited) *Multi-Technique Approach to Understanding Phase Transformations in a Precious Metal Alloy*; DF Susan, JR Michael, JT Bond, RG Stone; Sandia National Laboratories; JM Rodelas; Missouri University of Science and Technology

9:00 AM **27** (Invited) *What Do We Know About Fundamental Parameters for Microanalysis?*; DC Joy; University of Tennessee

9:30 AM **28** (Invited) *Problem Solving in Electron-probe Microanalysis: Application of Software Tools*; PK Carpenter; Washington University

10:00 AM *Coffee Break*

10:30 AM **29** (Invited) *Specimen Heterogeneity Analysis Revisited*; F Meisenkothen; UES Inc; JJ Donovan; University of Oregon

11:00 AM **30** *Milli-X-ray Fluorescence X-Ray Spectrum Imaging: Problem Solving Through Mapping on the Centimeter Scale*; JM Davis, DE Newbury; National Institute of Standards and Technology

11:15 AM **31** *Meeting Microanalysis Challenges Using a Flexible X-ray Fluorescence Microscope*; Y Yokota, S Ohzawa, D Matsunaga, Y Sato, S Komatani; Horiba Japan; A Whitley; Horiba Jobin Yvon

11:30 AM **32** *Confocal Micro X-ray Fluorescence A New Paradigm in 3D Elemental Imaging for Materials Characterization*; BM Patterson, GJ Havrilla; Los Alamos National Laboratory

11:45 AM **33** *Characterization of the Interfacial Regions of Copper-Carbon Steel Explosive Welds Using a Combination of Analytical Techniques*; JP Chandler, A Manerbino, S Liu, M Kaufman; Colorado School of Mines

Atom-Probe Analysis of Non-traditional Materials

Session Chairs: O Nishikawa, Kanazawa Institute of Technology, Japan
JA Panitz, High-Field Consultants

Platform Session

Monday 8:30 AM Room: Dona Ana

8:30 AM **34** (Invited) *Microfabricated Field Emitter Arrays for Electron and Ion Emission*; CC Spindt; SRI International

9:00 AM **35** *Towards Quantitative Analysis of Nitrogen in Microelectronics Applications for Atom Probe Tomography*; RM Ulfig, T Prosa, D Reinhard, E Oltman, R Alvis; Imago Scientific Instruments Corporation

9:15 AM **36** *3D Atom Probe and SIMS as Complementary Techniques for the Observation and Quantitative Measurement of Mmicrostructures*; L Renaud, I Martin, F Hillion, F Horreard; CAMECA, France; YS Yang, JS Tang, CG Park; Pohang University of Science and Technology, Korea

9:30 AM **37** (Invited) *Imaging Atom-Probe Studies of a Field Evaporation Based Deuterium Ion Source for Neutron Generators*; PR Schwoebel, B Reichenbach, I Solano; University of New Mexico

10:00 AM *Coffee Break*

10:30 AM **38** (Invited) *Observations of Cluster Ions Originating from Non-Traditional Atom Probe Materials*; T Prosa, R Alvis, TF Kelly; Imago Scientific Instruments

11:00 AM **39** *Investigation of Performance-Influencing Factors in Pulsed Laser Atom Probe*; J Bunton, J Olson, D Lenz, TF Kelly; Imago Scientific Instruments

11:15 AM **40** *Characterization of Precipitation Behavior in a Spray-Formed Al-Zn-Mg Alloy Using a Combination of Transmission Electron Microscopy and Three Dimensional Atom Probe Tomography*; J Hwang, R Banerjee; University of North Texas; M Kaufman; Colorado School of Mines

11:30 AM **41** *LA-WATAP and SIMS as Complementary Techniques for Quantitative Measurement of Nnanometer Structures*; L Renaud, I Martin, A Merkulov, P Peres, R Benbalagh, M Schuhmacher; CAMECA, France

Analytical Electron Microscopy: Advanced Techniques and Applications for Nanoscience

Session Chairs: PA Crozier, Arizona State University
M Watanabe, Lawrence Berkeley National Laboratory

Platform Session

Monday 8:30 AM Room: Brazos

8:30 AM **42** (Invited) *Atomic-Scale Chemical Imaging of Composition and Bonding by Aberration-Corrected Microscopy*; DA Muller, LF Kourkoutis; Cornell University; M Murrfit; Nion Company; JH Song; Chungnam National University, Korea; HY Hwang; University of Tokyo, Japan; J Silcox; Cornell University; N Dellby, OL Krivanek; Nion Company

9:00 AM **43** (Invited) *Analytical High-Resolution Studies of Transparent Conductive Oxides and their Interfaces with Active Si Regions for Photovoltaic Applications*; Q Ramasse; Lawrence Berkeley National Laboratory; A Anapolsky, C Lazik, M Jin; Applied Materials Inc; AP Kuprin; University of California Davis; TC Kaspar, SA Chambers; Pacific Northwest National Laboratory; ND Browning; University of California Davis

9:30 AM **44** *Investigation of the Hexagonal Perovskite $Ba_3Ti_2RuO_9$ using High Resolution STEM and High Resolution EELS*; C Maunders; McMaster University, Canada; G Radtke; Laboratoire TECSSEN CNRS, France; M Robertson; Acadia University, Canada; S Lazar; McMaster University, Canada; HJ Whitfield, J Etheridge; Monash University, Australia; GA Botton; McMaster University, Canada

9:45 AM **45** *Spatial Resolution and Delocalization of the EELS Core-Loss Fine Structure*; R Egerton; University of Alberta, Canada; F Wang, M Malac; National Institute for Nanotechnology, Canada

10:00 AM *Coffee Break*

10:30 AM **46** (Invited) *Oxide Interfaces Under the Electron Microscope*; M Varela, HM Christen, HN Lee, L Petit, T Schulthess, SJ Pennycook, W Luo, ST Pantelides; Oak Ridge National Laboratory; J Garcia-Barriocanal, C Leon, J Santamaria; Universidad Complutense de Madrid, Spain

11:00 AM **47** *Atomic Structure of Core-Shell Precipitates in Al-Li-Sc-Zr Alloys Studied by Analytical and Aberration-Corrected TEM/STEM*; MD Rossell, R Erni; Lawrence Berkeley National Laboratory; A Tolley; CNEA CONICET, Argentina; EA Marquis; Oxford University, United Kingdom; V Radmilovic, U Dahmen; Lawrence Berkeley National Laboratory

11:15 AM **48** *Structural Characterization of WO_3/ZrO_2 Catalysts using HAADF Imaging*; W Zhou, E Ross-Medgaarden, IE Wachs, CJ Kiely; Lehigh University

11:30 AM **49** (MAS Distinguished Scholar) *Quantitative HAADF-STEM and EELS*; JM LeBeau; University of California Santa Barbara; SD Findlay; The University of Tokyo, Japan; LJ Allen; University of Melbourne, Australia; S Stemmer; University of California Santa Barbara

11:45 AM **50** *EELS Imaging of Oxygen Vacancy Ordering*; J Gazquez, M Varela, MP Oxley; Oak Ridge National Laboratory; MA Torija, M Sharma, C Leighton; University of Minnesota; SJ Pennycook; Oak Ridge National Laboratory

Imaging in Stem Cell Biology

Session Chair: H Schatten, University of Missouri

Platform Session

Monday 8:30 AM Room: Taos

8:30 AM **51** *An Overview of Stem Cell Research in the Mouse and Other Mammalian Species*; H Schatten; University of Missouri-Columbia

8:45 AM **52** *The Histo-morphometric Relationship between Bone, Blood Vessels and Hemopoietic Stem Cells*; S Ellis; Peter MacCallum Cancer Centre; J Grassinger, B Williams; Australian Stem Cell Centre; S Asquith; Peter MacCallum Cancer Centre; G Haines, D Haylock, I Bertoncello, S Nilsson; Australian Stem Cell Centre

9:00 AM **53** (Invited) *Beauty is Skin Deep: Imaging and Characterization of Skin Stem Cells*; HA Pasolli, V Horsley, T Tumber, C Blanpain, W Lowry, V Greco, E Fuchs; The Rockefeller University

9:30 AM **54** (Invited) *A Tubular Scaffold that Modulates Differentiation of Rat Bone Marrow Stem Cells*; J Potts, M Yost, G Kaur, Q Wang, T Valarmathi; University of South Carolina

10:00 AM *Coffee Break*

10:30 AM **55** (Invited) *Towards the Understanding of Epigenetic Mechanisms Regulating Neural Stem Cells*; X Zhao; University of New Mexico School of Medicine

11:00 AM **56** (Invited) *Application of Multiphoton and Fluorescence Lifetime Microscopy of Endogenous Fluorescence to the Study of Differentiation in Mouse Embryonic Stem Cells*; J Squirrel, K Eliceiri, T Kamp, G Lyons; University of Wisconsin-Madison

11:30 AM **57** (Invited) *Ovarian Stem Cells and Mammalian Neo-Oogenesis*; A Bukovsky; University of Tennessee College of Medicine

Improving "Green" Products through Imaging: Biomass, Biofuels and Bioproducts

Session Chairs: DF Wood, US Department of Agriculture
TG Williams, US Department of Agriculture

Platform Session

Monday 8:30 AM Room: Mesilla

8:30 AM **58** (Invited) *Grassline in Your Tank: Myths and Realities about Biofuels*; BE Dale; Michigan State University

9:00 AM **59** (Invited) *Visible Histological and Infrared Microscopic Assessment of Grass Biomass*; DS Himmelsbach; US Department of Agriculture; DE Akin; Light Light Solutions; LL Rigsby; US Department of Agriculture

9:30 AM **60** (Invited) *The Plant Extracellular Matrix*; MC McCann, B Penning, A Olek, NC Carpita; Purdue University

10:00 AM *Coffee Break*

10:30 AM **61** (Invited) *Switchgrass for Biofuels: Insights through Microscopy*; G Sarath; US Department of Agriculture; L Baird; University of San Diego; G Hou; Appalachian State University; R Mitchell, K Vogel; US Department of Agriculture

11:00 AM **62** (Invited) *Electron Tomography and SEM Analysis of Lignin Coalescence in Biomass Cell Walls Following Thermochemical Pretreatment*; B Donohoe, T Vinzant, S Decker, D Johnson, M Himmel; National Renewable Energy Laboratory

11:30 AM **63** (Invited) *Utilization of Atomic Force Microscopy, Confocal Microscopy, and Electron Microscopy to Evaluate Biomass Pretreatment*; B Simmons, D Dibble, S Singh; Sandia National Laboratories; M Auer, D Jorgens; Lawrence Berkeley National Laboratory; J-L Faulon; Sandia National Laboratories

Understanding the Synthesis and Properties of Nanostructures and Nanomaterials: Catalysis

Session Chairs: PM Voyles, University of Wisconsin
A Borisevich, Oak Ridge National Laboratory

Platform Session

Monday 8:30 AM Room: Ruidoso

8:30 AM **64** (Invited) *3D Scanning Transmission Electron Microscopy for Catalysts: Imaging and Data Analysis*; AY Borisevich, AR Lupini; Oak Ridge National Laboratory; AF Koschan, M Mercimek, MA Abidi; University of Tennessee, Knoxville; SJ Pennycook; Oak Ridge National Laboratory

9:00 AM **65** *Cs-corrected STEM Studies of Ge Nanodots Grown on Slightly Oxidized Si(001) Surfaces*; N Tanaka, S-P Cho, AA Shklyav; Japan Science and Technology Agency; J Yamasaki; Nagoya University, Japan; E Okunishi; JEOL Ltd; M Ichikawa; Japan Science and Technology Agency

9:15 AM **66** (MAS Distinguished Scholar) *Using Aberration-corrected STEM Imaging to Explore Chemical and Structural Variations in the M1 Phase of the MoVNb-TeO Oxidation Catalyst*; WD Pyrz; University of Delaware; DA Blom; University of South Carolina; VV Gulians; University of Cincinnati; T Vogt; University of South Carolina; DJ Buttrey; University of Delaware

9:30 AM **67** *Direct Observation of Au Nanoislands on TiO₂ (110) Surface by HAADF STEM*; N Shibata, A Goto; University of Tokyo, Japan; K Matsunaga; Kyoto University, Japan; T Mizoguchi, SD Findlay, T Yamamoto, Y Ikuhara; University of Tokyo, Japan

9:45 AM **68** *Precise Measurement of the Metal Nanocluster Size in a Supported Catalyst: Ta/SiO₂*; S Mehraeen, J Sun; University of California, Davis; B Reed; Lawrence Livermore National Laboratory; N Okamoto, A Kulkarni, B Gates; University of California, Davis; ND Browning; Lawrence Livermore National Laboratory

10:00 AM *Coffee Break*

10:30 AM **69** *Oxide Support Modification during Pd Particle Aging at Elevated Temperatures*; RS Goeke, AK Datye; University of New Mexico

10:45 AM **70** *Imaging of Gold Nanoparticles within Mesoporous Silica Supports*; JP Gabaldon, M Bore, A Datye; University of New Mexico

11:00 AM **71** *Methods for Location of Palladium Catalyst Nanoparticles in Mesoporous Silicates*; H Qian, P Li, M Malac; National Institute for Nanotechnology, Canada; H Yang, S Mutyala; National Centre for Upgrading Technology, Canada; H Furukawa; JEOL Systems Technology Co Ltd, Japan; M Kawasaki; JEOL USA, Inc

11:15 AM **72** *Support Effects on Adatom Emission from Nanoparticles*; L Houk, A DeLaRiva; University of New Mexico; R Goeke; Sandia National Labs; P Fanson; Toyota Motor Engineering & Manufacturing; A Datye; University of New Mexico

11:30 AM **73** *Size-dependent Crystallinity and Relative Orientations of Nano-Pt/r-Al₂O₃*; L Li; University of Pittsburgh; J Kang, S Sanchez; University of Illinois, Urbana-Champaign; Q Wang; Yeshiva University; L-L Wang; University of Illinois, Urbana-Champaign; Z Zhang; University of Pittsburgh; D Johnson; University of Illinois, Urbana-Champaign; AI Frenkel; Yeshiva University; R Nuzzo; University of Illinois, Urbana-Champaign; J Yang; University of Pittsburgh

11:45 AM **74** *Microstructural Characterization of Colloid-Derived Bimetallic Pd-Cu Nanocatalysts Supported on γ -Al₂O₃ for Nitrate Reduction*; Z Liu; University of Pittsburgh; KA Guy, JR Shapley, CJ Werth; University of Illinois, Urbana-Champaign; Q Wang, AI Frenkel; Yeshiva University; JC Yang; University of Pittsburgh

Surface Microscopy and Microanalysis in Materials and Biological Systems

Session Chairs: JA Ohlhausen, Sandia National Laboratories

J Fulghum, University of New Mexico
VS Smentkowski, General Electric Global Research

Platform Session

Monday 8:00 AM Room: Aztec

8:00 AM **75** (Invited) *Characterizing Nanomaterials by Combining Electron Microscopy and Surface Analysis*; D Gaspar, D Baer, Z Zhu, B Arey, C Wang, M Warner, A Miracle; Pacific Northwest National Laboratory

8:30 AM **76** *Single Flat Gold Nanoparticle Microscopy and Spectroscopy*; WD Tennyson, CE Allen, DR Freno, DH Dahanayaka, LA Bumm; The University of Oklahoma

8:45 AM **77** (Invited) *Molecular Depth Profiling to 3D Molecular Imaging with XPS and TOF-SIMS*; JS Hammond, GL Fisher, S Raman, JF Moulder; Physical Electronics

9:15 AM **78** *Analysis of Multi-Component Polymer Blends with the Confocal Raman AFM*; U Schmidt, J Mueller, K Weishaupt, O Hollricher; WITec GmbH, Germany

9:30 AM **79** (Invited) *Surface Microscopy and Microanalysis in the Medical Device Industry*; A Belu; Medtronic, Inc

10:00 AM *Coffee Break*

10:30 AM **80** (Invited) *New Approaches in Accelerating Material Development Through Structure-to-Property Relationships built from XPS and Microscopic Data*; K Artyushkova, A Plamen, F Julia; University of New Mexico

11:00 AM **81** (MAS Distinguished Scholar) *Correlative Microscopic and Spectroscopic Characterization of Carboxylated Single-Walled Carbon Nanotubes*; P Bajaj; University of Texas Dallas; K Artyushkova; University of New Mexico; I Musselman; University of Texas Dallas

11:15 AM **82** (Invited) *Probing Polymeric Interfaces with Synchrotron Techniques*; J Lenhart; Sandia National Laboratories; D Fischer; National Institute of Standards and Technology

Metallographic Techniques and Material Characterization

Session Chairs: R Noecker, ExxonMobil
N Saenz, Pacific Northwest National Laboratory

Platform Session
Monday 8:15 AM Room: Pecos

8:15 AM **83** (Invited) *Examination of Sectioning Damage by EBSD*; G Lucas, G Vander Voort, G Choczaj; Buehler Ltd

8:45 AM **84** (Invited) *Delineation and Measurement of Grain Size by EBSD*; G Vander Voort; Buehler Ltd; M Nowell; EDAX-TSL; E Manilova; Pulzunov Central Boiler and Turbine Institute

9:15 AM **85** *SEM and EBSD Investigations of High-Chromium Cast Irons*; B Hinckley, K Dolman; Weir Minerals Australia Ltd, Australia; R Wuhler, A Ray, W Yeung; University of Technology Sydney, Australia

9:30 AM **86** (Invited) *Orientation Imaging Microscopy of Stray Grain Formation in Single Crystal Weld Structures*; T Anderson, J DuPont; Lehigh University; T DebRoy; Pennsylvania State University

10:00 AM *Coffee Break*

10:30 AM **87** (Invited) *In Situ EBSD of Microstructure Evolution During Deformation*; R Mishra, R Kubic; General Motors

IMS Henry Clifton Sorby Award and Lecture

**Session Chair: DJ Fitzgerald,
Precision Surfaces International**

Platform Session
Monday 11:00 AM Room: Pecos

11:00 AM **88** (Invited) *Imaging Systems and Materials Characterization*; L Murr; University of Texas at El Paso

Physical Tutorial: Lorentz Microscopy: A Versatile Technique for Studying Magnetic Multilayers, Elements and Nanowires

Session Chair: G Thompson, University of Alabama

Platform Session
Monday 10:30 AM Room: La Cienega

10:30 AM **342** (Invited) *Lorentz Microscopy: A Versatile Technique for Studying Magnetic Multilayers, Elements and Nanowires*; JN Chapman; University of Glasgow

MSA Presidential Happening

**Session Chair: W Gunning,
Medical University of Ohio**

Platform Session
Monday 12:15 PM Room: Brazos

12:15 PM MSA Presidential Happening

Microscopy and Analysis of Soft Matter: From the Molecules Up

Session Chairs: DJ Stokes, FEI Company,
The Netherlands
RD Leapman, National Institutes of Health

Platform Session
Monday 1:00 PM Room: Picuris

1:00 PM **89** (Invited) *WetSEM: Cell Surface Characteristics as Reporters for Cellular Energy State*; H Pluk, H Croes; Radboud University Nijmegen Medical Centre, The Netherlands; B Lich; FEI Company, The Netherlands; B Wieringa, J Fransen; Radboud University Nijmegen Medical Centre, The Netherlands

1:30 PM **90** (Invited) *Electron Microscopy through Thin Film Windows of Cell Cultures and Liquid Processes in Microfluidic Chips*; K Mølhave; Technical University of Denmark, Denmark

2:00 PM **91** *Evaluation of STEM-in-SEM vs. TEM for Polymer Applications in an Industrial Setting*; O Guise, C Strom; SABIC Innovative Plastics; N Preschilla; Reliance Industries Limited

2:15 PM **92** *Life-Like Physical Fixation of Large Samples for Correlative Microscopy*; K Rensing; Bal-Tec AG, Balzers, Liechtenstein; M Wölfel, MS Droste; Electron Microscopy ETH Zurich, Zurich, Switzerland; F Lucas; Bal-Tec AG, Balzers, Liechtenstein; R Wepf; Electron Microscopy ETH Zurich, Zurich, Switzerland

2:30 PM **93** (Invited) *ESEM, STEM-in-ESEM and 200 kV STEM Imaging of Soft Matter and Liquid-State Specimens*; N De Jonge; Oak Ridge National Lab; DJ Stokes; FEI Company, The Netherlands

Imaging, Fluorescence and Flow Cytometry

Session Chairs: JP Robinson, Purdue University
RW Smith, Portland State University

Platform Session
Monday 1:30 PM Room: Taos

1:30 PM **94** (Invited) *Confocal Microscopy and Flow Cytometry System Performance: Assessment of QA Parameters that Effect Data Quantification*; RM Zucker, J Rogers, R Ellis-Hutchings; USEPA

2:00 PM **95** (Invited) *Development of a Versatile Apertureless Near-field Microscope for Biological and Material Applications*; E Sánchez, D Nowak, J Hiester, A Lawrence, D Vedhachalam; Portland State University; Z Dzegede; Cornell University; J Abramson; Portland State University

2:30 PM **96** *Microscopy Study of Interactions of Carbon Nanotubes with Astrocytoma Cells*; L Dong, MM Greenwade, MJ Timson, CM Witkowski, MM Craig; Missouri State University

2:45 PM **97** *Pico-second Fluorescence Lifetime Microscope System in the Deep UV-Visible (240nm–850nm) using both Time- and Frequency-Domain Time-Resolved Techniques*; L Chandler; Horiba Jobin Yvon

3:00 PM **98** *Perspectives on Cellular Analysis: Linking Quantitation to Structure and Function by Instrumental Methods and Analysis*; RW Smith; Portland State University; JP Robinson; Purdue University; RM Zucker; U S Environmental Protection Agency; C Geddes; University of Maryland; A Kachelmeier; University of Portland; G McConnell; University of Strathclyde, United Kingdom; C Merrifield; MRC Laboratory of Molecular Biology, United Kingdom; R Murphy; Carnegie Mellon University; J Nolan; La Jolla Bioengineering Institute; J Price; Burnham Institute for Medical Research; R Price; University of South Carolina; P Peter Rabinovitch; University of Washington; E Sánchez; Portland State University; L Sklar; University of New Mexico; PTC So; Massachusetts Institute of Technology; D Sudar; Lawrence Berkeley National Laboratory

Simulation of Microscopy, Microanalysis, and Microscopic Phenomena

Session Chairs: NWM Ritchie, National Institute of Standards and Technology
LN Brewer, Sandia National Laboratories

Platform Session
Monday 1:30 PM Room: Aztec

1:30 PM **99** (Invited) *Quantitative Analyses of Early Stages of Phase Transformation by Atom Probe Tomography*; EA Marquis; University of Oxford, United Kingdom

2:00 PM **100** (Invited) *Atomistic Studies of Line Defects at Grain Boundaries*; DL Medlin, D Cohen; Sandia National Laboratories; RC Pond; University of Liverpool, United Kingdom; JC Hamilton, O Uche; Sandia National Laboratories

2:30 PM **101** *HAADF Imaging and Ab Initio Analysis of GPBII Zones in Al-Cu-Mg Alloys*; L Kovarik, M Mills; The Ohio State University

2:45 PM **102** (Invited) *Microstructure-Property Relationships Based on 3D Images of Polycrystals*; A Rollett, S Lee, G Rohrer; Carnegie Mellon University

3:15 PM **103** *On the Evolution of Friction-Induced Microstructures in Single Crystal Nickel*; SV Prasad, JR Michael, CC Battaile; Sandia National Laboratories, Albuquerque; BS Majumdar; New Mexico Institute of Mining and Technology

FIB-Based Applications and Instrumentation Advances for the Physical and Biological Sciences

Session Chairs: LA Giannuzzi, FEI Company
B Gorman, University of North Texas
M Uchic, Wright-Patterson Air Force Base

Platform Session
Monday 1:30 PM Room: Galisteo

1:30 PM **104** (Invited) *Detecting Nanoparticles in Cells Using FIB-EDS*; K Scott, RD Holbrook; National Institute of Standards and Technology

2:00 PM **105** *3D Energy-Dispersive X-ray Spectrometry (3D EDXS) in a DualBeam FIB: Aspects of Sample Preparation and Quantitative Analysis*; M Schaffer, H Schröttner, J Wagner; Graz University of Technology, Austria

2:15 PM **106** *Reconstruction of δ -phase in Superalloy by 3D EDXS in a DualBeam FIB*; J Wagner, M Schaffer, H Schröttner, S Mitsche, I Letofsky-Papst; Graz University of Technology, Austria; C Stotter, C Sommitsch; University of Leoben, Austria

2:30 PM **107** (Invited) *Large Area Patterning Using Ion-beam Lithography*; LE Ocola, A Imre; Argonne National Laboratory

3:00 PM **108** *FIB Fabrication of Metallic Nanostructures on End-faces of Cleaved Optical Fibers for Chemical Sensing Applications*; PE Russell; Appalachian State University; A Dhanwan; U S Army Research Office; J Gleeson; Appalachian State University

3:15 PM **109** *Development of Novel Thin Film Deposition Methods in a CrossBeam® FIB-SEM Platform Using an OmniGISTM*; EL Principe; Carl Zeiss SMT Inc; C Hartfield; OmniProbe; R Kruger; Carl Zeiss SMT Inc; A Smith; OmniProbe

Problem Solving Using Microanalytical Techniques

Session Chairs: DT Kremser, Battelle Memorial Institute
PK Carpenter, Washington University

Platform Session

Monday 1:30 PM Room: Cimarron

1:30 PM **110** (Invited) *SIMS Analysis of Xe and Kr in a High Burn-up UO₂ Nuclear Fuel*; CT Walker, S Bremier, S Portier, R Hasnaoui; Institute for Transuranium Elements, Germany

2:00 PM **111** *Analysis of Pu by Virtual-standard WDS-EPMA. Results of an Interlaboratory Round-robin Test*; C Merlet; Université de Montpellier II, France; X Llovet; Universitat de Barcelona, Spain; L Aurore; CEA Cadarache, France; S Bremier; Institute for Transuranium Elements, Germany; X Deschanel, O Dugne; CEA Marcoule, France; J Lamontagne; CEA Cadarache, France; R Restani; Paul Scherrer Institut, Switzerland; C Roche, M Tribet; CEA Marcoule, France; W Van Renterghem; SCK CEN, Belgium

2:15 PM **112** *Evaluation of the Significance of Secondary Fluorescence of Aluminum in a Coated Nickel Superalloy*; GW Kagel, J Foroughi; The M&P Lab

2:30 PM **113** *X-ray Nano-analysis of Sub-100nm Particles Using EDS in Conjunction with SEM*; S Burgess, J Holland, C Collins, S Sharp; Oxford Instruments NanoAnalysis, United Kingdom

2:45 PM **114** *On the Precision of EDS Analysis with Sample Tilted at 70°*; P T.-Pinar; McGill University; P Hovington; Hydro-Quebec Research Institute; H Demers; McGill University; M Lagace; Hydro-Quebec Research Institute; R Gauvin; McGill University

3:00 PM **115** *X-Ray Mapping of Rough Surfaces with Multiple Silicon Drift Detectors*; R Anderhalt, D Redfern, A Sandborg; EDAX

3:15 PM **116** *Practical Analysis of Micron-scale Boride and Carbide Inclusions Using an Analytical SDD Detector*; C Collins, S Burgess; Oxford Instruments Nanoanalysis, United Kingdom; F Bauer; Oxford Instruments GmbH, Germany; J Holland; Oxford Instruments Nanoanalysis, United Kingdom

Atom-Probe Analysis of Non-traditional Materials

Session Chairs: TF Kelly, Imago Scientific Instruments
P Schwoebel, University of New Mexico

Platform Session

Monday 1:30 PM Room: Dona Ana

1:30 PM **117** (Invited) *Cryopreparation for Interfacial Atom-Probe Analysis*; JA Panitz; High-Field Consultants, Inc

2:00 PM **118** (Invited) *A New Approach for the Mass Analysis of Biomolecules at Atomic Level Utilizing the Scanning Atom Probe*; O Nishikawa, M Taniguchi; Kanazawa Institute of Technology, Japan

2:30 PM **119** (MSA PTSA Award) *Site Specific Atom Probe Analysis from Ceramic, Geologic and Bio-Materials*; R Martens, G Thompson, M Bersch; University of Alabama; M Forseth; MDForseth Consulting; R Knutson; Complete Family Dentistry

2:45 PM **120** *Advantages of Using a Digital Detector for Field Ion Microscopy*; RM Ulfig, DJ Larson, S Gerstl; Imago Scientific Instruments

3:00 PM **121** (Invited) *Discovery of 250 Ma Cellulose Fibers in a Deep Permian Halite Layer Poses Unique Challenges in TEM Imaging and Analysis*; J Griffith, S Willcox; University of North Carolina; DW Powers; University of Mississippi; R Nelson; U S Department of Energy Carlsbad; BK Baxter; Westminster College

Analytical Electron Microscopy: Advanced Techniques and Applications for Nanoscience

Session Chairs: Y Ito, Northern Illinois University
W Sigle, Max-Planck-Institut für Metallforschung, Germany

Platform Session

Monday 1:30 PM Room: Brazos

1:30 PM **122** (Invited) *Application of Monochromated Electrons in EELS*; W Sigle, L Gu, C Koch, V Srot, J Nelayah, PA Van Aken; Max Planck Institute for Metals Research, Germany

2:00 PM **123** *High Energy-Resolution EELS Studies on Electronic Excitations of LaB₆ and Cs_{0.33}WO₃ Particles by using a Monochromator Transmission Microscope*; Y Sato, M Terauchi, M Tanaka; Tohoku University, Japan; M Mukai,

T Kaneyama; JEOL Ltd; K Adachi; Sumitomo Metal Mining Co, Ltd; T Asahi; Osaka University

2:15 PM **124** *Exciting Far-Ultraviolet Whispering Gallery Modes with High Energy Electrons*; JK Hyun, M Couillard, PP Rajendran, C Liddell, DA Muller; Cornell University

2:30 PM **125** *Characterisation of the Optical Response of some Anisotropic Ternary MAX Compounds*; N Haddad, G Hug; ONERA-CNRS, France; E Garcia-Caurel; Ecole Polytechnique, France; L Hultman; IFM Linköping University, Sweden; MW Barsoum; Drexel University

2:45 PM **126** *Plasmon Resonance Chemical Phase Mapping of Reactive Multilayers*; MA Mat Yajid; University of Sheffield, United Kingdom; T Wagner; Max-Planck-Institut für Metallforschung, Germany; G Moebus; University of Sheffield, United Kingdom

3:00 PM **127** (MAS Distinguished Scholar) *Investigation of the Atomic Structures of Si_3N_4/CeO_{2-d} Interfaces using Atomic Resolution Z-contrast Imaging and EELS Combined with First-Principles Methods*; W Walkosz, RF Klie, S Ogut; University of Illinois Chicago; AY Borisevich, P Becher, SJ Pennycook, JC Idrobo; Oak Ridge National Laboratory

3:15 PM **128** *Magnetic Linear Dichroism Probed by High Momentum Resolution EELS*; Y Ito; Northern Illinois University; NJ Zaluzec, AN Chiamonti, RE Cook; Argonne National Laboratory; M Van Veenendaal; Northern Illinois University; DJ Miller; Argonne National Laboratory

Improving "Green" Products through Imaging: Biomass, Biofuels and Bioproducts

Session Chairs: TG Williams, US Department of Agriculture

DF Wood, US Department of Agriculture

Platform Session

Monday 1:30 PM Room: Mesilla

1:30 PM **129** (Invited) *Identify Molecular Structural Features of Biomass Recalcitrance Using Nondestructive Microscopy and Spectroscopy*; S-Y Ding, M Himmel; National Renewable Energy Laboratory; SX Xie; Harvard University

2:00 PM **130** (MSA Presidential Student) *In Vitro Assembly of the Arabidopsis thaliana Plastid Division Proteins FtsZ1 and FtsZ2*; AG Smith, CB Johnson, S Vitha, A Holzenburg; Texas A&M University

2:15 PM **131** (Invited) *Electron Microscopy as a Valuable Tool in Designing Biobased Products*; SH Imam, GM Glenn, WJ Orts, DF Wood, T Williams; U S Department of Agriculture; F Azam; NIFA Tarnab, Pakistan

2:45 PM **132** (Invited) *Structure of Porous Starch Microcellular Foam Particles*; GM Glenn, SH Imam, AP Klamczynski, B-S Chiou, DF Wood, WJ Orts; U S Department of Agriculture

3:15 PM **133** *Fine Structure of Starch-Clay Composites as Biopolymers*; DF Wood, B-S Chiou, GM Glenn, DF Hoffmann, TG Williams, E Yee, SH Imam, WJ Orts; U S Department of Agriculture

Visualizing Biological Nanomachines

Session Chairs: A Steven, National Institutes of Health
M Morais, University of Texas Medical Branch

Platform Session

Monday 1:30 PM Room: San Miguel

1:30 PM **134** (Invited) *Flexibility, Heterogeneity and Resolution in Single Particle Reconstruction*; S Ludtke; Baylor College of Medicine

2:00 PM **135** (Invited) *Multiple Approaches for Mapping EM Structures of Protein Complexes*; H Li, C Tang, H Li; Brookhaven National Laboratory

2:30 PM **136** *Proteomic Survey of Large Macromolecular Complexes in *D. vulgaris**; B-G Han, D Typke, RM Glaeser; Lawrence Berkeley National Laboratory

2:45 PM **137** (Invited) *Structural Analysis of Dynamain Family Members Provide Insight into Membrane Fission*; J Hinshaw, JA Mears, P Ray, S Fang; National Institutes of Health

3:15 PM **138** *Functional Architecture of the Retromer Cargo Recognition Complex*; G Effantin, A Hierro, AL Rojas, R Rojas, N Murthy; National Institutes of Health; AV Kajava; University of Montpellier, France; JS Bonifacino, JH Hurley, AC Steven; National Institutes of Health

Understanding the Synthesis and Properties of Nanostructures and Nanomaterials: Structure-Property Relationships

Session Chairs: R. Sharma, Arizona State University
JM Zuo, University of Illinois

Platform Session

Monday 1:30 PM Room: Ruidoso

1:30 PM **139** (Invited) *Electron Microscopy of Nanodevices: In Situ and Ex Situ Characterization of Structure and Transport Properties of Carbon Nanotubes*; JM Zuo, T Kim; University of Illinois, Urbana-Champaign; Q Chen, LM Peng; Peking University, P R China; EA Olson; University of Illinois, Urbana-Champaign

2:00 PM **140** *Scanning Transmission X-ray Microscopy of Individual Multi-Walled Carbon Nanotubes: Linear Dichroism and Functionalization Chemistry*; AP Hitchcock, E Najafi, M Obst; McMaster University, Canada; J-J Pireaux; University of Namur, Canada; B Douhard, A Felten; University of Namur, Belgium

2:15 PM **141** *Imaging of Magnetite Nanoparticle Ferrofluid Under the Influence of Magnetic Field by Cryo-TEM*; JS Wu, M Aslam, VP Dravid; Northwestern University

2:30 PM **142** (Invited) *Measuring and Quantitatively Analyzing the Electrical Characteristics of Individual Semiconducting Nanowires in a Nanowire Array*; L-M Peng, Y Liu, S Wang, ZY Zhang; Peking University, China; Q Li; Chinese University of Hong Kong, Hong Kong

3:00 PM **143** *Diameter-Dependent Microstructure, Electronic Structure and Transport Properties of Bi Nanowires*; Q Zhang, M Tian, J Wang, M Chan, T Mallouk; The Pennsylvania State University

Metallographic Techniques and Material Characterization

Session Chairs: N Saenz, Pacific Northwest National Laboratory
R Noecker, ExxonMobil

Platform Session

Monday 1:30 PM Room: Pecos

1:30 PM **144** (Invited) *The Role of Microscopy in the NIST World Trade Center Investigation*; S Banovic; National Institute of Standards and Technology

2:00 PM **145** *Metallographic Analysis of Aluminum Alloy AA 6061 for Quality Control and Process Verification*; Z Wang, B Fabb; Dynetek Industries Ltd, Canada

2:15 PM **146** (Invited) *Challenges in Preparing Aluminum Alloys for Grain Boundary Characterization*; KA Unocic, MJ Mills, GS Daehn; The Ohio State University

2:45 PM **147** *Characterization of Metallurgical Effects in Laser-Drilling of Superalloys*; JKM Garofano, HL Marcus, M Aindow; University of Connecticut

3:00 PM **148** *Dynamic Tensile Extrusion Response of Tantalum*; F Cao, E Cerreta, C Trujillo, G Gray; Los Alamos National Laboratory

Biological Tutorial: Live Cell Imaging Limitations

Session Chair: A Dohnalkova, Pacific Northwest National Laboratory

Platform Session

Monday 2:00 PM Room: La Cienega

2:00 PM **149** (Invited) *Live Cell Imaging: Building the Perfect System for the Core Imaging Facility*; SC Watkins; University of Pittsburgh

Microscopy and Analysis of Soft Matter: From the Molecules Up

Poster Session

Monday 3:30 PM Room: Exhibit Hall

3:30 PM **150** *Characterization of Closed-Cell Foam Skin Thickness by Backscatter Electron Imaging in an SEM*; CS Todd; The Dow Chemical Company

Poster # 1

3:30 PM **151** *Use of X-ray Micro Computed Tomography in the Evaluation of Bread Crumb Structure*; AD Lape, S Jensen, VL St. Jeor, CA Lendon; Cargill Incorporated

Poster # 2

3:30 PM **152** *Quantum Dots—Utilization in TEM*; J King, S Agarwal, E Syklawer, N Prasain, H Chen, J Resmondo, F McDonald, N Bauer, D Alvarez, S Wu, T Stevens, L Shevde, T Moore, M Townsley; University of South Alabama

Poster # 3

3:30 PM **153** *Two Methods of Conductive Coating for Scanning Electron Microscopy of Maize Weevils Sitophilus zeamais Compared by Energy Dispersive Spectroscopy*; MW Pendleton, EA Ellis; Texas A&M University; BB Pendleton; West Texas A&M University; A Holzenburg; Texas A&M University

Poster # 4

3:30 PM **154** *Lab-Tek Chamber Slide for EM Prep: New Protocols for in situ Ultrastructural Study of Monolayer Cultures*; M Hazen, G Ning; The Pennsylvania State University

Poster # 5

3:30 PM **155** (MSA PTSA Award) *A Simple Method to Enumerate T4 Phages by Scanning Electron Microscopy*; S Modla, DH Powell, DA Scheiblin, KJ Czymmek; University of Delaware

Poster # 6

3:30 PM **156** *Imaging Quantum Dots (Qdots) Oligomer Networks with Confocal Fluorescence, Laser Scanning and Transmission Electron Microscopy (CFLSM and TEM)*; N Vundyala, C Sun, F Sidime, W Shi, WJ L'Amoreaux, K Raja, R Peetz; CUNY College of Staten Island

Poster # 7

3:30 PM **157** *Detection of As, Cd and Pb in Walnuts by using EXAFS Spectrometry*; E Gallegos Loya, J Parra Berumen; Centro de Investigación en Materiales Avanzados, Mexico; ME Alvarez Ramos; Universidad de Sonora, Mexico; JA Duarte Moller; Centro de Investigación en Materiales Avanzados, Mexico

Poster # 8

Imaging, Fluorescence and Flow Cytometry

Poster Session

Monday 3:30 PM Room: Exhibit Hall

3:30 PM **158** *Detection of FISH-stained Microorganisms in Soil Microstructure by Fluorescence Microscopy*; T Eickhorst, R Tippkötter; University of Bremen

Poster # 9

3:30 PM **159** *Light Emitting Diodes as Illumination Sources for Microscopy: A Bright New Future*; R Cole; New York State Department of Health

Poster # 10

Scanning Probe Microscopy in the Physical and Biological Sciences

Poster Session

Monday 3:30 PM Room: Exhibit Hall

3:30 PM **160** *Aggregation Phenomena Studied by AFM and MDSC in Nanocarbon Composite Membranes*; LP Terrazas-Bandala, G González-Sánchez, EA Zaragoza, R Ibarra; Advanced Materials Research Center; A Torres, V Nevárez, L Ballinas; Autonomous University of Chihuahua

Poster # 11

3:30 PM **161** *Study of the Surface Porosity of Cellulose Triacetate Membranes by AFM*; LP Terrazas-Bandala, G González-Sánchez; Advanced Materials Research Center; L Ballinas; Autonomous University of Chihuahua

Poster # 12

FIB-Based Applications and Instrumentation Advances for the Physical and Biological Sciences

Poster Session

Monday 3:30 PM Room: Exhibit Hall

3:30 PM **162** *FIB and HRTEM Characterization of Surface Oxides on Polysilicon MEMS after Cyclic Loading*; A Avishai, H Kahn; Case Western Reserve University; R Ballarini; University of Minnesota; A Heuer; Case Western Reserve University

Poster # 13

3:30 PM **163** *Charge-contrast in SEM Imaging with Simultaneous Ion Bombardment*; B Myers, J Wilson, VP Dravid, S Barnett; Northwestern University

Poster # 14

3:30 PM **164** *Assessing the Internal Structure and Composition of Climatically-Relevant Atmospheric Particles Using Focused Ion Beam Milling and X-ray Microanalysis*; J Conny, D Klinedinst, S Eustis; National Institute of Standards and Technology

Poster # 15

3:30 PM **165** *A Quantitative Study on Focused Ion Beam Milling in a Cryogenic Environment*; J Fu, S Joshi, J Catchmark, G Ning; The Pennsylvania State University

Poster # 16

3:30 PM **166** *Repetitive Grain Boundary Chemical Analysis by Atom Probe Microscopy*; DJ Larson, P Clifton, R Alvis, D Olson, J Weng, S Gerstl; Imago Scientific Instruments; F Chen; Wuhan Iron and Steel Corporation, China

Poster # 17

3:30 PM **167** *In-situ Scanning Transmission Electron Microscopy Study on the Microstructural Characterization of a TFT-LCD Panel by a FIB/SEM*; YJ Park, SH Han, HN Kim; LG Philips LCD, Republic of Korea

Poster # 18

3:30 PM **168** *Fabricating Atom Probe Tomography Specimens from TEM Foils*; M Miller, K Russell, D Hoelzer; Oak Ridge National Laboratory

Poster # 19

3:30 PM **169** *Recent Advances in 3D Materials Characterization using DualBeams*; W Neijssen; FEI Company, China; L Roussel; FEI Company, The Netherlands

Poster # 20

3:30 PM **170** *Critical Dimension Monitoring with STEM in Thin Film Magnetic Head Wafer Production*; H Wang, J Fang, M Lederman; Western Digital Corporation

Poster # 21

3:30 PM **171** *OmniGIS Gas Injection System for Ion Beam Induced Deposition and Etching*; DN Leonard; Appalachian State University; A Dhawan; U S Army Research Office; PE Russell; Appalachian State University

Poster # 22

3:30 PM **172** *Preparation of AlGaIn-based High Electron Mobility Transistor Devices using Focused Ion Beam Milling*; DA Cullen, DJ Smith; Arizona State University

Poster # 23

Atom-Probe Analysis of Non-traditional Materials

Poster Session

Monday 3:30 PM Room: Exhibit Hall

3:30 PM **173** *Identification and Analysis of Fluorine Clustering in Boron Implants*; D Reinhard, D Lawrence, R Alvis; Imago Scientific Instruments; P Ronsheim; IBM

Poster # 24

3:30 PM **174** *Diffusion of TaN and HfO into TiN in a Metal Gate Stack*; D Reinhard, D Lawrence, D Olson, R Alvis; Imago Scientific Instruments

Poster # 25

3:30 PM **175** *Analysis of Bulk Dielectrics with Atom Probe Tomography*; DJ Larson, R Alvis, D Lawrence, T Prosa, RM Ulfing, D Reinhard, P Clifton, S Gerstl, J Bunton, D Lenz, TF Kelly; Imago Scientific Instruments; K Stiller; Chalmers University of Technology, Sweden

Poster # 26

In-situ TEM

Poster Session

Monday 3:30 PM Room: Exhibit Hall

3:30 PM **176** *Dislocation/APB Interaction during TEM In-Situ Straining of Fe₂MnAl*; Y Liao, I Baker; Dartmouth College

Poster # 27

3:30 PM **177** *In-situ Atomic-scale Observation of Melting of Cu (110) Crystal*; SH Oh, C Scheu, M Saito, M Ruehle; Max-Planck-Institut fuer Metallforschung, Germany

Poster # 28

3:30 PM **178** *A MEMS-based Technology Platform for In-situ TEM Heating Studies*; J Damiano, D Nackashi, S Mick; Protochips Inc

Poster # 29

3:30 PM **179** *In-situ Observation of Behaviors of Nanometer-sized Dislocation Loops Upon Heating*; K Arakawa, H Mori; Osaka University, Japan

Poster # 30

3:30 PM **180** *In-situ TEM Observations on the Sintering Process of Colloidal Gold Using an Ultra-fast Heating Stage*; M Briceno de Gutierrez, K Hattar; University of Illinois; J Damiano, D Nackashi; Protochips Inc; I Robertson; University of Illinois

Poster # 31

3:30 PM **181** *In-situ XTEM Analysis of the Liquid Phase Epitaxial Growth of a-Si/Au Alloy Layer*; DK Venkatachalam; RMIT University, Australia; D Llewellyn, K Belay, R Elliman; Australian National University; DK Sood, SK Bhargava; RMIT University, Australia

Poster # 32

Improving "Green" Products through Imaging: Biomass, Biofuels and Bioproducts

Poster Session

Monday 3:30 PM Room: Exhibit Hall

3:30 PM **182** *Electron Microscopy Analysis of Maize Basal Endosperm Transfer Cells Processed by High-pressure Freezing and Freeze-substitution*; B-H Kang, D Williams, K Kelley, K Backer-Kelley, P Chourey; University of Florida Gainesville

Poster # 33

3:30 PM **183** *Transcriptional Regulation of Secondary Wall Biosynthesis in Plants*; R Zhong, EA Richardson, C Lee, J Zhou, R McCarthy, Z-H Ye; University of Georgia

Poster # 34

Visualizing Biological Nanomachines

Poster Session

Monday 3:30 PM Room: Exhibit Hall

3:30 PM **184** *Three-Dimensional Structure of ATP-Dependent Molecular Machine hCHRAC for Chromatin Remodeling*; M Hu, E Lyman, Y-B Zhang, L Qian, B Raymond, L Kuznetsova, J Hainfeld; Brookhaven National Laboratory

Poster # 35

3:30 PM **185** *Cryoelectron Microscopic Study of Campylobacter jejuni Bacteria Flagella Filament*; X Yu, V Galkin, E Egelman; University of Virginia; P Guerry; Naval Medical Research Center

Poster # 36

3:30 PM **186** *Cryo-Electron Microscopy of the Lambda Bacteriophage Holin S105*; C Savva, J Dewey, D Struck, R Young, A Holzenburg; Texas A&M University

Poster # 37

3:30 PM **187** *EM Tomography Visualization of Urothelial Intermediate Filaments and their Linkage to the Apical Plasma Membrane*; H Wang, X-P Kong; New York University

Poster # 38

3:30 PM **188** *Improved Multi-Stranded Nucleic Acid Immobilization Technique: Enhanced Double-Stranded, Triple-Stranded and Four-Stranded DNA Microarray Platform*; A Law, C Gagna, T Law, C Spergel, J Rotunno, J Cherian, P Mody, K Schlatmann; New York Institute of Technology; WC Lambert; New Jersey Medical School

Poster # 39

3:30 PM **189** *Microfluidic Mixing System for Time Resolved Cryo-Electron Microscopy*; Z Lu, J McMahon; Rensselaer Polytechnic Institute; H Mohamed, D Barnard, TR Shaikh, T Wagenknecht; Wadsworth Center; T-M Lu; Rensselaer Polytechnic Institute

Poster # 40

Understanding the Synthesis and Properties of Nanostructures and Nanomaterials

Poster Session

Monday 3:30 PM Room: Exhibit Hall

3:30 PM **190** *Electron Microscopy Characterization of High Yield Growth of Thin TiO₂ Nanowires*; H Li, J Jiao; Portland State University

Poster # 41

3:30 PM **191** *Electron Microscopy Characterization of Pd-Ce Interaction on alpha-Al₂O₃ Support*; MS Moreno; Centro Atómico Bariloche, Argentina; F Wang, M Malac; National Institute for Nanotechnology, Canada; T Kasama; University of Cambridge, United Kingdom; MD Sanchez; Universidad Nacional del Sur, Argentina; I Costilla, CE Gigola; Planta Piloto de Ingeniería Química, Argentina

Poster # 42

3:30 PM **192** *Structural and Electron Field Emission Properties of Fe-doped GaN Nanowires*; Y Chen, J Jiao; Portland State University

Poster # 43

3:30 PM **193** *Growth and Characterization of InP Nanowires on Si(111)*; M Pozuelo, SV Prikhodko, R Woo; University of California, Los Angeles; SD Sitzman; Oxford Instruments; RF Hicks, S Kodambaka; University of California, Los Angeles

Poster # 44

3:30 PM **194** *Novel Fabrication of Carbon Nanotube Vias for VLSI Interconnects*; J Wu, J Walenza-Slabe; Portland State University; M Mann, KBK Teo, WI Milne; University of Cambridge, United Kingdom; J Jiao; Portland State University

Poster # 45

3:30 PM **195** *Characterization of Nanocomposite Materials using Electron Microscopy*; V Rangari, S Mohammad, S Jeelani; Tuskegee University

Poster # 46

3:30 PM **196** *Synthesis and Interfacial Characterization of Au Nanoparticles on Si Nanowires*; SY Sayed, F Wang, M Malac, R Egerton, J Buriak; National Institute for Nanotechnology, Canada

Poster # 47

3:30 PM **197** *Electron Microscopy and Raman Characterization of Multi-Walled Carbon Nanotubes Grown by Chemical Vapor Deposition*; M Ellis; University of Arizona; T Jutarosaga; King Mongkut's University of Technology, Thailand; S Smith, Y Wei; Motorola Labs; S Seraphin; University of Arizona

Poster # 48

3:30 PM **198** *STEM Studies of Novel Gold Catalysts*; AR Lupini, GM Veith, NJ Dudley, SJ Pennycook; Oak Ridge National Laboratory

Poster # 49

3:30 PM **199** *Sol-gel Prepared Cu-Ce-Ni Nanoparticle Alumina Catalysts for WGS Hydrogen Production*; NV Seetala, J Bass; Grambling State University; AMR Jayasingha, RK Garudadri, U Siriwardane; Louisiana Tech University

Poster # 50

3:30 PM **200** *Characterization of Y₂O₃-MgO Nanostructures Prepared by Argon Shrouded-Plasma Spraying*; JF Al-Sharab, Sadangi, V Shukla, BH Kear; Rutgers University; J Bentley; Oak Ridge National Laboratory

Poster # 51

3:30 PM **201** *SHG Detection on Glycine-Lithium Nitrate crystals*; RA Gonzalez Valenzuela, J Hernández Paredes, HE Esparza Ponce; Centro de Investigación en Materiales Avanzados, Mexico; ME Alvarez Ramos, LE Regalado; Universidad de Sonora, Mexico; JA Duarte Moller; Centro de Investigación en Materiales Avanzados, Mexico

Poster # 52

3:30 PM **202** *Hollow ZnO Structures Formed by Evaporating Zn and InI₃ Mixture*; C Li, Q Meng; Portland State University

Poster # 53

Surface Microscopy and Microanalysis in Materials and Biological Systems

Poster Session

Monday 3:30 PM Room: Exhibit Hall

3:30 PM **203** *Characterization of the Organic-Inorganic Interface of Abalone Shell Nacre*; WW Liu, N Yao; Princeton University

Poster # 54

3:30 PM **204** *Quantitative Evaluation of Auger Depth Profiles by LOGIT*; T Ogiwara, S Tanuma; National Institute for Material Science, Japan

Poster # 55

3:30 PM **205** *Surface Versus Bulk Defects on Devices using Complementary Techniques*; VS Smentkowski, SG Ostrowski, L Denault, CG Woychik; General Electric Global Research
Poster # **56**

3:30 PM **206** *Comparison of Sample Preparation Methods for Analysis of Biological Samples by High Vacuum Techniques*; L Denault, SG Ostrowski, VS Smentkowski, TL Paxon; General Electric Global Research
Poster # **57**

3:30 PM **207** *Evaluation of Chemical State Analysis and Imaging by Micro XPS*; H Iwai, H Yoshikawa, S Fukushima, S Tanuma; National Institute for Materials Science, Japan
Poster # **58**

Metallographic Techniques and Material Characterization

Poster Session

Monday 3:30 PM Room: Exhibit Hall

3:30 PM **208** *Influence of Reinforcement Particles Addition and Processing Intensity on the Mechanical Properties in an Al 7075 Composite Produced by Mechanical Milling*; I Estrada, C Carreño-Gallardo, E Rocha-Rangel; Universidad Autónoma Metropolitana, Mexico; M Miki-Yoshida, P Amezaga-Madrid, R Martínez-Sánchez; Centro de Investigación en Materiales Avanzados, Mexico
Poster # **59**

3:30 PM **209** *Microstructural and Hot Extrusion Evaluation of Aluminum Alloy Al2024 During Mechanical Milling*; C Carreño-Gallardo, I Estrada-Guel, M Neri; Centro de Investigación en Materiales Avanzados, Mexico; E Rocha-Rangel, M Romero-Romo; Universidad Autónoma Metropolitana, Mexico; C López-Meléndez, R Martínez-Sánchez; Centro de Investigación en Materiales Avanzados, Mexico
Poster # **60**

3:30 PM **210** *Effect of Metallized Graphite Addition and Milling Intensity on Final Powder Morphology in an Aluminum 7075 Composite*; I Estrada-Guel, C Carreño-Gallardo, E Rocha-Rangel; Universidad Autónoma Metropolitana, Mexico; M Miki-Yoshida, P Amezaga-Madrid, R Martínez-Sánchez; Centro de Investigación en Materiales Avanzados, Mexico
Poster # **61**

3:30 PM **211** *Fractographs of Bending Fatigued Electrodeposited Nano-Crystalline Ni*; L-C Lai; University of California, Irvine; W-A Chiou; University of Maryland; J Earthman; University of California, Irvine
Poster # **62**

3:30 PM **212** *A New Method for Fracturing Mineral Particles for Cross-Sectional FESEM Analysis*; C Huntington, B Clark, J Ptasinski, KL Bunker, BR Strohmeier, RJ Lee; RJ Lee Group, Inc
Poster # **63**

3:30 PM **213** *Searching for the Limits of RIMAPS Technique Application*; NO Fuentes; Comision Nacional de Energia Atomica Argentina; EA Favret, AM Canzian; Universidad de Gral San Martin Argentina
Poster # **64**

3:30 PM **214** *Microstructure and Fractography of Eutectoid Fe₃₀Ni₂₀Mn₃₅Al₁₅*; Y Liao, I Baker; Dartmouth College
Poster # **65**

3:30 PM **215** *Al-MWCNT Composites Obtained by Mechanical Milling*; R Pérez-Bustamante, I Estrada-Guel, W Antúnez-Flores, E Torres-Moye, A Hernández-Gutierrez, M Miki-Yoshida, R Martínez-Sánchez; Centro de Investigación en Materiales Avanzados Mexico
Poster # **66**

3:30 PM **216** *A Study of the Ni-Ru-Y system at 1200°C using SEM and EDX*; S Coetzee; University of Botswana, Botswana; L Cornish, M Witcomb; University of the Witwatersrand, South Africa
Poster # **67**

3:30 PM **217** *TEM and FESEM: The Right Combination for Enhanced Particle Characterization*; KL Bunker, D McAllister, KA Allison, K Wagner, K Rickabaugh, AM Levine, BR Strohmeier, RJ Lee; RJ Lee Group, Inc
Poster # **68**

Tuesday, August 5, 2008

Microscopy and Analysis of Soft Matter: From the Molecules Up

Session Chairs: DJ Stokes, FEI Company,
The Netherlands
RD Leapman, National Institutes of Health

Platform Session

Tuesday 8:30 AM Room: Picuris

8:30 AM **218** (Invited) *Electron Irradiation Effects in Carbon Nanostructures: Surface Reconstruction, Extreme Compression and Nanotube Growth*; M Terrones; IPICYT, San Luis Potosi, Mexico

9:00 AM **219** *Multimodal Imaging of Nanostructures with FEG SEM*; A Muto; Hitachi High Technologies Corporation; DB Buchholz, RPH Chang, VP Dravid; Northwestern University

9:15 AM **220** (Invited) *X-ray Microscopy of Soft Matter*; H Ade; North Carolina State University

9:45 AM **22 1**
Focused Ion Beam Processing of Polymeric Materials for Analytical Sample Preparation; SE Kooi; Massachusetts Institute

of Technology **10:00 AM** *Coffee Break*

10:30 AM **222** (Invited) *Spectroscopic Imaging of Soft Materials*; S Yakovlev; Stevens Institute of Technology; S Shi, M Misra; Unilever Research; M Libera; Stevens Institute of Technology

11:00 AM **223** (Invited) *Advanced Transmission Electron Microscopy for Functional Polymer Systems*; J Loos, E Sourty, S van Bavel, K Lu; Eindhoven University of Technology, The Netherlands

11:30 AM **224** *Quantitative STEM and EFTEM Characterization of Dendrimer-Based Nanoparticles Used in Magnetic Resonance Imaging and Drug Delivery*; A Sousa, MA Aronova, H Wu, H Sarin, GL Griffiths, RD Leapman; National Institutes of Health

11:45 AM **225** *Surface Characterization of Amphiphilic Polymer Networks*; NM Taylor, WJ L'Amoreaux, RM Peetz; CUNY College of Staten Island

Visualizing Unstained Specimens: Phase, Polarized Light and Other Intrinsic Contrast Methods

Session Chair: R Oldenbourg, Marine Biological
Laboratory

Platform Session

Tuesday 8:30 AM Room: Dona Ana

8:30 AM **226** (Invited) *Second Harmonic Generation Imaging Studies of Diseased States*; O Nadiarnykh; University of Connecticut Health Center; R Lacombe; University of Connecticut; M Brewer, P Campagnola; University of Connecticut Health Center

9:00 AM **227** (Invited) *Quantitative Phase Microscopy*; K Nugent; The University of Melbourne

9:30 AM **228** (Invited) *Deep Ultraviolet Microscopy and Its Application to Cancer Immunology*; BJ Zeskind; Immuneering Corporation

10:00 AM *Coffee Break*

10:30 AM **229** (Invited) *Soft X-ray Tomography Generates Quantitative Images of Whole Cells Using Intrinsic Contrast*; M Le Gros, D Parkinson; Lawrence Berkeley National Laboratory; W Gu, G McDermott, CA Larabell; University of California

11:00 AM **230** (Invited) *A Polarized Light Field Microscope with Fast Polarization Switcher and Microlens Array Reveals the 3-D Birefringence Distribution of Complex Anisotropic Structures*; R Oldenbourg; Marine Biological Laboratory

11:30 AM *Discussion: Visualizing Unstained Specimens*; R Oldenbourg; Marine Biological Laboratory

Simulation of Microscopy, Microanalysis, and Microscopic Phenomena

Session Chairs: NWM Ritchie, National Institute of Standards and Technology
LN Brewer, Sandia National Laboratories

Platform Session
Tuesday 8:30 AM Room: Aztec

8:30 AM **231** (Invited) *Secondary, Backscattered and Low Energy Loss electrons in the SEM: Quantification for Nano Analysis*; M El-Gomati, C Walker, C Bonet, S Tear, J Matthew; University of York, United Kingdom

9:00 AM **232** *Artificial SEM Images for Testing Resolution-Measurement Methods*; P Cizmar, AE Vldar, B Ming, MT Postek; National Institute of Standards and Technology

9:15 AM **233** *Counting Electrons in Transmission Electron Microscopes*; G Moldovan, X Li, P Wilshaw, AI Kirkland; University of Oxford, United Kingdom

9:30 AM **234** *Model of Fluctuation Electron Microscopy for a Nanocrystal/Amorphous Composite*; F Yi, W Stratton, PM Voyles; University of Wisconsin Madison

9:45 AM **235** *The Use of Statistical Approach for Quantitative Strain Analyses with the Intensity Response of EBSD Systems*; J Cocle, R Gauvin, S Yue; McGill University, Canada

10:00 AM *Coffee Break*

10:30 AM **236** (Invited) *Ionization of Inner Shells of Atoms by Electron Impact*; F Salvat, D Bote; Universitat de Barcelona, Spain; C Merlet; Université de Montpellier II, France; X Llovet; Universitat de Barcelona, Spain

11:00 AM **237** *Predicting Visibility in Elemental Maps Derived from X-ray Spectrum Images*; DE Newbury, D Bright, JM Davis, N Ritchie; National Institute of Standards and Technology

11:15 AM **238** (Invited) *Modeling Electron Diffraction and Imaging in Microscopes with Aberration Correctors for Quantitative Materials Structural Analysis*; JM Zuo, WJ Huang, A Shah, R Kroeger; University of Illinois

FIB-Based Applications and Instrumentation Advances for the Physical and Biological Sciences

Session Chairs: LA Giannuzzi, FEI Company
B Gorman, University of North Texas
M Uchic, Wright-Patterson Air Force Base

Platform Session
Tuesday 8:30 AM Room: Galisteo

8:30 AM **239** (Invited) *In-situ Mechanical Testing of Micro-Sized Specimens Fabricated by FIB*; R Wheeler; UES Incorporated; P Shade; The Ohio State University; M Uchic, D Dimiduk; Wright-Patterson AFB; A Shiveley; UES Incorporated; D Sergison; Sergison Machine; HL Fraser; The Ohio State University

9:00 AM **240** *Site-Specific Studies of Electrical Heterogeneities in Ni-BaTiO₃ Multilayer Ceramic Capacitors Using FIB and AEM*; GY Yang, PJ Moses, EC Dickey, CA Randall; The Pennsylvania State University

9:15 AM **241** *Sub-stage with Remote Control of Specimen Rotation for Use in FIB/SEM Tools*; D MacMahon; Micron Technology

9:30 AM **242** (Invited) *FIB Preparation of Cross-sectional Polymer Thin Film TEM Samples*; S Kim, A Minor; Lawrence Berkeley National Laboratory

10:00 AM *Coffee Break*

10:30 AM **243** *Sample Preparation for Aberration Corrected Microscopy*; A Genç, D Huber; The Ohio State University; D Basile; E A Fischione Instruments Inc; HL Fraser; The Ohio State University; P Fischione; E A Fischione Instruments Inc

10:45 AM **244** *In-Situ Sample Preparation and Modeling of SEM-STEM Imaging*; R Young, A Buxbaum, B Peterson, R Schampers; FEI Company

11:00 AM **245** *Advanced FIB-based Sample Preparation for 3D Characterization of 45nm ICs*; F Lort; ST Microelectronics, France; D Delille; FEI Company, The Netherlands

11:15 AM **246** *Specimen Preparation for Cross-Section Atom Probe Analysis*; D Lawrence, R Alvis, D Olson; Imago Scientific Instruments

11:30 AM **247** (MAS Distinguished Scholar) *New FIB Fold-Out Method for TEM Cross-Section Sample Preparation*; HC Floresca, J Jeon, MJ Kim; University of Texas Dallas

11:45 AM **248** *Study of FIB Damage in Carbonaceous Materials using XANES*; N Bassim, B DeGregorio, RM Stroud; U S Naval Research Laboratory; P Fischione; E A Fischione Instruments, Inc

Problem Solving Using Microanalytical Techniques

Session Chairs: PK Carpenter, Washington University
DT Kremser, Battelle Memorial Institute

Platform Session

Tuesday 8:00 AM Room: Cimarron

8:00 AM **249** (Invited) *Wavelength Dispersive X-ray Spectrometry Element Mapping and Mineralogy Based Manipulation Assessment as a Method for Distinguishing Forensic Soil Samples*; CS Schwandt; McCrone Associates, Inc

8:30 AM **250** (Invited) *Multi-Detector X-Ray Mapping and Generation of Correction Factor Images*; R Wuhler, K Moran, MR Phillips; University of Technology, Sydney

9:00 AM **251** (Invited) *Determining Bulk Chemical Compositions of Chondrules by Electron Microprobe: Modal Recombination versus Defocused Beam Analyses*; J Berlin, RH Jones, AJ Brearley, MN Spilde; University of New Mexico

9:30 AM **252** (Invited) *Trace-element Analyses in Lunar Meteorite Sayh al Uhaymir 169*; RA Zeigler, PK Carpenter, BL Jolliff, RL Korotev; Washington University

10:00 AM *Coffee Break*

10:30 AM **253** *Compositional Variations and Modeling in Low Alloy Steel Welds*; JJ McGee, DB Knorr; Lockheed Martin, KAPL, Inc

10:45 AM **254** *Comparison of the Defect Microstructure of Silicon Dioxide Thin Films and Buried Oxide Layers Determined Using Cathodoluminescence Microanalysis*; MA Stevens-Kalceff; University of New South Wales, Australia

11:00 AM **255** *Surface Enhanced Raman (SERS) Nanoparticle Delivery Device for In-situ Sample Analysis*; TJ Tague Jr; Bruker Optics; M Leona; Metropolitan Museum of Art

11:15 AM **256** *Advances in High Resolution CT and Dimensional Measuring*; D Moller-Gunderson, K Brockdorf; phoenix|x-ray Systems + Services Inc; O Brunke; phoenix|x-ray Systems + Services GmbH, Germany

11:30 AM **257** *Enhancing Contrast of Al Traces on Si Substrates using Low-voltage SEM-hosted XRM*; BC Gundrum, JA Hunt; Gatan Research & Development; MA Zurbuchen; The Aerospace Corporation

11:45 AM **258** *Identifying Foreign Material Contamination in Food and Food Ingredients*; VL St. Jeor, AD Lape, AR Muroski, C McGuire, DL Elmore; Cargill Incorporated

Analytical Electron Microscopy: Advanced Techniques and Applications for Nanoscience

Session Chairs: M Watanabe, Lawrence Berkeley National Laboratory
PA Crozier, Arizona State University

Platform Session

Tuesday 8:30 AM Room: Brazos

8:30 AM **259** (Invited) *Elemental Mapping of Nanoscale Structures in the Aberration-Corrected Analytical Electron Microscope*; AA Herzing, IM Anderson; National Institute of Standards and Technology; JK Edwards, AF Carley, GJ Hutchings; Cardiff University, United Kingdom; X-Q Li, W-X Zhang, CJ Kiely; Lehigh University

9:00 AM **260** *First Performance Measurements and Application Results of a New High Brightness Schottky Field Emitter for HR-S/TEM at 80–300kV Acceleration Voltage*; B Freitag, G Knippels, S Kujawa, M van der Stam, D Hubert, PC Tiemeijer; FEI Company, The Netherlands; C Kisielowski, P Denes, A Minor, U Dahmen; Lawrence Berkeley National Laboratory

9:15 AM **261** *Atomic Resolution Elemental Maps by Core Level EELS Using Cs Corrected STEM*; E Okunishi, H Sawada, Y Kondo; JEOL Ltd, Japan; M Kersker; JEOL USA

9:30 AM **262** *The Newly Installed Aberration Corrected and Dedicated STEM (Hitachi HD2700C) at Brookhaven National Laboratory*; H Inada; Hitachi High Technologies America; Y Zhu, J Wall, VV Volkov; Brookhaven National Laboratory; K Nakamura, M Konno; Hitachi High Technologies; K Jarausch; Hitachi High Technologies America; RD Twesten; Gatan

9:45 AM **263** *Performance of a Nion Co. UltraSTEM*; P Wang, MH Gass; SuperSTEM Laboratory, United Kingdom; M Falke; Chemnitz University of Technology, Germany; A Bleloch; SuperSTEM Laboratory, United Kingdom

10:00 AM *Coffee Break*

10:30 AM **264** (Invited) *Nanoscale Elemental Analysis by EELS in the Life Sciences*; RD Leapman; National Institutes of Health

11:00 AM **265** *Atomic-Resolution STEM at 60kV Primary Voltage*; N Dellby, M Murfitt, OL Krivanek; Nion Co; M Kociak, K March, M Tence, C Colliex; CNRS, France

11:15 AM **266** *High Resolution Polymer Imaging Using Scanning Transmission Electron Microscopy*; EI Garcia-Meitin, G Bar, J Blackson, D Reuschle; The Dow Chemical Company

11:30 AM **267** *In Situ Measurements of Ni Oxidation Using Electron Energy-Loss Spectroscopy*; P Rez, ES Moore, R Sharma; Arizona State University

11:45 AM **268** *Elemental Mapping in Three Dimensions using 4D STEM-EELS Tomography*; P Thomas, C Booth, R Harmon, S Markovic, RD Twesten; Gatan Inc; K Jarausch; Hitachi High Technologies America

Microscopy and Infectious Diseases

Session Chairs: CS Goldsmith, Centers for Disease Control
DR Beniac, Public Health Agency of Canada

Platform Session
Tuesday 8:30 AM Room: Taos

8:30 AM **269** (Invited) *Electron Microscopy of the SARS Coronavirus*; D Beniac, SL deVarennes, A Andonov, TF Booth; Public Health Agency of Canada, Canada

9:00 AM **270** (Invited) *Diagnostic Electron Microscopy in the UK from the Earliest Days to the Present*; A Curry; Health Protection Agency, United Kingdom

9:30 AM **271** (Invited) *Lemons to Lemonade (EM Techniques for Salvaging Suboptimal Specimens)*; SE Miller; Duke University Medical Center

10:00 AM *Coffee Break*

10:30 AM **272** (Invited) *Electron Microscopy in Identification of Novel Environmental Microorganisms Potentially Dangerous for Humans and Animals*; VL Popov, VC Han, JW Wen, DH Walker; University of Texas Medical Branch

11:00 AM **273** (Invited) *The Role of Microscopy in the Global Climate Change Scheme*; FJ Torres-Velez; University of Georgia

11:30 AM **274** *Defining the Viral Ecology of Epizootic Shell Disease of the American Lobster (Homarus Americanus)*; KD Moulton, JL Jamison, SM Duboise; University of Southern Maine

11:45 AM **275** *Microchemical Anatomy and Pathogenesis of the Protozoan Parasite Leishmania*; A LeFurgey, P Ingram; Veterans Affairs Medical Center; Duke University Medical Center

Impact of Biofilms in the Real World

Session Chairs: RB Simmons, Georgia State University
JH Woodward, Buckman Laboratories

Platform Session
Tuesday 8:30 AM Room: Mesilla

8:30 AM **276** (Invited) *Using Fluorescence Microscopy to Assess Microbial Activity and Antimicrobial Performance in Biofilms*; B Pitts; Montana State University

9:00 AM **277** (Invited) *Nannobacteria, Organic Matter, and Precipitation in Hot Springs, Viterbo, Italy: Distinctions and Relevance*; BL Kirkland, FL Lynch; Mississippi State University; RL Folk; The University of Texas, Austin; AM Lawrence; Mississippi State University

9:30 AM **278** (Invited) *Diseased Minerals: Microbial Degradation of Copper Mineral Specimens*; MN Spilde; University of New Mexico; PJ Boston; New Mexico Institute of Mining and Technology; A Dichosa, DE Northup; University of New Mexico; CA Francis; Harvard Mineralogical Museum

10:00 AM *Coffee Break*

10:30 AM **279** (Invited) *Community Development in Bacterial Biofilms of the Oral Cavity*; RJ Palmer Jr; National Institutes of Health; NI Chalmers; National Institutes of Health, University of Maryland Dental School; AH Rickard; Binghamton University; PE Kolenbrander; National Institutes of Health

11:00 AM **280** *Ethylene and Biofilms and Other Extracellular Materials in Pierce's Disease of Grapes*; EA Ellis, BG Cobb, GR McEachern; Texas A&M University

11:30 AM **281** *S. epidermidis Biofilm Development on Patterned Surfaces*; Y Wang, M Libera; Stevens Institute of Technology

Visualizing Biological Nanomachines

Session Chairs: A Steven, National Institutes of Health
M Morais, University of Texas Medical Branch

Platform Session

Tuesday 8:30 AM Room: San Miguel

8:30 AM **282** (Invited) *Packaging of Proteins into Viral Capsids and Their Activation*; JB Heymann, A Sen, N Cheng; National Institutes of Health; J Qiao, L Mindich; New Jersey Medical School; AC Steven; National Institutes of Health

9:00 AM **283** (Invited) *Dissecting the Bacteriophage Phi29 DNA Packaging Motor*; MC Morais; University of Texas Medical Branch; JS Koti; University of Minnesota; VD Bowman; Purdue University; E Reyes-Aldrete; University of Texas Medical Branch; DL Anderson; University of Minnesota; MG Rossmann; Purdue University

9:30 AM **284** (Invited) *Single Particle Electron Cryomicroscopy of Bacteriophage P22 Portal Protein Complexes*; H Zheng, G Wisedchaisri, T Gonen; University of Washington

10:00 AM *Coffee Break*

10:30 AM **285** (Invited) *Insight into DNA and Protein Transport in dsDNA viruses: The Structure of Bacteriophage N4*; K Choi; University of Texas Medical Branch Galveston; J McPartland, I Kaganman; University of Chicago; VD Bowman; Purdue University; L Rothman-Denes; University of Chicago; MG Rossmann; Purdue University

11:00 AM **286** *Electron Cryo-Tomography of Viral Infection Within Caulobacter crescentus*; E Wright; California Institute of Technology; J Poindexter; Barnard College; P Viollier; Case Western Reserve University; G Jensen; California Institute of Technology

11:15 AM **287** *Correlated Fluorescent Light Microscopy and Electron Cryotomography of the Caulobacter crescentus Chemotaxis Arrays*; A Briegel, HJ Ding, Z Li; California Institute of Technology; J Werner, Z Gitai; Princeton University; DP Dias; California Institute of Technology; RB Jensen; Roskilde University, Denmark; G Jensen; California Institute of Technology

11:30 AM **288** (Invited) *Insights into the Mechanism of Formation of Arp2/3 Induced Actin Branches from Electron Microscopy and Electron Tomography Studies*; I Rouiller, X-P Xu; Burnham Institute for Medical Research; K Amann; University of Wisconsin Madison; C Egile; Experimental Therapeutic and Translational Research Oncology, France; D Nicastro; University of Colorado; S Nickell; Max-Planck Institute für Biochemie, Germany; R Li; Harvard Medical School; T Pollard; Yale University; N Volkmann, D Hanein; Burnham Institute for Medical Research

Understanding the Synthesis and Properties of Nanostructures and Nanomaterials

Session Chairs: EC Dickey, Pennsylvania State University
S Kodambaka, University of California, Los Angeles

Platform Session

Tuesday 8:30 AM Room: Ruidoso

8:30 AM **289** (Invited) *Size Effects in the Vapor-Liquid Solid (VLS) Growth of Semiconductor Nanowires*; EC Dickey, TE Clark, X Zhang, JM Redwing; Pennsylvania State University

9:00 AM **290** (Invited) *New Insights into the Nanowire Nucleation and Growth Kinetics*; S Kodambaka; University of California, Los Angeles; J Tersoff; IBM T J Watson Research Center; BJ Kim; Purdue University; M Reuter; IBM T J Watson Research Center; EA Stach; Purdue University; FM Ross; IBM T J Watson Research Center

9:30 AM **291** *Structure of Coated Ge-nanowires*; M Klementova; Academy of Science, Czech Republic; M Rieder; Czech Geological Survey, Czech Republic; V Drinek, R Fajgar, J Subrt; Academy of Science, Czech Republic

9:45 AM **292** (Invited) *Study of Au Nanoparticle Catalyzed Growth Processes of ZnO Nanowires*; J Wang; University of Missouri, St Louis; LF Allard; Oak Ridge National Laboratory; P Fraundorf; University of Missouri, St Louis; J Howe; Oak Ridge National Laboratory; J Liu; University of Missouri, St Louis

10:00 AM *Coffee Break*

10:30 AM **293** *Well Aligned ZnO/ZnSe Coaxial Nanocable Array on Transparent Conducting Oxide Substrate for Solar Cells*; K Wang, J Chen, W Zhou; University of New Orleans; Y Zhang, J Pern, Y Yan, A Mascarenhas; National Energy Renewable Laboratory

10:45 AM **294** *TEM Study of the Formation of GaSb Core-Shell Nanofibers*; A Perez-Bergquist, K Sun, L Wang; University of Michigan

11:00 AM **295** *Direct Imaging of Point Defect Configurations for Au inside Si Nanowires*; K van Benthem, S-H Oh, AY Borisevich; Oak Ridge National Laboratory; W Luo; Vanderbilt University; P Werner, ND Zakharov; Max Planck Institut of Microstructure Physics, Germany; ST Pantelides, SJ Pennycook; Oak Ridge National Laboratory

11:15 AM **296** (Invited) *Catalyst Dynamics during Carbon Nanotube and Si Nanowire CVD*; S Hofmann; University of Cambridge, United Kingdom; R Sharma; Arizona State University; R Blume; Fritz Haber Institute, Germany; CT Wirth, C Ducati, T Kasama; University of Cambridge, United Kingdom; RE Dunin-Borkowski; Technical University of Denmark, Denmark; D Teschner; Fritz Haber Institute, Germany;

J Drucker, P Bennett; Arizona State University; A Knop-Gericke, R Schloegl; Fritz Haber Institute, Germany; J Robertson; University of Cambridge, United Kingdom

11:45 AM **297** (MSA Presidential Student) *In Situ Synthesis of Fe Catalyst and Carbon Nanotubes by Chemical Vapor Deposition*; ES Moore, R Sharma, P Rez, MMJ Treacy, A Gamalski; Arizona State University

Failure Analysis: Real World Applications and Case Studies

Session Chairs: DP Dennies, The Boeing Company
F Schmidt, Engineering Systems Inc

Platform Session
Tuesday 8:00 AM Room: Pecos

8:00 AM **298** *Catastrophic Failure of a Wheel Assembly in a Heavy Duty Off-Road 6X6 Vehicle*; C Johnson; Oshkosh Corporation

8:30 AM **299** (Invited) *Metallurgical and Metallographic Aspects of Engineering Failure Analysis*; M Stevenson, J McDougall, M Hayes; Engineering Systems Inc

9:00 AM **300** *Microstructural Evaluation of Electron Beam Melted Ti-6Al-4V*; J Wooten; CalRAM, Inc; DP Dennies; The Boeing Company

9:15 AM **301** *Cosmetic Defects Due to Contamination in an Electroplated Deposit*; K Wasag; Scientific Control Laboratories, Inc; F Schmidt; Engineering Systems Inc

9:30 AM **302** *Imaging Grain Boundary Corrosion at Low Beam Currents in a Modern FIB/SEM System Equipped with a New Secondary Ion Detector*; M Phaneuf, A Laquerre; Fibics Incorporated, Canada

9:45 AM **303** *Failure Analysis of a Fractured Ductile Cast Iron Bracket*; S Raebel; Stork Technimet

10:00 AM *Coffee Break*

10:30 AM **304** (Invited) *Evaluation of Trimetallic Joint*; DP Dennies; The Boeing Company

11:00 AM **305** *Electron Microscopy Study of Localized Gate Forward Breakdown in AlGaIn/AlN/GaN High Electron Mobility Transistors*; L Li, N Nuhfer, M Skowronski; Carnegie Mellon University

11:30 AM **306** *Identification of Surface Deposits found in Failures of Water Purification Filters and Membranes*; J Wil-liard, JR Dominguez; GE Water & Process Technologies

Physical Tutorial: Electron Backscatter Diffraction: Operation and Applications

Session Chair: G Thompson, University of Alabama

Platform Session
Tuesday 9:00 AM Room: La Cienega

9:00 AM **308** (Invited) *Electron Backscatter Diffraction: Operation and Applications*; DP Field; Washington State University

Biological Tutorial: Cryo-Fluorescence: A Tool for Correlative Cryo-Light and Cryo-Electron Microscopy

Session Chair: A Dohnalkova, Pacific Northwest National Laboratory

Platform Session
Tuesday 10:30 AM Room: La Cienega

10:30 AM **307** (Invited) *Cryo-Fluorescence: A Tool for Correlative Cryo-Light and Cryo-Electron Microscopy*; CL Schwartz; University of Colorado, Boulder

MAS Presidential Happening

Session Chair: IM Anderson, National Institute of Standards and Technology

Platform Session
Tuesday 12:15 PM Room: Aztec

12:15 PM MAS Presidential Happening

Simulation of Microscopy, Microanalysis, and Microscopic Phenomena

Session Chairs: NWM Ritchie, National Institute of Standards and Technology
LN Brewer, Sandia National Laboratories

Platform Session
Tuesday 1:30 PM Room: Aztec

1:30 PM **309** (Invited) *Simulation of Atomic Resolution Images in STEM*; LJ Allen, AJ D'Alfonso; University of Melbourne, Australia; M Bosman; The University of Sydney, Australia; SD Findlay; The University of Tokyo, Japan; MP Oxley; Oak Ridge National Laboratory; VJ Keast; The University of Newcastle, Australia; JM LeBeau, S Stemmer; University of California, Santa Barbara

2:00 PM **310** *Bloch Wave Analysis of Depth Dependent Strain Effects in High Resolution Electron Microscopy*; PD Nellist, EC Cosgriff, PB Hirsch, DJH Cockayne; University of Oxford, United Kingdom

2:15 PM **311** *Critical Role of Inelastic Interactions in Quantitative Electron Microscopy*; A Mkhoyan, S Maccagnano-Zacher, M Thomas, J Silcox; Cornell University

2:45 PM **312** (MAS Distinguished Scholar) *Controlling Channeling Effects in Aberration-Corrected STEM Tomography*; HL Xin, V Intaraprasong, DA Muller; Cornell University

3:00 PM **313** *Simulating Atomic Resolution STEM Images of Non-Periodic Samples*; SD Findlay; University of Tokyo, Japan; AJ D'Alfonso, LJ Allen; University of Melbourne, Australia; MP Oxley; Oak Ridge National Laboratory; PD Nellist, EC Cosgriff, G Behan, AI Kirkland; University of Oxford, United Kingdom; N Shibata, T Mizoguchi, Y Ikuhara; University of Tokyo, Japan

3:15 PM **314** *Quantitative Image Simulation for Scanning Transmission Electron Microscopy*; MP Oxley, K van Benthem, SJ Pennycook; Oak Ridge National Laboratory

Transmission Electron Microscopy Techniques and Applications

Session Chairs: MA O'Keefe, Lawrence Berkeley National Laboratory
PE Batson, IBM TJ Watson Research Center

Platform Session
Tuesday 1:30 PM Room: Brazos

1:30 PM **315** (MAS Distinguished Scholar) *Very Low Energy TEM Diffraction of Nanostructures*; B McMorran, A Cronin; University of Arizona

1:45 PM **316** *Development of New Diffraction Microscope Based on Conventional Scanning Electron Microscope*; O Kamimura, T Dobashi; Hitachi Ltd; K Kawahara, T Abe, K Gohara; Hokkaido University, Japan

2:00 PM **317** *Measurement of Electron Beam Coherence Using a Lau Interferometer*; B McMorran, A Cronin; University of Arizona

2:15 PM **318** *Control of Parasitic Aberrations in Multipole Corrector Optics*; P Batson; IBM T J Watson Research Center

2:30 PM **319** *Aberration Corrected Lorentz Microscopy for Perpendicular Magnetic Recording Media*; C Phatak, J Bain, J Zhu, M DeGraef; Carnegie Mellon University

2:45 PM **321** *Object-defined Resolution Below 0.5Å in Transmission Electron Microscopy—Recent Advances on the TEAM 0.5 Instrument*; C Kisielowski, R Erni; Lawrence Berkeley National Laboratory; B Freitag; FEI Company, The Netherlands

3:00 PM **320** *Young's Fringes Are Not Evidence of HRTEM Resolution*; MA O'Keefe; Lawrence Berkeley National Laboratory; LF Allard; Oak Ridge National Laboratory; DA Blom; University of South Carolina

Visualizing Biological Nanomachines

Session Chairs: A Steven, National Institutes of Health
M Morais, University of Texas Medical Branch

Platform Session
Tuesday 1:30 PM Room: San Miguel

1:30 PM **322** (Invited) *Single Particle Reconstruction of Yeast RNA Degradation Machine, Exosome, Using Electron Microscopy*; H Wang; Lawrence Berkeley National Laboratory; J Wang, F Ding; Cornell University; K Callahan; University of Rochester; M Bratkowski; Cornell University; S Butler; University of Rochester School; E Nogales; Lawrence Berkeley National Laboratory; A Ke; Cornell University

2:00 PM **323** (Invited) *Symmetry Determination and Cryo-EM Reconstruction of Vps4 and Its Vta1 Complex*; Z Yu; California Institute of Technology; M Gonciarz, W Sundquist, C Hill; University of Utah; G Jensen; California Institute of Technology

2:30 PM **324** (Invited) *The Structure of Western Equine Encephalitis Virus*; M Sherman, S Weaver; University of Texas

3:00 PM **325** (Invited) *AFM and cryoEM Studies of the Giant Mimivirus*; C Xiao; Purdue University; YG Kuznetsov; University of California Irvine; S Sun, B Hu, MJ Criswell, CM Bator-Kelly, S Hafenstein, PR Chipman; Purdue University; M Suzan-Monti, D Raoult; CNRS, France; A McPherson; University of California Irvine; MG Rossmann; Purdue University

Understanding the Synthesis and Properties of Nanostructures and Nanomaterials: Electronic and Magnetic Nanomaterials

Session Chairs: R Sharma, Arizona State University
R Hull, Rensselaer Polytechnic Institute

Platform Session
Tuesday 1:30 PM Room: Ruidoso

1:30 PM **326** (Invited) *Assembly, Analysis and Functionalization of Complex Epitaxial Nanostructures*; R Hull; Rensselaer Polytechnic Institute; JJ Gray; University of Pittsburgh; JA Floro, JF Graham; University of Virginia

2:00 PM **327** *Solid State Synthesis and Crystal Structure of Ca₁₀(VxP_{1-x}O₄)₆F₂ Apatite*; Z Dong, TJ White; Nanyang Technological University, Singapore

2:15 PM **328** *Nanoscale Disorder in MgB₂ Thin Films Grown by Hybrid Physical-Chemical Vapor Deposition*; Y Zhu; University of Wisconsin, Madison; D Larbalestier, A Gurevich; Florida State University; XX Xi; Pennsylvania State University; PM Voyles; University of Wisconsin, Madison

2:30 PM **329** *Mechanistic Control of the Nucleation and Growth Conditions for Narrow Composition Distributions in FePt Nanoparticles*; C Srivastava, DE Nikles, GB Thompson; University of Alabama

2:45 PM **330** *In-situ Z-STEM Imaging of Chemical Ordering in FePt Magnetic Nanoparticles*; JE Wittig; Vanderbilt University; J Bentley, LF Allard; Oak Ridge National Laboratory; MS Wellons, CM Lukehart; Vanderbilt University

3:00 PM **331** *Surface Segregation and Ordering in Pt₃Co Nanoparticles Observed by Aberration-Corrected STEM*; PJ Ferreira; University of Texas, Austin; LF Allard; Oak Ridge National Laboratory; S Chuo, N Yabuuchi, Y Shao-Horn; Massachusetts Institute of Technology

3:15 PM **332** *FePt (core)/FeRh (shell) Nanoparticles: Structure and Magnetism*; M Shamsuzzoha, S Shi, P Padhan, DE Nikles, J Harrell; University of Alabama

Microbeam Analysis of Terrestrial and Planetary Materials—A Symposium in Memory of Gene Jarosewich

Session Chairs: EP Vicenzi, Smithsonian Institution
GP Meeker, U.S. Geological Survey

Platform Session
Tuesday 1:30 PM Room: Cimarron

1:30 PM **333** (Invited) *Applications of Integrated Electron and Ion Beam Micro and Nanoanalysis to Understanding Earth and Planetary Materials*; AJ Brearley; University of New Mexico

2:00 PM **334** *Making the Most of Small Extraterrestrial Samples: Chemical and Isotopic Information for Chondrules Obtained Using Multiple Microbeam Techniques*; R Jones; University of New Mexico

2:15 PM **335** (Invited) *Keilite (Fe>0.5,Mg<0.5)S as an Indicator of Extensive Impact Melting on Enstatite Chondrite Parent Asteroids*; K Keil; University of Hawaii

2:45 PM **336** (Invited) *Digesting Meteorites to Decipher Asteroid: The Work of Eugene Jarosewich*; TJ McCoy; Smithsonian Institution

3:15 PM *Memorial Tribute to Gene Jarosewich*; EP Vicenzi; Smithsonian Institution

Failure Analysis: Real World Applications and Case Studies

Session Chairs: DP Dennies, The Boeing Company
F Schmidt, Engineering Systems Inc

Platform Session
Tuesday 1:30 PM Room: Pecos

1:30 PM **337** (Invited) *Improper Weld Repair of a CF8M Cast Stainless Steel Impeller*; F Schmidt, D Norfleet, K Johnson; Engineering Systems Inc

2:00 PM **338** *Failure Analysis of a Tree Pruner Saw Blade Anchor Screw*; ME Stevenson, M Hayes, JL McDougall; Engineering System Inc; ER Weishaupt; Metals & Materials Engineers, LLC, University of Alabama; DA Turnquist; Engineering System Inc

2:30 PM **339** *Failure Analysis of Peelable Seals Utilizing Light and Transmission Electron Microscopies*; EI Garcia-Meitin, J Wooster, R Cotton, J McKenna; The Dow Chemical Company

3:00 PM **340** *Investigation of Microcracks in a Multilayered Coating of a Camera Lens*; Y-S Yu, Y-J Yoon, J-H Kim, H-S Kwon, B-K Kim; Samsung Electro-Mechanics Co, Ltd

3:15 PM **341** *Nanostructure Origin of Leakage Current in GaN/InGaN Lighting Emitting Diode Using Patterned Sapphire Substrate*; Y-J Yoon, B-K Kim, M Kim; Samsung Electro-Mechanics Co, Republic of Korea

It's a Family Affair!

Session Chairs: F Hogue, Hogue Metallography
J Frafjord, Y-12 National Security Complex

Platform Session
Tuesday 1:30 PM Room: Santa Ana

1:30 PM *It's a Family Affair*

Technologists' Forum Roundtable: Immunogold Labeling

Session Chair: F Macaluso, Albert Einstein College of Medicine

Platform Session
Tuesday 1:30 PM Room: Mesilla

1:30 PM *Tech Forum Roundtable Discussion*; R Powell; Nanoprobes Inc; P Webster; House Ear Institute; H Yi; Emory University

Joint Tutorial: Job Hunting for Scientific Professionals

Session Chairs: A Dohnalkova, Pacific Northwest National Laboratory
G Thompson, University of Alabama

Platform Session

Tuesday 1:30 PM Room: La Cienega

1:30 PM **343** (Invited) *Job Hunting for Scientific Professionals*; BE Maleeff; GlaxoSmithKline

Simulation of Microscopy, Microanalysis, and Microscopic Phenomena

Poster Session

Tuesday 3:30 PM Room: Exhibit Hall

3:30 PM **344** *Geometrical Interpretation and Simulation of HOLZ Patterns*; XZ Li; University of Nebraska Lincoln
Poster # 69

3:30 PM **345** *EBSD Characterization of the Deformation Behavior of Alloy 182 Weld Metal*; M Othon, M Morra; General Electric Global Research Center Niskayuna
Poster # 70

3:30 PM **346** *Computation of Current Density in Particle Beams*; M Oral, AE Vladar; National Institute of Standards and Technology
Poster # 71

3:30 PM **347** *HAADF Imaging and MD Simulations of Microtwinning Partial Dislocations in Nickel Based Superalloy Rene 104*; L Kovarik, R Unocic; The Ohio State University; J Li; University of Pennsylvania; M Mills; The Ohio State University
Poster # 72

3:30 PM **348** *High-resolution Electron Imaging of Amorphous Layers with Aberration-Corrected Probes*; S Maccagnano-Zacher, A Mkhoyan, J Silcox; Cornell University
Poster # 73

3:30 PM **349** *Quantitative Image Contrast Variations in STEM*; K van Benthem, MP Oxley; Oak Ridge National Laboratory; C Kreyenschulte; WWU Muenster, Germany; SJ Pennycook; Oak Ridge National Laboratory
Poster # 74

3:30 PM **350** *An Experimental and Monte Carlo Study of Secondary Electron Emission from Elemental Solids*; C Walker, M El-Gomati; University of York, United Kingdom; A Ass'ad; Bishah College of Technology, Saudi Arabia; M Zadrazil; Tescan Ltd, Czech Republic
Poster # 75

3:30 PM **351** *Monte Carlo Modeling of the Low-loss Electron Signal in Scanning Electron Microscopy and Comparison with the BSE Signal*; C Bonet, A Pratt, M El-Gomati, JAD Matthew, SP Tear; University of York, United Kingdom
Poster # 76

3:30 PM **352** *Cross Sections for the Ionization of Atoms by Electron Impact: A Numerical Database and an Analytical Formula*; D Bote, F Salvat-Pujol, JA Escuder; Universitat de Barcelona, Spain; CJ Powell; National Institute of Standards and Technology; F Salvat; Universitat de Barcelona, Spain
Poster # 77

Problem Solving Using Microanalytical Techniques

Poster Session

Tuesday 3:30 PM Room: Exhibit Hall

3:30 PM **353** *An Ex-Situ TEM Investigation into the Effect of Successive Reduction-Oxidation-Reduction Treatments on Closely Spaced Copper Metal Particles*; CE Kliewer; Exxon-Mobil Research and Engineering
Poster # 78

3:30 PM **354** *A DigitalMicrograph™ Script to Characterize Elliptical Distortion of Electron Diffraction Patterns in TEM*; VDH Hou; Micron Technology
Poster # 79

3:30 PM **355** *A Method to Correct Elliptical Distortion of Diffraction Patterns in TEM*; VDH Hou, D Li; Micron Technology
Poster # 80

3:30 PM **356** *Distortion Minimization of CBED Patterns in TEM*; VDH Hou; Micron Technology
Poster # 81

3:30 PM **357** *Combined Raman Spectroscopy and SEM Analysis of CVD Grown Carbon Nanotubes*; B Duong, Y Peng, M Ellis, S Seraphin, H Xin; University of Arizona
Poster # 82

3:30 PM **358** *Effect of Zr/Ti Ratio on the Microstructure of PZT Film*; YH Oh, BW Koo, JY Jo, TW Noh; Seoul National University, Korea; S-H Kim; INOSTEK Inc, Korea; Y-W Kim; Seoul National University, Korea
Poster # 83

3:30 PM **359** *Comparison of Elemental Distribution Profiles Across Cu(In,Ga)Se₂ Solar-cell Absorbers Acquired by Various Techniques*; D Abou-Ras, CA Kaufmann; Hahn-Meitner-Institut Berlin, Germany; A Eicke; Zentrum für Sonnenenergie- und Wasserstoff-Forschung, Germany; M Döbeli; Paul Scherrer Institute, Switzerland; B Gade; Thermo Fisher Scientific, Germany; T Nunney; Thermo Fisher Scientific, United Kingdom
Poster # 84

3:30 PM **360** *The Quantitative Analysis of Super-Low Phosphorus Content of SUS316L Type Stainless Steel With EPMA Calibration Curve Method*; T Kimura, S Iwasaki, K Sakuraya, S Tanuma; National Institute for Materials Science, Japan

Poster # 85

3:30 PM **361** *Electron Microscopy Study of Germanium Glass Vitrified by High Pressure Melt-Quench*; VC Solomon; University of Connecticut; MH Bhat; Arizona State University; V Molinero; University of Utah; E Soignard; Arizona State University; S Sastry; J Nehru Centre for Advanced Scientific Research, India; JL Yarger, AC Angell; Arizona State University

Poster # 86

3:30 PM **362** *Advanced Large Active Area SDD for X-Ray Spectroscopy*; VD Saveliev, CR Tull, L Feng, S Barkan, M Takahashi, EV Damron; SII NanoTechnology USA Inc

Poster # 87

3:30 PM **363** *TEM and SEM Investigation on Oxidised Ge-based Clathrates*; C Hébert, B Bartova, M Cantoni; Ecole Polytechnique Fédérale, Switzerland; U Aydemir, M Baitinger; Max Planck Institute for Chemical Physics of Solids, Germany

Poster # 88

3:30 PM **364** *Computer-Controlled Polishing Preparation and Subsequent Mounting of Samples for Low-voltage X-Ray Tomography*; P Prasad; Gatan Research & Development; D Erwin; Gatan FA Products Division; JA Hunt; Gatan Research & Development

Poster # 89

3:30 PM **365** *Analytical TEM of Nb₃Sn Multifilament Superconductor Wires*; M Cantoni; Ecole Polytechnique Fédérale, Switzerland; V Abäecherli, D Uglietti, B Seeber, R Flükiger; University of Geneva, Switzerland

Poster # 90

3:30 PM **366** *EMCD In The TEM—Optimization of Signal Acquisition And Data Evaluation*; H Lidbaum; Uppsala University, Sweden; J Rusz; Uppsala University, Sweden; Academy of Sciences of the Czech Republic, Czech Republic; A Liebig, B Hjörvarsson, PM Oppeneer, E Coronel, O Eriksson, K Leifer; Uppsala University, Sweden

Poster # 91

Analytical Electron Microscopy: Advanced Techniques and Applications for Nanoscience

Poster Session

Tuesday 3:30 PM Room: Exhibit Hall

3:30 PM **367** *Uranium Single Atom Imaging And EELS Mapping using Aberration Corrected Scanning Transmission Electron Microscope and LN₂ Cold Stage*; H Inada; Hitachi High Technologies America; J Wall, Y Zhu, VV Volkov; Brookhaven National Laboratory; K Nakamura, M Konno; Hitachi High Technologies; K Jarausch; Hitachi High Technologies America; RD Twesten; Gatan

Poster # 92

3:30 PM **368** *Ultrastructure of a Metal/Superconductor Interface Revealed by Atomic-Resolution STEM Techniques*; Y Xin; Florida State University; LF Allard; Oak Ridge National Laboratory; Z Mao; Tulane University

Poster # 93

3:30 PM **369** *Analysis of Catalysts using Aberration-Corrected TEM*; S Rozeveld; The Dow Chemical Company; DA Blom; University of South Carolina; LF Allard; Oak Ridge National Laboratory; T Richardson, CS Todd, J Blackson; The Dow Chemical Company

Poster # 94

3:30 PM **370** *Influence of Au Electrodes on the Properties of SrTiO₃/La_{0.67}Sr_{0.33}MnO₃/Au Magnetic Tunnel Junctions Studied by Aberration-Corrected STEM-EELS*; C Magen, M Varela, SJ Pennycook; Oak Ridge National Laboratory; S Brivio, D Petti, M Cantoni, R Bertacco; LNESS-CNISM, Italy

Poster # 95

3:30 PM **371** *Nanoscale EELS and EDX Analyses of GaN Nanowires and GaN/AlGaN Radial Heterostructure Nanowires*; L Lari, RT Murray; University of Liverpool, United Kingdom; MH Gass; SuperSTEM Laboratory, United Kingdom; T Bullough, PR Chalker; University of Liverpool, United Kingdom; C Chéze; Paul-Drude-Institut für Festkörperelektronik, Germany; L Geelhaar; NaMLab GmbH, Germany; H Riechert; Paul-Drude-Institut für Festkörperelektronik, Germany

Poster # 96

3:30 PM **372** *Probing the Composition Variations in Nanoscale Multilayers*; A Genç; Ohio State University; R Banerjee; University of North Texas; AWS Johnson; University of Western Australia, Australia; HL Fraser; Ohio State University

Poster # 97

3:30 PM **373** *Z-Contrast Imaging and EELS Study of Supported CoPd Nano-Catalyst*; Y Zhao, L D'Souza, JR Regalbutto, RF Klie; University of Illinois Chicago

Poster # 98

3:30 PM **374** *Optimization of Acquisition Parameters for Atomic-Column Electron Energy-Loss Spectrum Imaging in a*

JEM-2200FS Aberration-Corrected Scanning Transmission Electron Microscope; M Watanabe; Lawrence Berkeley National Laboratory; M Kanno; JEOL Ltd, Japan; D Ackland, CJ Kiely, DB Williams; Lehigh University

Poster # 99

3:30 PM **375** *Atomic Investigation of Al₂O₃/GaN Heterostructures Interfaces using Aberration-Corrected STEM Combined with First-Principles Methods*; JC Idrobo; Vanderbilt University; P Pant, J Narayan; North Carolina State University; SJ Pennycook; Oak Ridge National Laboratory; ST Pantelides; Vanderbilt University

Poster # 100

3:30 PM **376** *3D Elemental Mapping Using a Real-Time EELS Imaging System Equipped with a Dedicated STEM*; T Yaguchi, K Kaji, H Kikuchi, M Miyakawa, H Okushima, M Konno, T Kamino; Hitachi High-Technologies Corp, Japan

Poster # 101

3:30 PM **377** *Effects of Pretreatments on the Growth Mechanisms of Ultra-Nanocrystalline Diamond Films: A Chemical Bonding Mapping Approaching*; X Zhong, Y-C Chen; Argonne National Laboratory; N-H Tai; National Tsing-hua University, Taiwan; I-N Lin; Tamkang University, Taiwan; J Hiller, O Auciello, B Kabius; Argonne National Laboratory

Poster # 102

3:30 PM **378** *Is There Still a Place for Aberration Corrected User Facilities?*; MH Gass, P Wang, K Sader, B Mendis, I Godfrey, A Bleloch; SuperSTEM, United Kingdom

Poster # 103

3:30 PM **379** *A Comparison of Theoretical and Experimental Cross-Sections for EELS Quantification at 200 kV Incident Electron Energy*; Q Jin, S Wang; Micron Technology Inc

Poster # 104

3:30 PM **380** *Use of Fourier-ratio Deconvolution for Processing Low-loss EELS Spectra*; F Wang, R Egerton, M Malac; National Institute for Nanotechnology, Canada

Poster # 105

3:30 PM **381** *HRTEM Characterization of Precipitates in Structural Microalloyed Steels*; L Béjar-Gómez, A Medina-Flores, A Bedolla-Jacuinde; Ciudad Universitaria Morelia, México; JA Ascencio; Universidad Nacional Autónoma de México Cuernavaca, México

Poster # 106

3:30 PM **382** *TEM Characterization of Tensile-Tested 14YWT Nanostructured Ferritic Alloys*; J Bentley, DT Hoelzer; Oak Ridge National Laboratory

Poster # 107

Transmission Electron Microscopy Techniques and Applications

Poster Session

Tuesday 3:30 PM Room: Exhibit Hall

3:30 PM **383** *Development of Sample Preparation Method for Observation of Dopant Profile by Electron Holography*; T Sato, H Matsumoto, M Konno, M Fukui, S Mamishin, Y Taniguchi; Hitachi High-Technologies Corporation; H Kasai; Hitachi Ltd

Poster # 108

3:30 PM **384** *In-line Point Projection Holography of Titanium Oxide Nanoparticles*; L Livadaru, M Malac, R Wolkow; University of Alberta

Poster # 109

3:30 PM **385** *Routine Phase Resolution of 2pi/100 and Better in Off-axis (Electron) Holography*; E Voelkl; HoloWerk LLC

Poster # 110

3:30 PM **386** *On-line Dynamic Digital Electron Holography*; T Hirayama, K Yamamoto; Japan Fine Ceramics Center; K Urata; Image Sence Ltd

Poster # 111

3:30 PM **387** *Improving Image Quality and Reducing Drift Problems via Automated Data Acquisition and Averaging in Cs-corrected TEM*; E Voelkl, B Jiang; FEI Company; Z Dai, J Bradley; Lawrence Livermore National Laboratory

Poster # 112

3:30 PM **388** *Absolute Strain at the Nanoscale from HREM Images*; CL Johnson, E Snoeck, MJ Hytch; CEMES-CNRS, France

Poster # 113

3:30 PM **389** *Atomic Resolution Imaging of Solid State Phase Separation in a Beta-Stabilized Titanium Alloy*; S Nag, A Genç; The Ohio State University; R Banerjee; University of North Texas; HL Fraser; The Ohio State University

Poster # 114

3:30 PM **390** *Simple Method for Estimating Relaxation in Silicon from Higher Order Laue Zone Line Splitting*; D Diercks; University of North Texas; M Kaufman; Colorado School of Mines; A Needleman; University of North Texas

Poster # 115

3:30 PM **391** *Comparison of Zone Axes for Convergent Beam Electron Diffraction Strain Measurements of a Strained Silicon Transistor*; D Diercks; University of North Texas; M Kaufman; Colorado School of Mines

Poster # 116

3:30 PM **392** *Evaluating Visibility and Spatial Resolution in Electron Holography*; R McLeod, M Malac; University of Alberta

Poster # 117

Microscopy and Infectious Diseases

Poster Session

Tuesday 3:30 PM Room: Exhibit Hall

3:30 PM **393** *Ultrastructural Analysis of the Reactivation of the Murid Herpesvirus 4, Strain 68 (MHV-68) in a Latently-Infected B Cell Line*; N Lobo, JL Jamison, KD Moulton, SM Duboise; University of Southern Maine

Poster # 118

3:30 PM **394** *Diagnosis of Ovine Paramyxovirus (Parainfluenza-type 3) Infection in Sheep Using Negative Contrast Electron Microscopy and Ultramicrotomy of Infected Cell Cultures*; CE Hearne, JL Cavender, DL Arellano, DL Montgomery; University of Wyoming

Poster # 119

3:30 PM **395** *Capsid Polymorphism of Rous Sarcoma Virus Correlates with Assembly Efficiency and Envelope Glycoprotein Content*; C Butan, DC Winkler, JB Heymann; National Institutes of Health; R Craven; Pennsylvania State University College of Medicine; AC Steven; National Institutes of Health

Poster # 120

3:30 PM **396** *Same-Day Diagnostic Electron Microscopy of Infected Cell Cultures by a Modified Protocol for Conventional and Microwave Processing*; MG Metcalfe, D Rollin, CD Humphrey; Center for Disease Control

Poster # 121

Impact of Biofilms in the Real World

Poster Session

Tuesday 3:30 PM Room: Exhibit Hall

3:30 PM **397** *Imaging and Analyses of Iron-oxidizing Bacteria on Basalt Glass by methods of FIB-SEM and HRTEM*; B Arey; Pacific Northwest National Laboratory, Battelle; A Templeton; University of Colorado Boulder; B Tebo; Oregon Health and Science University; H Staudigel; Scripps Institution of Oceanography; T Trainor; University of Alaska, Fairbanks

Poster # 122

Biological Sciences Applications

Poster Session

Tuesday 3:30 PM Room: Exhibit Hall

3:30 PM **398** *TEM Survey of the Cytoplasmic Wound Reaction of *Caulerpa prolifera**; E Lavoie-Hodges, E Dressaire, DC Bell; Harvard University

Poster # 123

3:30 PM **399** *An Ultrastructural Study of Salt Glands in *Zoysia matrella**; S Rao, MW Pendleton, H Kim, ML Binzel, EA Ellis; Texas A&M University

Poster # 124

3:30 PM **400** *Light and Electron Microscopy of the Spermatogonial Stage of *Gymnoconia peckiana*, One of the Causes of Orange Rust of *Rubus**; CW Mims, EA Richardson; University of Georgia

Poster # 125

3:30 PM **401** *Spicule Morphology and Formation in *Helicoradomenia acredema* (Mollusca Aplacophora)*; RJ Kingsley, CB Marks; University of Richmond

Poster # 126

3:30 PM **402** *Scanning Electron Microscopic Study of the *Aphanius dispar* (Ruppell 1828) (Pisces: Cyprinodontidae) Gills*; TA Ba-Omar, I Al-Amri; Sultan Qaboos University, Sultanate of Oman

Poster # 127

3:30 PM **403** *Singing Spiders a Scanning Electron Microscopy Examination of the Sound Producing Structures Males Jumping Spiders Use to Woo Females (Araneae Salticidae)*; CB Marks; University of Richmond; DO Elias; University of British Columbia, Canada

Poster # 128

3:30 PM **404** *Microscopic Picture of Dentine Canalliculi of Atypical Teeth*; B Jodlowska—Jedrych; Medical University of Lublin; B Kawka; Ortovision; W Matysiak; Medical University of Lublin

Poster # 129

3:30 PM **405** *High Resolution Imaging of Titanium Implants Detached from Bone*; J Kenealy, R Stach; BIOMET 3i; I Nishimura; University of California Los Angeles

Poster # 130

3:30 PM **406** *Development of Monovalent Fluorescent Probes for Single Particle Tracking of ErbB Receptors*; ST Low-Nam, BS Wilson, DS Lidke; University of New Mexico

Poster # 131

3:30 PM **407** *Forensic Analysis of Silk Fibers*; I Cakir, HB Uner; Istanbul University, Turkey

Poster # 132

Understanding the Synthesis and Properties of Nanostructures and Nanomaterials

Poster Session

Tuesday 3:30 PM Room: Exhibit Hall

- 3:30 PM **408** *TEM/SEM Studies of Microstructural Transformations in Ultrathin TiDy/Dd Films Evaporated on Si(100) after TDMS Induced Decomposition of the TiDy Phase*; EG Keim; University of Twente, The Netherlands; W Lisowski; Polish Academy of Sciences, Poland; MA Smithers; University of Twente, The Netherlands
Poster # 133
- 3:30 PM **409** *High Resolution HAADF-STEM Imaging Analysis of N Related Defects in GaNAs Quantum Wells*; M Herrera; University of California, Davis; Q Ramasse; Lawrence Berkeley National Laboratory; ND Browning; Lawrence Livermore National Laboratory; J Pizarro, PL Galindo, D Gonzalez, R Garcia; University of Cadiz, Spain; MW Du; Oak Ridge National Laboratory; SB Zhang; Rensselaer Polytechnic Institute; M Hopkinson; University of Sheffield, United Kingdom
Poster # 134
- 3:30 PM **410** *Crystalline Behavior and Microstructure Analysis in $Fe_{73.28}Si_{13.43}B_{8.72}Cu_{0.94}Nb_{3.63}$ Alloy with Annealing Temperature*; YH Oh, BW Koo; Seoul National University, South Korea; KY Kim, HK Seok, YB Kim; Korea Institute of Science and Technology, South Korea; Y-W Kim; Seoul National University, South Korea
Poster # 135
- 3:30 PM **411** *In-situ Observation of Nano-particulate Gold Catalysts under Reaction Gas and Non-reaction Gas Conditions*; T Kawasaki, H Hasegawa, K Ueda, T Tanji; Nagoya University, Japan
Poster # 136
- 3:30 PM **412** *Arsenic Segregation to Dislocation Loops in Silicon*; DJ Larson, K Thompson, R Alvis, D Lawrence, RM Ulfig, DA Reinahard, P Clifton, JH Bunton, DR Lenz, TF Kelly; Imago Scientific Instruments
Poster # 137
- 3:30 PM **413** *Ni-Cu-Zn Ferrite Prepared by Aloe Vera Plant Extract or Egg White*; B Duong, S Seraphin; University of Arizona; P Laokul; Khon Kaen University, Thailand; C Mas-ingboon; Kasetsart University, Thailand; S Maensiri; Khon Kaen University, Thailand
Poster # 138
- 3:30 PM **414** *Anodic Tantalum Pentoxide: Chemical and Structural Characterization of a Bi-Layer Oxide*; J Ray Sloppy, J Li, EC Dickey; Pennsylvania State University
Poster # 139
- 3:30 PM **415** *Characterization of TaN Thin Films Synthesized by ICP Assisted Sputtering*; S-I Baik, J-W Park, T-Y Ahn, G-R Lee, J-J Lee, Y-W Kim; Seoul National University, Korea
Poster # 140
- 3:30 PM **416** *Effect of Charge and Discharge on the Capacitance of Supercapacitor of Hydrous Ruthenium Oxides and Carbon Nanotube Coatings*; H-S Hwang, Y Lin; Chung Hua University, Taiwan ROC
Poster # 141
- 3:30 PM **417** *Crystallite Morphology of Rutile TiO_2 Nanocrystals: A TEM Study*; AY Kuznetsov; Inmetro, Brazil; V Swamy; Monash University, Australia; L Gomes; Inmetro, Brazil; H Calderon; ESFM-IPN, Mexico; V Prakapenka; University of Chicago; CA Achete; Inmetro, Brazil
Poster # 142
- 3:30 PM **418** *Thin Film Properties Measurement using SEM-based Energy Dispersive Spectroscopy for Nanoscience Studies*; S Sharp, S Burgess; Oxford Instruments Nanoanalysis, United Kingdom; C Hodson, Q Fang; Oxford Instruments Plasma Technology, United Kingdom
Poster # 143
- 3:30 PM **419** *Morphology Effects on Photocatalytic Activity of Niobate Materials*; MC Sarahan, FE Osterloh, ND Browning; University of California, Davis
Poster # 144
- 3:30 PM **420** *Dual-Axis STEM Tomography of Dy-doped $YBa_2Cu_3O_{7-x}$ Coated Superconductors*; V Ortalan, M Herrera, DG Morgan; University of California, Davis; MW Rupich; American Superconductor Corporation; ND Browning; University of California, Davis
Poster # 145
- 3:30 PM **421** *Microstructural Investigation of the Most Efficient Vortex Pinning in a Superconducting $YBa_2Cu_3O_7$ Thin Film*; F Kametani, Z Chen, SI Kim, A Gurevich, D Larbaestier; Florida State University
Poster # 146
- 3:30 PM **422** *Experimental and Simulated Strain Field Maps in Stacked Quantum Wires*; T Ben, DL Sales, J Pizarro, PL Galindo; Universidad de Cadiz, Spain; D Fuster, Y Gonzalez, L Gonzalez; Instituto de Microelectronica de Madrid, Spain; M Varela, SJ Pennycook; Oak Ridge National Laboratory; SI Molina; Universidad de Cadiz, Spain
Poster # 147
- 3:30 PM **423** *Microstructure of Ferroelectric $BaTiO_3$ Thin Films on Ti Substrate*; J He, JC Jiang, EI Meletis; University of Texas, Arlington; Z Yuan, J Liu, J Weaver, CL Chen; University of Texas, San Antonio; B Lin, V Giurgiutiu; University of South Carolina; RY Guo, A Bhalla; University of Texas, San Antonio
Poster # 148

3:30 PM **424** *Beam-induced Changes of FePt Nanoparticles during STEM In-situ Annealing*; J Wittig; Vanderbilt University; J Bentley, LF Allard; Oak Ridge National Laboratory; MS Wellons, C Lukehart; Vanderbilt University

Poster # 149

3:30 PM **425** *Low Energy Electron Holography of Charged Tip*; B McMorran, D Wanegar, A Cronin; University of Arizona

Poster # 150

Microbeam Analysis of Terrestrial and Planetary Materials—A Symposium in Memory of Gene Jarosewich

Poster Session

Tuesday 3:30 PM Room: Exhibit Hall

3:30 PM **426** *Chromium, Vanadium and Phosphorous Contents in Garnets from the Smithsonian Institution Reference Materials Collection: a Preliminary Examination by Microanalysis*; MAV Logan, BC Hearn Jr.; Smithsonian Institution

Poster # 151

Failure Analysis: Real World Applications and Case Studies

Poster Session

Tuesday 3:30 PM Room: Exhibit Hall

3:30 PM **427** *Evaluation of High Temperature Alloys in a Microturbine Recuperator Test Rig*; J Howe, R Trejo, L Walker; Oak Ridge National Laboratory; E Lara-Curzio; Oak Ridge National Laboratory; K More; Oak Ridge National Laboratory

Poster # 152

Wednesday, August 6, 2008

Imaging Cells and Tissues in 3D— Confocal Microscopy

Session Chairs: B Rajwa, Purdue University
JP Robinson, Purdue University

Platform Session

Wednesday 8:30 AM Room: Picuris

8:30 AM **428** (Invited) *High-Throughput Multiphoton Tissue Cytometry*; PTC So; Massachusetts Institute of Technology

9:00 AM **429** (Invited) *Controlled Light Exposure Microscopy (CLEM) for Prolonged Live-cell Imaging and Strongly Reduced Photobleaching*; R Hoebe; University of Amsterdam, The Netherlands; W de Vos; Ghent University, The Netherlands; C van Oven, P Zoon, S Lambrechts; University of Amsterdam, The Netherlands; P van Oostveldt; Ghent University, The Netherlands; D Gadella, R van Noorden, E Manders; University of Amsterdam, The Netherlands

9:30 AM **430** (Invited) *Laser Sources For Improved Optical Microscopy*; G McConnell; University of Strathclyde, United Kingdom

10:00 AM *Coffee Break*

10:30 AM **431** (Invited) *The FARSIGHT Project: Associative 4D/5D Image Analysis Methods for Quantifying Complex and Dynamic Biological Microenvironments*; B Roysam; Rensselaer Polytechnic Institute; W Shain; Wadsworth Center; E Robey; University of California Berkeley; Y Chen, A Narayanaswamy, C-L Tsai, Y Al-Kofahi; Rensselaer Polytechnic Institute; C Bjornsson; Rensselaer Polytechnic Institute, Wadsworth Center; E Ladi, P Herzmark; University of California Berkeley

11:00 AM **432** *A Novel Software Algorithm for the Quantitative Assessment of Fluorescent Reporter Proteins in Multi-Cellular Tumor Spheroids*; L Le Roux, D Maxwell, D Schellingerhout, A Volgin, J Gelovani; MD Anderson Cancer Center

11:15 AM **433** *BioImageXD—Free Microscopy Image Processing Software*; PP Kankaanpää, KA Pahajoki; University of Turku, Finland; VS Marjomäki; University of Jyväskylä, Finland; DJ White; Max Planck Institute Dresden, Germany; J Heino; University of Turku, Finland

11:30 AM **434** (MSA Presidential Student) *Robust Adaptive 3-D Segmentation of Vessel Laminae from Fluorescence Confocal Microscope Images & Parallel GPU Implementation*; A Narayanaswamy, S Dwarakapuram, C Bjornsson, BM Cut-

ler; Rensselaer Polytechnic Institute; W Shain; Wadsworth Center; B Roysam; Rensselaer Polytechnic Institute

Teaching Microscopy and Microanalysis: K–12 and Outreach

Session Chairs: E Schumacher, McCrone Associates
CE Lyman, Lehigh University

Platform Session

Wednesday 8:15 AM Room: Galisteo

8:15 AM **435** (Invited) *Odyssey of a Chemical Microscopist*; JG Delly; College of Microscopy

8:45 AM **436** *Breaking Down Barriers: Using Microscopy to Demystify Science and Change Students' Perspective of Their World*; CB Johnson, AG Smith, S Vitha, A Holzenburg; Texas A&M University

9:00 AM **437** *Remote-Access Scanning Electron Microscopy for K-12 Students: The Bugscope Project Nine Years On*; C Wallace, C Conway, AM Ray, SJ Robinson; University of Illinois at Urbana-Champaign

9:15 AM **438** *AFM Learning Activities for a 7–11 Grade Nanotechnology Course*; DN Leonard, PE Russell; Appalachian State University

9:30 AM **439** *Sherlock Holmes to CSI: Microscopy in the Forensic Geology Classroom*; TJ Williams; University of Idaho

9:45 AM **440** *Teaching Aids for Optical Mineralogy in the Geosciences*; DE Kile; US Geological Survey

10:00 AM *Coffee Break*

10:30 AM **441** (Invited) *Training Electron Microscopy Technicians*; MS Kostrna; Madison Area Technical College

11:00 AM **442** (Invited) *Electron Microscope Education in the Community College*; F Villalovoz, C Davis; San Joaquin Delta College

11:30 AM *Roundtable Discussion*

40 Years of Energy Dispersive X-ray Spectrometry

Session Chairs: DE Newbury, National Institutes of Standards and Technology
R Gauvin, McGill University

Platform Session
Wednesday 8:00 AM Room: Aztec

8:00 AM **443** (Invited) *Celebrating 40 years of Energy Dispersive X-ray Spectrometry in Electron Probe Microanalysis (EPMA)*; K Keil; University of Hawaii; R Fitzgerald; La Jolla; KFJ Heinrich; Rockville

8:30 AM **444** (Invited) *Impact of 40 Years of Technology Advances on EDS System Performance*; JJ McCarthy; University of Wisconsin; JJ Friel; Temple University; P Camus, D Rohde; Thermo Fisher Scientific

9:00 AM **445** (Invited) *35 Years of EDS Software: The More Things Change, The More They Stay the Same*; F Schamber; Aspek Corporation

9:30 AM **446** (Invited) *SDDs—Silicon Detectors for EDS with a Performance at the Theoretical Limit*; H Soltau, A Bechtele; PNSensor, Germany; O Jaratschin, A Liebl; PNDetector, Germany; A Niculae; PNSensor, Germany; A Simsek; PNDetector, Germany; R Eckhard, K Hermenau, P Lechner, G Lutz; PNSensor, Germany; G Schaller, F Schopper, L Strüder; Max-Planck Institute Halbleiterlabor, Germany

10:00 AM *Coffee Break*

10:30 AM **447** (Invited) *Calibration of the Detection Efficiency of Energy Dispersive X-ray Spectrometers for Absolute Intensity Measurements and for Establishing a Basis for a More Rigorous Quantitation Procedure*; M Procop; BAM, Germany; F Scholze; PTB, Germany

11:00 AM **448** (Invited) *A New Solid-State Detector and Counting System for Wavelength Dispersive Spectrometers*; D Leshner; Advanced MicroBeam Inc; Y Diawara, S Medved, R Durst; Bruker AXS Microanalysis

11:30 AM **449** *The Spatial Resolution of X-Ray Microanalysis with EDS in the Transmission Electron Microscope*; R Gauvin; McGill University, Canada

11:45 AM **450** *Compositional Mapping by X-ray Spectrum Imaging at 1 MHz Output Count Rate with the Silicon Drift Detector*; DE Newbury, JM Davis, D Bright, N Ritchie; National Institute of Standards and Technology; JR Michael, PG Kotula; Sandia National Laboratories

Advances in Structure/Function Determination by Cryo-electron Microscopy

Session Chairs: T Ruiz, University of Vermont
E Bullitt, Boston University

Platform Session
Wednesday 8:30 AM Room: San Miguel

8:30 AM **451** (MAS Distinguished Scholar) *2dx—Automated 3D Structure Reconstruction from 2D Crystal Data*; B Gipson, X Zeng, H Stahlberg; University of California Davis

8:45 AM **452** *Testing Parameters for Two-Dimensional Crystallization and Electron Crystallography on Two Eukaryotic Membrane Proteins*; G Zhao; Georgia Institute of Technology; D Müller; Technical University Dresden, Germany; DW Stafford; University of North Carolina Chapel Hill; Y Kanaoka, KF Austen; Harvard Medical School; I Schmidt-Krey; Georgia Institute of Technology

9:00 AM **453** (Invited) *Asymmetric Helical Reconstruction and Its Implementation in Ruby*; M Kikkawa; Kyoto University, Japan

9:30 AM **454** *Three-Dimensional Reconstruction of the Muscle Thin Filament Single Particle Analysis of an Asymmetric Filament*; D Paul, E Morris; Institute of Cancer Research, United Kingdom; R Kensler; University of Puerto Rico Medical School; J Squire; University of Bristol, United Kingdom

9:45 AM **455** *Cryo TEM: A New Perspective to the Biogeochemical Associations of Bacteria and Minerals*; A Dohnalkova, M Marshall, J Fredrickson; Pacific Northwest National Laboratory

10:00 AM *Coffee Break*

10:30 AM **456** (Invited) *Tomographic Subvolume Averaging and Subvolume Classification of SIV Envelope Spike Motifs*; H Winkler, P Zhu, K Roux, K Taylor; Florida State University

11:00 AM **457** *On The Structure of Coronaviruses: Cryo-electron Tomography of Mouse Hepatitis Virus*; M Bárcena; Leiden University, The Netherlands; BJ Bosch, W Bäterlink; Utrecht University, The Netherlands; GT Oostergetel; University of Groningen, The Netherlands; A Verkleij, PJM Rotter; Utrecht University, The Netherlands; AJ Koster; Leiden University, The Netherlands

11:15 AM **458** *Cryo-Electron Tomography of Isolated Cytoskeletons of Giardia intestinalis*; C Schwartz; University of Colorado Boulder; S Dawson; University of California Davis; A Hoenger; University of Colorado Boulder

11:30 AM **459** (Invited) *Using Molecular Envelope Information Derived from SAXS and EM for Crystallographic Phasing*; Q Hao, Q Liu, X Hong; Cornell University

Ciliopathies

Session Chair: JL Carson, University of North Carolina

Platform Session

Wednesday 8:30 AM Room: Taos

8:30 AM **460** (Invited) *Human Ciliopathies: An Overview of The First One Hundred Years*; JL Carson; University of North Carolina, Chapel Hill

9:00 AM **461** (Invited) *Structural Investigations of Human Cilia from Normal and Primary Ciliary Dyskinesia Patients*; ET O'Toole; University of Colorado; ME Porter; University of Minnesota; LE Ostrowski; University of North Carolina, Chapel Hill

9:45 AM **462** *Structural Study of Multiple Microtubule Types by Cryo-electron Microscopy*; H Sui, KH Downing; Lawrence Berkeley National Laboratory

10:00 AM *Coffee Break*

10:30 AM **463** (Invited) *Cilia Have Multiple Roles in the Development of the Vertebrate Left-Right Axis*; M Brueckner, J McGrath, S Makova; Yale University School of Medicine

11:15 AM **464** (Invited) *Ciliary Dysfunction in Adult Mice Results in Slowly Progressing Cystic Kidney Disease and Disrupts Energy Homeostasis*; JR Davenport, A Kale, N Sharma, BK Yoder; University of Alabama, Birmingham

Understanding the Synthesis and Properties of Nanostructures and Nanomaterials: Nanocharacterization of Oxides

Session Chairs: P Voyles, University of Wisconsin
A Grigoriev, University of Wisconsin

Platform Session

Wednesday 8:30 AM Room: Ruidoso

8:30 AM **465** (Invited) *Structure of Complex Oxides in High Electric Fields*; A Grigoriev, R Sichel; University of Wisconsin, Madison; HN Lee; Oak Ridge National Laboratory; CB Eom; University of Wisconsin, Madison; B Adams, EM Dufresne, Z Cai; Argonne National Laboratory; PG Evans; University of Wisconsin, Madison

9:00 AM **466** *Determination of Zener-Polaron-Type Charge and Orbital Ordering in $Pr_{1-x}Ca_xMnO_3$ Manganite*; L Wu; Brookhaven National Laboratory; RF Klie; University of Illinois; C Jooss; University of Goettingen, Germany; Y Zhu; Brookhaven National Laboratory

9:15 AM **467** *Interdiffusion or Beam Spreading? Asymmetric Interface Profiles in $LaVO_3/SrTiO_3$ Heterostructures*; LF Kourkoutis; Cornell University; Y Hotta, T Higuchi; University of Tokyo, Japan; JM Sosa; Cornell University; HY Hwang; University of Tokyo, Japan; DA Muller; Cornell University

9:30 AM **468** *TEM Characterization of Microtwins in VO_x Thin Films*; J Li, BD Gauntt, EC Dickey; Pennsylvania State University

9:45 AM **469** *TEM Characterization of Nanometer-Scale Spinel/Rocksalt Phase Decomposition in Nickel Magnanite Thin Film*; J Li, H Schulze, SSN Bharadwaja, EC Dickey, S Trolrier-McKinstry; Pennsylvania State University

10:00 AM *Coffee Break*

10:30 AM **470** *The Life Cycle of Metal Oxide Sensors*; DC Meier, B Raman, S Semancik; National Institute of Standards and Technology

10:45 AM **471** *Plan-view TEM Study on Interfacial Structure of $(La,Ca)MnO_3/MgO$* ; JC Jiang, J He, EI Meletis; University of Texas, Arlington; Z Yuan, CL Chen; University of Texas, San Antonio

11:00 AM **472** *SrO Segregation on High-energy $SrLaAlO_4$ Surfaces*; AE Becerra-Toledo, Y Wang, LD Marks; Northwestern University

11:15 AM **473** *Disordered Vanadium Oxide Thin Films for Use in Infrared Detection*; BD Gauntt, J Li, J Kulik, EC Dickey; Pennsylvania State University

11:30 AM **474** *On Mapping Ferroelectric Fields by Medium-Resolution Electron Holography*; MA Schofield, L Wu, Y Zhu; Brookhaven National Laboratory

11:45 AM **475** *Misfit Dislocations in Ferroelectric Thin Films*; M Arredondo; University of New South Wales, Australia; M Chi; University of California, Davis; M Saunders; University of Western Australia; A Petraru; Institut für Festkörperforschung, Germany; N Valanoor; University of New South Wales, Australia; H Kohlstedt; Institut für Festkörperforschung, Germany; ND Browning; University of California, Davis

High Resolution and Analytical Characterization of Engineered Nanostructures

Session Chairs: B Foran, Aerospace Corporation
MJ Kim, University of Texas at Dallas

Platform Session

Wednesday 8:30 AM Room: Brazos

8:30 AM **476** (Invited) *Challenging Analysis for the Gate Stack and Strained Channel of the Advanced CMOS*; G Lian, C Vartuli, J Chung; Texas Instruments Inc

9:00 AM **477** *Quantitative Strain Measurement in Sub-45 nm CMOS Transistors by Convergent Beam Electron Diffraction (CBED) at Low Temperature and Nano Beam Diffraction (NBD)*; L Clement; STMicroelectronics, France; D Delille; FEI Company, The Netherlands

9:15 AM **478** *Local Strain Measurement by Geometrical Phase Analysis in the Transmission Electron Microscope Applied to Strain-Engineered CMOS Devices*; J Chung, G Lian, C Vartuli; Texas Instruments; S Rajagopalan, L Rabenberg; University of Texas

9:30 AM **479** *EFTEM- and STEM-EDXS Spectral Imaging of Hidden Si-based Semiconductor Device Defects*; CT Schamp, BT Valdez; Cerium Labs

9:45 AM **480** *Structure of Low Loss EELS in Hf and Zr Metal, Dioxides and Silicates*; R Shivaraman, AVG Chizmeshya, SK Dey, RW Carpenter; Arizona State University

10:00 AM *Coffee Break*

10:30 AM **481** (Invited) *EBIC Targeting for Dual Beam FIB Based TEM Sample Preparation*; N Presser, B Foran, Y Sin, M Mason, SC Moss; The Aerospace Corporation

11:00 AM **482** (MAS Distinguished Scholar) *Tunneling Magnetoresistance and B Diffusion in CoFeB/MgO/CoFeB Magnetic Tunnel Junctions Characterized by STEM-EELS*; JJ Cha, JC Read, RA Buhrman, DA Muller; Cornell University

11:15 AM **483** *Structural Analysis for Luminous Defects on GaN Epitaxial Layers*; YC Park, MY Kim, and BK Kim; Samsung Electro-Mechanics Co, South KOREA

Ultrafast Electron Microscopy and Ultrafast Science

Session Chairs: M Taheri, Lawrence Livermore
National Laboratory

N Browning, Lawrence Livermore National Laboratory
J Wellen, Argonne National Laboratory

Platform Session

Wednesday 8:00 AM Room: Dona Ana

8:00 AM **484** (Invited) *Single-Shot Dynamic Transmission Electron Microscopy: Present and Future*; B Reed, M Armstrong, ND Browning, G Campbell, W DeHope, J Kim, W King, T LaGrange, J Pesavento, B Pyke; Lawrence Livermore National Laboratory; S Raoux; IBM Almaden Research Center; R Shuttlesworth, B Stuart, M Taheri; Lawrence Livermore National Laboratory; T Topuria; IBM Almaden Research Center;

8:30 AM **485** (Invited) *Lights, Action, Camera: Making Movies of Molecules (and Materials) with Femtosecond Electron Diffraction*; BJ Siwick; McGill University, Canada

9:00 AM **486** (Invited) *Transient Structural Studies of Nanoparticles Using Electron Diffraction*; C-Y Ruan, Y Murooka, RK Raman, RA Murdick, RJ Worhatch; Michigan State University

9:30 AM **487** (Invited) *Time-Resolved Electron Microscopy: Accomplishments, Challenges, and the Future Directions*; V Lobastov; California Institute of Technology

10:00 AM *Coffee Break*

10:30 AM **488** (Invited) *Dynamic Studies by Repetitively Pulsed and Pump-probe Microscopy*; A Howie; University of Cambridge UK

11:00 AM **489** (Invited) *Expanding In-situ Mechanical Testing into the Ultrafast Regime*; EA Stach; Purdue University

11:30 AM **490** (Invited) *Benefits of Aberration Correction for Ultra-Fast TEM Experiments*; B Kabius; Argonne National Laboratory

Microbeam Analysis of Terrestrial and Planetary Materials—A Symposium in Memory of Gene Jarosewich

Session Chairs: EP Vicenzi, Smithsonian Institution
M Spilde, University of New Mexico

Platform Session

Wednesday 8:30 AM Room: Cimarron

8:30 AM **491** (Invited) *Challenges and Results of Real Comet Dust Analyses: The Stardust Mission*; FJM Rietmeijer; University of New Mexico

9:00 AM **492** *X-ray Mapping Analysis of Lunar Meteorite Dhofar 961: Characterization and Origin of the Mafic Impact-Melt Component*; BL Jolliff, RA Zeigler, PK Carpenter, RL Korotev; Washington University; EP Vicenzi; Smithsonian Institution; JM Davis; National Institute of Standards and Technology

9:15 AM **493** (Invited) *Development of Lunar Regolith Simulant: From the Macro to the Micro*; HA Lowers, DB Stoesser, SA Wilson, GP Meeker; U S Geological Survey

9:45 AM **494** *NanoSIMS and TEM Studies of SiC and Si₃N₄ Supernova Condensates*; RM Stroud; Naval Research Laboratory; LR Nittler, CM Alexander; Carnegie Institution of Washington; P Hoppe; Max Planck Institute for Chemistry

10:00 AM *Coffee Break*

10:30 AM **495** (Invited) *Recent Advances in Analytical Methods Used to Study Meteorites*; JI Goldstein; University of Massachusetts; JR Michael, PG Kotula; Sandia National Laboratories

11:00 AM **496** *Hyperspectral X-ray Analysis of Submicrometer-scale Heterogeneities in a Venerable Compositional Standard Provided by Nature: Kakanui Hornblende*; EP Vicenzi, T Rose; Smithsonian Institution

11:15 AM **497** *Nanobeam Analysis of the Oxidation States of Transition Metals in Primitive Planetary Materials*; TJ Zega; Naval Research Laboratory; AD Kilcoyne; Lawrence Berke-

ley National Laboratory; RM Stroud; Naval Research Laboratory

11:30 AM **498** (Invited) *Mineral Recorders of Martian History: Reading the Record with Microbeam Trace Element Analyses.*; CK Shearer, PV Burger, JJ Papike, J Karner; University of New Mexico

Nuclear and Reactive Materials

Session Chairs: I Davidson, AWE, United Kingdom
A Lockley, Atomic Energy of Canada Ltd.

Platform Session

Wednesday 8:00 AM Room: Pecos

8:00 AM **499** (Invited) *What's New With U: Recent Advances In Uranium Metallography*; A Kelly, D Thoma, R Field, P Dunn, D Teter; Los Alamos National Laboratory

8:30 AM **500** (Invited) *Ion Beam Surface Preparation of Uranium for EBSD*; D Carpenter; Y-12 National Security Complex

9:00 AM **501** (Invited) *Electron Backscatter Diffraction (EBSD) Characterization of Twinning Related Deformation and Fracture in alpha-Uranium*; R McCabe, R Field, D Brown, D Alexander, C Cady; Los Alamos National Laboratory

9:30 AM **502** (Invited) *Preparation of Metal Surfaces for Optical Metallography and EBSD using Ion Beam Polishing*; R Bridges; Y-12 National Security Complex

10:00 AM *Coffee Break*

10:30 AM **503** *Understanding Stress Corrosion Cracking with Electron Tomography*; S Lozano-Perez; University of Oxford, United Kingdom; L Cervera Gontard; Danish Technical University, Denmark

10:45 AM **504** *Microstructural Analysis of Pb-Induced Transgranular SCC of Alloy 690 in PbO + 10% NaOH Solution*; MG Burke, RE Hermer; Bechtel Bettis, Inc; M Phaneuf; Fibics, Inc

11:00 AM **505** *Oxide Nanoparticle Dispersion in an ODS/Fe12Cr Model Alloy*; V de Castro, ML Jenkins; University of Oxford, United Kingdom

11:15 AM **506** *High-Resolution Characterization of Oxygen Incorporation in Erbium Dihydride Thin Films*; C Parish, C Snow, L Brewer; Sandia National Laboratories

11:30 AM **507** *Cathodoluminescence Microcharacterization of Electron Irradiation Induced Defects in Borosilicate Glasses*; MA Stevens-Kalceff; University of New South Wales, Australia

Technologists' Forum Platform: Geology of the Southwest US Revealed Through M&M

Session Chair: V Woodward, Lubrizol Advanced Materials

Platform Session

Wednesday 9:00 AM Room: Mesilla

9:00 AM **508** (Invited) *Microprobing Minerals*; P Hlava; Access to Gems & Minerals, Inc

9:30 AM **509** (Invited) *New Mexico Underground: Extreme Geomicrobiology of Caves in the Southwest*; MN Spilde; University of New Mexico; PJ Boston; New Mexico Institute of Mining and Technology; DE Northup; University of New Mexico; L Melim; Western Illinois University

10:00 AM *Coffee Break*

10:30 AM **510** (Invited) *Gemstone Synthesis*; P Hlava; Access to Gems & Minerals, Inc

Joint Tutorial: ImageJ: A Useful Tool for Image Processing and Analysis

Session Chairs: A Dohnalkova, Pacific Northwest National Laboratory
G Thompson, University of Alabama

Platform Session

Wednesday 9:00 AM Room: La Cienega

9:00 AM **512** (Invited) *An Introduction to ImageJ: A Useful Tool for Biological Image Processing and Analysis*; JB Sheffield; Temple University

Physical Tutorial: Electron-Probe Microanalysis (EPMA): An Overview for Beginners and a Status Report for Experts

Session Chair: G Thompson, University of Alabama

Platform Session

Wednesday 10:30 AM Room: La Cienega

10:30 AM **511** (Invited) *Electron-Probe Microanalysis (EPMA): An Overview for Beginners and a Status Report for Experts*; PK Carpenter; Washington University

Imaging Cells and Tissues in 3D—Confocal Microscopy

Session Chairs: JP Robinson, Purdue University
B Rajwa, Purdue University

Platform Session
Wednesday 1:30 PM Room: Picuris

1:30 PM **513** (Invited) *Confocal Microscopy Reveals Molecular Interactions Between DNA-binding Drugs and Chromatin in Live Cells*; JW Dobrucki, K Wojcik; Jagiellonian University, Poland

2:00 PM **514** (Invited) *Confocal Microscopy and Optical Contrast Agents for In Vivo Detection Of Cancer*; MC Pierce, DJ Javier, N Nitin, RT Kester, T Tkaczyk; Rice University; A Gillenwater; M D Anderson Cancer Center; R Richards-Kortum; Rice University

2:30 PM **515** (Invited) *Confocal Microscopy of Thick Tissue Sections: 3D Visualization of Rat Kidney Glomeruli*; RM Zucker, J Rogers, R Ellis-Hutchings; USEPA

Advanced CARS Microscopy in Biology: Methods and Applications for Cellular and Tissue Imaging

Session Chairs: M Vogel, Harvard University
R Schalek, Harvard University

Platform Session
Wednesday 1:30 PM Room: Taos

1:30 PM **516** (Invited) *Driving CARS into Biomedical Field*; J-X Cheng; Purdue University

2:00 PM **517** (Invited) *Simple High Performance Multimodal Coherent Anti-Stokes Raman Scattering (CARS) Microscopy Based on a Two-Photon Microscope*; A Pegoraro, A Ridsdale, RK Lyn, JP Pezacki, A Stalow; Steacie Institute for Molecular Sciences, National Research Council, Canada

2:30 PM **518** (Invited) *Combined $\chi(3)$ Microscopy of the Peripheral Nervous Tissue*; CP Pfeffer; Harvard Medical School; M Vogel; Harvard University; BR Olsen; Harvard Medical School; F Ganikhanov; West Virginia University

Teaching Microscopy and Microanalysis: Manufacturer and Remote Training

Session Chairs: CE Lyman, Lehigh University
E Schumacher, McCrone Associates

Platform Session
Wednesday 1:30 PM Room: Galisteo

1:30 PM **519** (Invited) *Manufacturer Training of Electron Microscopists: X-ray Microanalysis*; N Rowlands, A Drake; Oxford Instruments Inc

2:00 PM **520** (Invited) *Remote Teaching for Electron Microscopy*; TC Isabell; JEOL USA, Inc; T Kobayashi, Y Ohkura; JEOL Ltd, Japan; RM O'Donnell; O'Donnell Engineering

2:30 PM **521** *The Electron Microscopy Database: Example Data Sets for Teaching and Learning Quantitative TEM*; PM Voyles; University of Wisconsin Madison

2:45 PM **522** *Remote Microscopy for Education and Outreach*; S Seraphin, G Chandler; University of Arizona; M Sellers; Northern Arizona University; D Bentley, K Dorame; University of Arizona; S Hernandez; Pima Community College

3:00 PM **523** *Remote Microscopy for Training Groups of Student Users*; JF Mansfield; University of Michigan

3:15 PM *Roundtable Discussion*

40 Years of Energy Dispersive X-ray Spectrometry

Session Chairs: R Gauvin, McGill University
DE Newbury, National Institutes of Standards and Technology

Platform Session
Wednesday 1:30 PM Room: Aztec

1:30 PM **524** *Advances in the Technology of Silicon Drift Detectors (SDD) and Multiple Element SDD*; R Terborg, M Rohde; Bruker AXS Microanalysis GmbH, Germany

1:45 PM **525** *Performance Comparison of SDDs with Si(Li)s for Performance Comparison of SDDs with Si(Li)s for SEM/EDS Analysis*; NC Barbi; PulseTor, LLC; ET Dobi; SEMTech Solutions, Inc; SD DaVilla; 4pi Analysis, Inc; RM Mott; PulseTor, LLC

2:00 PM **526** *Analyzing and Expanding the Detector Efficiency of Silicon Drift Detectors*; A Niculae, H Soltau, P Lechner, G Lutz, A Bechtele, R Eckhardt, K Hermenau; PNSensor GmbH, Germany; A Liebel, O Jaritschin, A Simsek; PNDetector GmbH, Germany; G Schaller, F Schopper, L Strüder; Max-Planck Institute Halbleiterlabor, Germany

2:15 PM **527** *Performance of a Commercial Silicon Drift Detector for X-ray Microanalysis*; EA Kenik; Oak Ridge National Laboratory

2:30 PM **528** *Determination of the Efficiency of Energy Dispersive X-ray Spectrometers with an EDS-CRM Reference Specimen*; H Demers, R Gauvin; McGill University, Canada

2:45 PM **529** *Results from Two Four-Channel Si-drift Detectors on an SEM: Conventional and Annular Geometries*; PG Kotula, JR Michael; Sandia National Laboratories; M Rohde; Bruker AXS Microanalysis GmbH, Germany

3:00 PM **530** (Invited) *DTSA-II: A New Tool for Simulating and Quantifying EDS Spectra—Application to Difficult Overlaps*; N Ritchie, JM Davis, DE Newbury; National Institute of Standards and Technology

Advances in Structure/Function Determination by Cryo-electron Microscopy

Session Chairs: E Bullitt, Boston University
T Ruiz, University of Vermont

Platform Session

Wednesday 1:30 PM Room: San Miguel

1:30 PM **531** *Intermolecular Contacts Required to Form Planar Lattices of Poliovirus RNA-dependent RNA Polymerase*; AB Tellez; Stanford University School of Medicine; J Wang; Boston University School of Medicine; J Spagnolo, K Kirkegaard; Stanford University School of Medicine; E Bullitt; Boston University School of Medicine

1:45 PM **532** *Structure Analysis of Complex I and Functional Implications*; T Clason, T Ruiz; University of Vermont; V Zickermann, U Brandt; Universität Frankfurt, Germany; G Peng, H Michel; Max-Planck-Institut für Biophysik, Germany; M Radermacher; University of Vermont

2:00 PM **533** *Structure of the Human 26S Proteasome Determined by Electron Microscopy: Subunit Rearrangement Opens the Gate into the Proteolytic Core.*; P da Fonseca, E Morris; Institute of Cancer Research, United Kingdom

2:15 PM **534** (Invited) *Global Interactive Docking and Hessian Filtering for Multi-Resolution Fitting of Biomolecular Assemblies*; J Heyd, S Birmanns; University of Texas Houston

2:45 PM **535** *Domain Exploration in Lipid Mono- and Bilayer on Nano-resolution Scale Using Freeze-fracture Electron Microscopy*; B Papahadjopoulos-Sternberg, J Ackrell; NanoAnalytical Laboratory

3:00 PM **536** (Invited) *Novel Methods for Cryo-Fluorescence Microscopy Permitting Correlative Cryo-Electron Microscopy*; J Valentijn, L van Driel; Leiden University, The Netherlands; A Agronskaia; Utrecht University, The Netherlands; K Knoops, R Koning, M Bárcena; Leiden University, The Netherlands; H Gerritsen; Utrecht University, The Netherlands; AJ Koster; Leiden University, The Netherlands

Understanding the Synthesis and Properties of Nanostructures and Nanomaterials: In-situ Synthesis and Characterization

Session Chairs: ZW Shan, Hysitron Inc
P Kruit, Delft University of Technology, Netherlands

Platform Session

Wednesday 1:30 PM Room: Ruidoso

1:30 PM **537** (Invited) *Synthesis of Nanostructures using Electron Beam Induced Deposition*; P Kruit, W van Dorp, K Hagen; Delft University of Technology, Netherlands; PA Crozier; Arizona State University

2:00 PM **538** *Fabrication and Application of Nanopores using TEM, STEM and Ion Beams*; DC Bell; Harvard University

2:15 PM **539** *In situ Microscopy: A Tool to Understand Mechanisms*; J Basu; University of Connecticut; R Divakar; Indira Gandhi Centre for Atomic Research, India; JP Winterstein; University of Connecticut; N Ravishankar; Indian Institute of Science, India; CB Carter; University of Connecticut

2:30 PM **540** *Nanopatterning and Grain Growth in Fluorides*; G Moebus, J Tsai; University of Sheffield, United Kingdom

2:45 PM **541** (Invited) *Exploring the Mechanical Properties of Nanostructures and Nanomaterials inside a TEM*; ZW Shan; Hysitron Inc; A Minor; Lawrence Berkeley Laboratory; SA Syed Asif, OL Warren; Hysitron Inc

3:15 PM **542** *Self Healing Nanoparticles: In-situ High-Resolution TEM Indentation of Nanoparticles*; CE Carlton, PJ Ferreira; University of Texas, Austin

High Resolution and Analytical Characterization of Engineered Nanostructures

Session Chair: RW Carpenter, Arizona State University

Platform Session

Wednesday 1:30 PM Room: Brazos

1:30 PM **543** (Invited) *In-Situ Probing the Electrical, Mechanical, and Thermal Properties of Individual Carbon Nanotubes and Nanowires by using a TEM-SPM Platform*; J-Y Huang; Sandia National Laboratories

2:00 PM **544** *In-Situ Characterization of 2D Potential Distributions in Biased Si n+-p Junctions Using Off-Axis Electron Holography*; MG Han, T Hirayama; The Japan Fine Ceramics Center, Japan; DJ Smith, MR McCartney; Arizona State University

2:15 PM **545** *p-n Junction Observation in a Single Transistor Device by In-situ TEM Electrical Measurement*; SY Park, D Cha; University of Texas, Dallas; O Lourie; Nanofactory Instruments AB; MJ Kim; University of Texas, Dallas

2:30 PM **546** *Study of Epitaxial Germanium Quantum Dots in Silicon by Off-axis Electron Holography*; L Li, MR McCartney, DJ Smith, S Ketharanathan, J Drucker; Arizona State University

2:45 PM **547** *Electrostatic Potential Mapping across AlGaAs/AlAs/GaAs Heterostructure*; S Chung, DJ Smith, MR McCartney; Arizona State University

3:00 PM **548** *Microstructural and Radial Distribution Function Analysis of Hydrogenated Silicon, Germanium, and Silicon-Germanium Alloy Thin Films*; DB Saint John, NJ Podraza, BD Gauntt, J Li, EC Dickey; The Pennsylvania State University

3:15 PM **549** *Quantitative Chemical Mapping of Engineered Interfaces in Quaternary III-V Semiconductor Heterostructures Using Phase Retrieval High Resolution Transmission Electron Microscopy*; K Mahalingam, H Haugan, G Brown, K Eyink; Air Force Research Laboratory

Ultrafast Electron Microscopy and Ultrafast Science

Session Chairs: M Taheri, Drexel University
N Browning, Lawrence Livermore National Laboratory
J Lewellen, Argonne National Laboratory

Platform Session

Wednesday 1:30 PM Room: Dona Ana

1:30 PM **550** (Invited) *Optimization of Ultrafast Photoelectron Sources for DTEM*; WA Schroeder; University of Illinois at Chicago

2:00 PM **551** (Invited) *Extreme Beams for Single-shot Ultrafast Electron Diffraction*; J Luiten, T Van Oudheusden; Eindhoven University of Technology, Netherlands; B Siwick; McGill University, Canada; E De Jong; FEI Company, Netherlands; W Op 't Root, B Van der Geer; Eindhoven University of Technology, Netherlands

2:30 PM **552** (Invited) *Review of Single Shot Electron Diffraction Experiments with Sub ps Resolution Using an RF Gun Electron Source*; J Schmerge; Stanford Linear Accelerator Center

2:45 PM **553** (Invited) *Optimizing the RF Photoinjector for Ultra-fast Electron Diffraction*; JB Rosenzweig; University of California, Los Angeles

3:00 PM **554** (Invited) *A Quantum-degenerate Electron Source*; M Zolotarev; Lawrence Berkeley National Laboratory; E Commins; University of California Berkeley; F Sanibale; Lawrence Berkeley National Laboratory

Microbeam Analysis of Terrestrial and Planetary Materials—A Symposium in Memory of Gene Jarosewich

Session Chairs: GP Meeker, U.S. Geological Survey
M Spilde, University of New Mexico

Platform Session

Wednesday 1:30 PM Room: Cimarron

1:30 PM **555** (Invited) *Systematics of Cathodoluminescence and Trace Element Compositional Zoning in Natural Quartz from Volcanic Rocks: Ti mapping in Quartz*; WP Lee-man; National Science Foundation; EP Vicenzi; Smithsonian Institution; CM MacRae, NC Wilson, A Torpy; CSIRO, Australia; C-TA Lee; Rice University

2:00 PM **556** *Smithsonian Microbeam Standards: Not Just Our Father's Microprobe Standards*; TR Rose; Smithsonian Institution

2:15 PM **557** *EPMA Standards: The Good, the Bad, and the Ugly*; PK Carpenter; Washington University

2:30 PM **558** (Invited) *Quantitative Mineralogy of Fine-grained Sedimentary Rocks: A Preliminary Look at QEM-SCAN®*; RI Grauch, DD Ebrel; US Geological Survey; AR Butcher, PWSK Botha; Intellection Pty Ltd, Australia

3:00 PM **559** (Invited) *Laser Ablation ICP-MS in Geochemistry and Biogeochemistry: A Progress Report*; WI Ridley, AE Koenig, MJ Pribil; US Geological Survey

It's a Family Affair!

Session Chairs: E Humphrey, Vancouver General Hospital; Canada
C Schooley, Project MICRO
MG Burke, Bechtel Bettis, Inc.

Platform Session

Wednesday 1:30 PM Room: Santa Ana

1:30 PM *It's a Family Affair: CSI Albuquerque*

Nuclear and Reactive Materials

Session Chairs: A Lockley, Atomic Energy of Canada Ltd.

I Davidson, AWE, United Kingdom

Platform Session

Wednesday 1:30 PM Room: Pecos

1:30 PM **560** (Invited) *Microanalysis of Plutonium*; M Matthews; AWE, United Kingdom

2:00 PM **561** (Invited) *Surface Preparation of Uranium and Uranium Alloys for Electron Microscopy*; T Cartwright; AWE, United Kingdom

2:30 PM **562** *Growth of Inclusions in Uranium-Niobium Alloy*; M Brierley; AWE, United Kingdom

Technologists' Forum Special Topic Session: EM Preparation Revisited—Dealing with the Nanoworld

Session Chair: Valerie Woodward,
Lubrizol Advanced Materials

Platform Session

Wednesday 1:30 PM Room: Mesilla

1:30 PM **563** (Invited) *Nanotech Drives Imaging Toward Faster, Sleeker, More Economic*; B Foster; The Microscopy & Imaging Place, Inc

2:00 PM **564** (Invited) *Advances in TEM Sample Preparation Using a Focused Ion Beam*; B Van Leer, LA Giannuzzi; FEI Company

2:30 PM **565** (Invited) *Sample Preparation Considerations for Electron Microscopy Characterization of Nano-Materials*; SD Walck; South Bay Technology, Inc

Joint Tutorial: Stereological Characterization of the Geometry of Three Dimensional Microstructures

Session Chairs: G Thompson, University of Alabama
A Dohnalkova, Pacific Northwest National Laboratory

Platform Session

Wednesday 2:00 PM Room: La Cienega

2:00 PM **566** (Invited) *Stereological Characterization of the Geometry of Three Dimensional Microstructures*; RT DeHoff; University of Florida

Imaging Cells and Tissues in 3D— Confocal Microscopy

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **567** (MSA Presidential Student) *A Fluorescence Technique for Identifying Distribution of Endophytic Fungi in Perennial Grass*; K Kane, GP Cheplick, WJ L'Amoreaux; CUNY College of Staten Island

Poster # 153

3:30 PM **568** *Optimizing Imaging of 3D Multicellular Tumor Spheroids with Fluorescent Reporter Proteins using Confocal Microscopy*; L Le Roux, D Schellingerhout, A Volgin, D Maxwell; MD Anderson Cancer Center; K Ishihara; Olympus America; J Gelovani; MD Anderson Cancer Center

Poster # 154

Hyperspectral Imaging, Cathodoluminescence, and Soft X-ray Analysis

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **569** *Enhancing the Field of View for Cathodoluminescence Spectrum Imaging in the Scanning Electron Microscope*; D Stowe; Gatan, United Kingdom; P Thomas; Gatan; S Galloway; Gatan, United Kingdom

Poster # 155

3:30 PM **570** *Enhanced Mapping of C Ka with a Grazing-incidence X-ray Optic*; G Brown, D O'Hara; Parallax Research, Inc

Poster # 156

TEM Accessory Instrumentation and Automation
Poster Session**Wednesday 3:30 PM Room: Exhibit Hall**

3:30 PM **571** *Automated 3D Reconstruction of Serial Electron Microscopy Image Sequences Using Object Recognition*; Y Lu, S Shaham; Rockefeller University

Poster # 157

3:30 PM **572** *Development of Double-Probe Piezo-Driving Holder for TEM*; K Yamazaki, I Ishikawa, S Deguchi, Y Kondo; JEOL Japan; Y Murakami, D Shindo; Tohoku University, Japan

Poster # 158

3:30 PM **573** *Development of Stage-Scanning Type Confocal STEM*; A Hashimoto, M Takeguchi; National Institute for Materials Science, Japan; M Shimojo; Saitama Institute of Technology, Japan; K Mitsuishi, K Furuya; National Institute for Materials Science, Japan

Poster # 159

3:30 PM **574** *Use of a Commercial RF Plasma Cleaner in Eliminating Adventitious Carbon Contamination in an XPS System*; E Strein, D Allred; Brigham Young University

Poster # 160

3:30 PM **575** *Reduction of Electron Beam Induced Specimen Contaminations by Chemical Cleaning of a TEM Column Using Oxygen Plasma*; S Horiuchi; AIST, Japan; T Hanada, M Ebisawa; Consult Zeroloss Imaging, Japan

Poster # 161

3:30 PM **576** *Soft-X-ray Emission Spectroscopy Study of Transition Intensities from the Valence Band to 3D Core-Hole of Lanthanide Oxides*; M Terauchi, Y Yoneda; Tohoku University, Japan

Poster # 162

Teaching Microscopy and Microanalysis
Poster Session**Wednesday 3:30 PM Room: Exhibit Hall**

3:30 PM **577** *Electronic Training Resource for Higher Education*; K Schierbeek, SE Hill, OP Mills; Michigan Technological University

Poster # 163

3:30 PM **578** *Coloring Pictures for Electron Microscopists, or Elements of Digital Image Manipulation for Students*; VM Dusevich, JD Eick; University of Missouri Kansas City

Poster # 164

3:30 PM **579** *SEM Remote Control with a 3D Option*; F Mighela; Telemicroscopy Laboratory, Italy; C Perra; University of Cagliari, Italy; R Pintus; 3D Model Laboratory, Italy; S Podda; Telemicroscopy Laboratory, Italy; M Vanzì; University of Cagliari, Italy

Poster # 165

3:30 PM **580** *Do-It-Yourself Web-Based Diagnosis for the Scanning Electron Microscope*; NHM Caldwell, MT Bui, J Naran, DM Holburn, BC Breton; University of Cambridge, United Kingdom

Poster # 166

3:30 PM **581** *Opportunities and Challenges Growing a User Base in a Multi-User Facility*; LA Dempere; University of Florida

Poster # 167

Advances in Electron Tomography for the Physical and Biological Sciences
Poster Session**Wednesday 3:30 PM Room: Exhibit Hall**

3:30 PM **582** *Identifying Individual Scaffolding Molecules in the Postsynaptic Density*; X Chen, C Winters, R Azzam, V Crocker; National Institutes of Health; X Li; Columbia University; J Galbraith, RD Leapman, TS Reese; National Institutes of Health

Poster # 168

3:30 PM **583** *Localizing Kinetochores in Condensin Deficient DT40 Cells Using Same Cell Correlative Confocal Light Microscopy/Electron Tomography*; Y Dong; Wadsworth Center; P Vagnarelli; University of Edinburgh, Scotland; X Meng; Wadsworth Center; S Ribeiro, WC Earnshaw; University of Edinburgh, Scotland; BF McEwen; Wadsworth Center

Poster # 169

3:30 PM **584** *New Frontiers in Cryo-electron Tomography with Zernike Phase Contrast Imaging for Transmission Electron Microscopy*; B Armbruster; JEOL; J Brink; JEOL; H Furukawa; JEOL, Japan; TC Isabell, M Kawasaki, M Kersker; JEOL

Poster # 170

3:30 PM **585** *Electron Tomography for Analysis of Catalysts*; R Cieslinski; Dow Chemical Company; C Kuebel; Fraunhofer Institute for Manufacturing Technology and Applied Materials Research, Germany; S Rozeveld, R Bowman; Dow Chemical Company

Poster # 171

40 Years of Energy Dispersive X-ray Spectrometry
Poster Session**Wednesday 3:30 PM Room: Exhibit Hall**

3:30 PM **586** *Sum Peaks in Energy-Dispersive X-ray Spectroscopy*; A Eades; Lehigh University

Poster # 172

3:30 PM **587** *Characterizing EDS Coincidence Detection At High Rates For Low Energies*; RB Mott; PulseTor LLC

Poster # 173

3:30 PM **588** *Rutile Rock: Ti-L, O-K Peak Deconvolution in the Presence of Fe-K*; P Camus, D Rohde, B Leite; Thermo Scientific

Poster # 174

**21st Century Scanning Microscopy—
Electrons and He Ions**
Poster Session**Wednesday 3:30 PM Room: Exhibit Hall**

3:30 PM **589** *Microscopic Characterization of Agave Tequilana Weber var. Azul Fibers from Agroindustrial Waste in Activated Carbon Production*; L Ballinas, L Manjarrez; Autonomous University of Chihuahua, Mexico; V Fierro, A Celzard; Universite Henri Poincare, France; A Goncalves, G Moraes-Rocha; Sao Paulo University, Brazil; G Gonzalez-Sanchez; Advanced Materials Research Center, Mexico

Poster # 175

3:30 PM **590** *Study of Microscopic Structure of Cellulose and Lignin Based Membranes*; L Ballinas, L Manjarrez, MA Hermosillo, R Valdez; Autonomous University of Chihuahua, Mexico; A Goncalves, G Moraes-Rocha; Sao Paulo University, Brazil; G Gonzalez-Sanchez; Advanced Materials Research Center, Mexico

Poster # 176

3:30 PM **591** *Beam Skirting Effects on Energy Deposition Profile in VP-SEM*; BD Myers, Z Pan, VP Dravid; Northwestern University

Poster # 177

3:30 PM **592** *Automated Image Acquisition at High Spatial Resolutions in a Field Emission Gun Scanning Electron Microscope*; J Blackson, CS Todd; The Dow Chemical Company; G Bar; Dow Olefinverbund GmbH, Germany; D Reuschle; The Dow Chemical Company; M Janus; FEI Company, Netherlands; M Darus, A Nickles; FEI Company

Poster # 178

3:30 PM **593** *A Comparison of Backscatter Electron, R-filter, and Scanning Transmission Imaging of Sectioned Resin Embedded Biological Materials in Field Emission Scanning Electron Microscope*; N Erdman, CH Nielsen; JEOL USA; CA Ackereley; Hospital for Sick Children, Toronto, Canada

Poster # 179

3:30 PM **594** *Design and Development of an Ultra High Vacuum Variable Pressure Scanning Electron Microscope for Dynamical Studies of Nanostructures*; M Klein; VisiTec Microtechnik GmbH, Germany; S Kodambaka; University of California Los Angeles; P Marienhoff; VisiTec Microtechnik GmbH, Germany

Poster # 180

3:30 PM **595** *Surface Interactions and Phase Transformations During the Synthesis of Ni Nanoparticles on a Mica Support*; S Chenna, PA Crozier; Arizona State University

Poster # 181

3:30 PM **596** *Advances in Low and Ultra-Low Energy, High-Resolution SEM*; L Roussel, DJ Stokes; FEI Company, The Netherlands; RJ Young; FEI Company, USA; I Gestmann; FEI Company, The Netherlands

Poster # 182

3:30 PM **597** *A Study of Low or Ultra-Low Voltage SEM Imaging for Mesoporous Materials*; S Takeuchi, A Miyaki, H Ito, T Sawahata, M Nakagawa; Hitachi High-Technologies Corporation, Japan; S Kataoka, Y Inagi, A Endo; National Institute of Advanced Industrial Science and Technology, Japan

Poster # 183

3:30 PM **598** *Production and Measurement of Sputtered Iridium*; P Savage, JF Mansfield; University of Michigan

Poster # 184

3:30 PM **599** *Recent Applications Development with the Helium Ion Microscope*; L Scipioni; Carl Zeiss SMT, Inc

Poster # 185

3:30 PM **600** *Strain and its Contrast Mechanisms in Crystalline Materials Imaged with FE-SEM*; H Jaksch; Carl Zeiss SMT Inc

Poster # 186

New Analytical Techniques in Microbeam Analysis

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **601** *Combined EPMA and SHRIMP Analyses of Xenotime to Interpret the Geochronological Record*; HA Lowers, JN Aleinikoff, FK Mazdab; U S Geological Survey

Poster # 187

3:30 PM **602** *Comparing the Effects of Different Gas Mixtures and Vacuum Chamber Geometries on the Evacron® Cleaning Process*; CG Morgan, R Vane; XEI Scientific, Inc

Poster # 188

3:30 PM **603** *Quantitative X-ray Analysis in the Variable Pressure SEM: The Effect of Gas Composition, Pressure, and Detector Geometry*; SJ Bean, VM Kugler; Carl Zeiss SMT Ltd, United Kingdom

Poster # 189

3:30 PM **604** *Al-Ir Compounds and the Problem of Light Element-Heavy Element Matrix Corrections in EPMA: Application of PENEPMA Monte Carlo Modeling*; J Fournelle, C Zhang, YA Chang; University of Wisconsin Madison

Poster # 190

3:30 PM **605** *The Intensity Changes of Ultra-soft X-ray Spectra of Several Light Element Oxides*; S Fukushima, T Ogiwara, T Kimura; National Institute for Materials Science, Japan; K Tsukamoto, T Tazawa; JEOL Ltd Japan; S Tanuma; National Institute for Materials Science, Japan

Poster # 191

3:30 PM **606** *Infrared Microprobe Analysis of Minerals Using Internal Reflection Spectroscopy*; JA Reffner; Smiths Detection; BA Weinger; John Jay College of Criminal Justice; PE Leary; Smiths Detection

Poster # 192

Advances in Structure/Function Determination by Cryo-electron Microscopy

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **607** *Yeast Phosphofructokinase: Correlating Kinetic Behavior and Structural Conformations*; S Benjamin, M Bárceña; University of Vermont; A Edelmann, J Bär, G Kopperschlager; Universität Leipzig, Germany; M Radermacher, T Ruiz; University of Vermont

Poster # 193

3:30 PM **608** *The Role of Dynamin Domains in Membrane Constriction*; P Ray, S Fang, JA Mears, JE Hinshaw; National Institutes of Health

Poster # 194

3:30 PM **609** *Serial Acquisition of Dual Axis EM Tomographic Data*; S Zheng, M Braunfeld, J Sedat, D Agard; University of California San Francisco

Poster # 195

3:30 PM **610** *Image Information Transfer Through a Post-Column Energy Filter with Detection by a Lens-Coupled Transmission-Scintillator CCD Camera*; U Luecken, PC Tiemeijer; FEI, The Netherlands; M Barfels, P Mooney, B Bailey; Gatan; D Agard; University of California San Francisco

Poster # 196

3:30 PM **611** *Titan Krios: Automated 3D Imaging at Ambient and Cryogenic Conditions*; M Storms, R Wagner, U Luecken, W Hax, M Harris; FEI, The Netherlands

Poster # 197

3:30 PM **612** *Pushing Back the Frontiers of CRYO in 120 kV TEMs*; SA Hiller, C Dietl, V Seybold, M Thaler, G Benner; Carl Zeiss SMT, Germany

Poster # 198

Microscopy Techniques for Ceramics and Composites

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **613** *Liquid-Phase Bonding of Yttria Stabilized Zirconia to Iron-Nickel Alloy 52 for Application in Solid Oxide Fuel Cells*; K Hendricks, R Hyers; University of Massachusetts, Amherst; G Hendricks; University of Massachusetts Medical School, Worcester

Poster # 199

3:30 PM **614** *Effect of Cathode Microstructure on the Cathode Polarization in the Sintered, Strontium-Doped Lanthanum Manganite/Yttria Stabilized Zirconia Solid, Oxide Fuel Cells*; A Chen, J Smith, RT DeHoff, E Wachsmann, J Bourne, K Jones; University of Florida

Poster # 200

Structural Basis of Disease

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **615** *Endoplasmic Reticulum Proteins BiP and PDI are Localized to Lamellar Bodies of Alveolar Type 2 Epithelial Cells*; C-L Na, R Ridsdale, TE Weaver; Cincinnati Children's Hospital Medical Center

Poster # 201

3:30 PM **616** *Microscopic Study of Human Alveolar Macrophages*; TA Ba-Omar, B Al-Riyami; Sultan Qaboos University, Oman

Poster # 202

3:30 PM **617** *Lung Endothelial Cells Express ALCAM on Released Exosomes/Microparticles*; J King, E Syklawer, H Chen, J Resmondo, F McDonald, T Stevens, L Shevde; University of South Alabama; S Ofori-Acquah; Emory University; T Moore, N Bauer; University of South Alabama

Poster # 203

3:30 PM **618** *Rheumatic Heart Disease Revisited II Acute Parietal Endocarditis Another Piece in the Unsolved Puzzle*; S Siew; Michigan State University

Poster # 204

3:30 PM **619** *Thrombocytopathy and Leukocytopathy in X-linked Myopathy with Excessive Autophagy (XMEA)*; CA Ackerley, N Ramachandran, I Munteanu; Hospital for Sick Children; H Kalimo; University and University Hospital of Helsinki; BA Minassian; Hospital for Sick Children

Poster # 205

3:30 PM **620** *Ultrastructural Alterations in Arabidopsis thaliana dj1c Null Mutant Cotyledons*; H Chen, J Frey, T Nazarenus, C Elowsky, J Stone; University of Nebraska-Lincoln

Poster # 206

3:30 PM **621** *Microscopic Analysis of Lead Accumulation in Tobacco (Nicotiana tabacum var. turkish) Roots*; R Al-Khatib; New Mexico State University; J Zhao; University of South Carolina; DA Blom; University of South Carolina; K Ghoshroy; University of South Carolina Sumter; R Creamer; New Mexico State University; S Ghoshroy; University of South Carolina

Poster # 207

Microscopy, Microanalysis and Image Analysis in the Pharmaceutical Sciences

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **622** *Long-Term Administration of Ciprofloxacin as the Cause of Ultrastructural Changes in the Liver and Disturbance of Its Functional Balance*; W Matysiak, B Jodlowska-Jedrych, E Kifer-Wysocka, J Romanowska-Sarlej, K Czerny; Medical University of Lublin

Poster # 208

Understanding the Synthesis and Properties of Nanostructures and Nanomaterials

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **623** *Microstructure Characterization of FePt/Ti/Si Thin Films*; Y Zhang; Massachusetts Institute of Technology; J Wan, GC Hadjipanayis; University of Delaware

Poster # 209

3:30 PM **624** *Crystal Structure of TiO₂ Nano-particles*; S Pokrant; Carl Zeiss SMT Inc, Germany; S Irsen; Forschungszentrum Caesar, Germany

Poster # 210

3:30 PM **625** *Effect of Nitrogen Incorporated Methods on Optical Properties of InAs/GaAs Quantum Dots*; H Chiung-Chih, H Ray-Quen, W Yue-Han, C Jenn-Fang; National Chiao-Tung University, Taiwan, R O C; C Tung-Wei, C Chen-Hao; Industrial Technology Research Institute, Taiwan, R O C; C Mao-Nan; National Chiao-Tung University, Taiwan, R O C

Poster # 211

3:30 PM **626** *Modeling of Periodic Ordered Nanostructures: Shape-evolution and Shape-Control During Precipitation of Inorganic Precursors and Urea*; S Bakardjieva, V Stengl, J Subrt; Academy of Science Czech Republic, Czech Republic

Poster # 212

3:30 PM **627** (MSA Presidential Student) *Electron Microscopy Analysis of CdS Coated Diatom Cell Walls*; T Gutu, J Jiao; Portland State University; C Jeffryes, C-H Chang, GL Rorrer; Oregon State University

Poster # 213

3:30 PM **628** *ELNES of Al-Al₄C₃ Nanoparticles Produced By Mechanical Milling*; A Santos, S Maldonado; Universidad Autónoma de Zacatecas, Mexico; R Martinez, F Espinosa, H Flores, V Gallegos; Centro de Investigación en Materiales Avanzados, Mexico

Poster # 214

3:30 PM **629** *Selective Dealloying with Supercritical Carbon Dioxide*; K Dorame, R Morrish, A Muscat; University of Arizona

Poster # 215

3:30 PM **630** *Pt Nanoparticles by EELS and Ab-initio Calculations*; Y Gochi-Ponce, V Gallegos-Orozco; Advanced Materials Research Center, Mexico; A Santos-Beltran; Universidad Autónoma de Zacatecas, Mexico; R Martinez-Sanchez, F Espinosa-Magaña; Advanced Materials Research Center, Mexico

Poster # 216

3:30 PM **631** *Microstructural Characterization of Aluminum-Silver Nanoparticles Composites Produced by Mechanical Milling*; D Mendoza, I Estrada, W Antunez, R Martinez; Centro de Investigación en Materiales Avanzados, Mexico

Poster # 217

3:30 PM **632** *Phase Separation and Crystallization of Magnetic Nanoparticles in a Borosilicate Glass*; MA Laurenzi III, IL Pegg; Catholic University of America

Poster # 218

3:30 PM **633** *XAS and Grazing Angle XRD of the CoTi₂ Thin Films Grown by DC Co-Sputtering Technique*; I Yocupicio-Villegas, H Esparza Ponce, JA Duarte Moller; Centro de Investigación en Materiales, Mexico

Poster # 219

3:30 PM **634** *Complementary Microscopy Techniques for Characterizing Nanostructures*; J Basu; University of Connecticut; R Divakar; Indira Gandhi Centre for Atomic Research, India; N Ravishankar; Indian Institute of Science, India; CB Carter; University of Connecticut

Poster # 220

3:30 PM **635** *Coupling LEAP and HRSTEM to Study the Nanoscale Structure and Chemistry of Interfaces*; R Srinivasan, A Geng; Ohio State University; R Banerjee, J Hwang; University of North Texas; J Tiley; Air Force Research Laboratory; GB Viswanathan, HL Fraser; Ohio State University

Poster # 221

High Resolution and Analytical Characterization of Engineered Nanostructures

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **636** *Characterization of Al In GaN/GaN Hetero-interface by HAADF-STEM and Electron Holography*; M Takeguchi, H Okuno, Y Irokawa, Y Sakuma, K Furuya; National Institute for Materials Science, Japan

Poster # 222

3:30 PM **637** *Preparation and Characterization of Titanate Nanotubes*; M Klementova; Academy of Sciences of the Czech Republic; Z Kvaca; Molecular Cybernetics, Czech Republic; P Bezdzicka, E Vecernikova; Academy of Sciences of the Czech Republic; M Mohyla; Molecular Cybernetics, Czech Republic

Poster # 223

3:30 PM **638** *Nucleation and Growth of Magnetic Nanoparticles in a Na-Ca-B-Fe Amorphous Precursor by Electron Beam Irradiation*; MA Laurenzi III; The Catholic University of America; W-A Chiou; University of Maryland; IL Pegg; The Catholic University of America

Poster # 224

3:30 PM **639** *Tomography of High-k Dielectrics on Fin-FET Sidewalls*; B Foran, N Ives; The Aerospace Corporation; P Lysaght; SEMATECH

Poster # 225

3:30 PM **640** *Physical and Electrical Characterization of the Interface Between Atomic-Layer-Deposited Al₂O₃ on GaAs Substrates for CMOS Applications*; DI Garcia-Gutierrez, V Kaushik; ATDF; D Shahrjerdi, S Banerjee; University of Texas, Austin

Poster # 226

3:30 PM **641** (MSA Presidential Student) *Exploring the Morphological Diversity of Amyloid β Cross- β Structure*; WS Childers, Y Liang, R Ni, AK Mehta, JV Taylor, DG Lynn; Emory University

Poster # 227

3:30 PM **642** *Stress Relaxation by Cation Ordering in Epitaxial Lead Zirconate Titanate Films*; L Zhang; University of Connecticut; A Vasiliev; Institute of Crystallography Russian Academy of Sciences; IB Misirlioglu; Massachusetts Institute of Technology; SP Alpay, M Aindow; University of Connecticut; R Ramesh; University of California Berkeley

Poster # 228

3:30 PM **643** *Interface Structure of a V₂O₃ Layer Grown on Cu₃Au (001) by Cs Corrected Transmission Electron Microscopy*; H Calderon; ESFM-IPN, Mexico; H Niehus; Humboldt Universität zu Berlin, Germany; B Freitag, D Wall; FEI Company, The Netherlands; F Stavale, CA Achete; Incetro, Xerem, Brazil

Poster # 229

3:30 PM **644** *Performance Advantages of a Modern Ultra-High Mass Resolution LEAP*; P Clifton, T Gribb, S Gerstl, RM Ulfig, DJ Larson; Imago Scientific Instruments

Poster # 230

3:30 PM **645** *Analysis of Silicon Nanowires by Laser Atom Probe Tomography Prepared by a Protected Lift-Out Processing Technique*; T Prosa, R Alvis; Imago Scientific Instruments; L Tsakalakos, V Smentkowski; General Electric Global Research

Poster # 231

3:30 PM **646** *Microstructural Investigation of Pd/Pt/Au and Pd/Ru/Au Ohmic Contacts to InAlSb/InAs Heterostructures for High Electron Mobility Transistors*; Q Zhang, R Dormaier, S Mohny; The Pennsylvania State University

Poster # 232

3:30 PM **647** *Nanofabrication by 3D E-beam Cutting*; T Gnanavel, Z Saghi, Y Peng, G Moebus; University of Sheffield, United Kingdom

Poster # 233

3:30 PM **648** *Characterization with TEM of AlN/GaN Heterostructures for Implant Activation Annealing*; T Zheleva, C Hager, K Jones, M Derenge; Army Research Laboratory
Poster # **234**

Ultrafast Electron Microscopy and Ultrafast Science

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **649** *Development of Time Resolved Reflection High-Energy Electron Diffraction System to Study Ultrafast Phases Transition at Surfaces*; H Park, TD Pounds, JM Zuo; University of Illinois
Poster # **235**

3:30 PM **650** (MSA Presidential Student) *Particle Swarm Optimization of Iterative Phase Retrieval Algorithms for Ultrafast Coherent Diffractive Imaging*; D Masiel, B Gipson, DG Morgan; University of California Davis; JCH Spence; Arizona State University; ND Browning; University of California Davis
Poster # **236**

Image Analysis and Quantitative Microscopy

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **651** *Extracting Rich, Quantitative Information from Images Using Open-Source Software*; A Carpenter, T Jones; Broad Institute of Harvard and MIT
Poster # **237**

3:30 PM **652** *Determination of True Particle Size Distribution in High Impact Polystyrene (HIPS)*; W Heckmann; BASF SE, Germany
Poster # **238**

3:30 PM **653** *Improvements in Automated Photometric Stereo 3D SEM*; R Pintus, S Podda; Sardegna Ricerche, Italy; M Vanzi; University of Cagliari, Italy
Poster # **239**

3:30 PM **654** *Non-Contact 3D Surface Metrology of Large Grain High Purity Niobium by SLCM and FESEM*; Z Sung, P Lee, D Larbalestier; Florida State University
Poster # **240**

Nuclear and Reactive Materials

Poster Session

Wednesday 3:30 PM Room: Exhibit Hall

3:30 PM **655** *Transmission Electron Microscopy Study of Uranium Thorium Zirconium Hydride Fuels*; K Terrani; University of California, Berkeley
Poster # **241**

3:30 PM **656** *Effects of Annealing and Ion Implantation on the Nano-Structure of the ODS Eurofer 97 Steel*; C Williams, A Cerezo, EA Marquis; University of Oxford, United Kingdom
Poster # **242**

Thursday, August 7, 2008

Hyperspectral Imaging, Cathodoluminescence, and Soft X-ray Analysis

Session Chairs: P Mainwaring, Gatan Inc
C MacRae, CSIRO

Platform Session

Thursday 8:30 AM Room: Aztec

8:30 AM **657** (Invited) *Correlating Composition and Luminescence Variations in III-Nitride Semiconductor Alloys*; PR Edwards, K Bejtko, IM Watson; University of Strathclyde, United Kingdom; S Fernández-Garrido, E Calleja; Universidad Politécnica de Madrid, Spain; RW Martin, KP O'Donnell; University of Strathclyde, United Kingdom

9:00 AM **658** (Invited) *Analysis of Combined Multi-signal Hyperspectral Datasets Using a Clustering Algorithm and Visualisation Tools*; N Wilson, C MacRae, A Torpy; CSIRO, Australia

9:30 AM **659** (Invited) *Methodology for the Quantification of Hyperspectral Cathodoluminescence*; C MacRae, N Wilson, A Torpy; CSIRO, Australia

10:00 AM *Coffee Break*

10:15 AM **660** (Invited) *Hyperspectral Imaging in TEM: New Ways of Information Extraction and Display*; B Schaffer, C Gspan, W Grogger, G Kothleitner, F Hofer; Graz University of Technology, Austria

10:45 AM **661** *Spectral Imaging with an Annular Si-drift Detector and Annular X-ray Detector Simulated by Stage and Scan Rotation in the SEM*; PG Kotula; Sandia National Laboratories

11:00 AM **662** *X-ray Spectrum Imaging of Sintering Additives in Thick-Film (Pb,La)(Zr,Ti)O₃*; C Parish, B McKenzie, M Winter, B Tuttle; Sandia National Laboratories

11:15 AM **663** *Hyperspectral Analysis in Soft X-ray Spectromicroscopy*; C Jacobsen, H Fleckenstein; Stony Brook University

11:30 AM **664** (Invited) *Statistical and Systematic Errors in EFTEM Spectral Imaging*; IM Anderson, A Herzing; National Institute of Standards and Technology

TEM Accessory Instrumentation and Automation

Session Chairs: A Ziegler, Max Planck Institute for
Biochemistry, Germany
M Marko, Wadsworth Center

Platform Session

Thursday 8:15 AM Room: Picuris

8:15 AM **665** (Invited) *Development of a High Accuracy, Large Range and Backlash Free Single-Tilt/Rotation (Alpha-Gamma) Holder for Precise Alignment of TEM Samples*; N Salmon, D Vetter; Hummingbird Scientific; EA Stach; Purdue University

8:45 AM **666** *Specially Designed Sample Holder and In-situ TEM for Gas-Solid Interaction Studies at an Atomic Resolution*; XF Zhang; Hitachi High Technologies America

9:00 AM **667** *A New Paradigm for Ultra-High-Resolution Imaging at Elevated Temperatures*; LF Allard; Oak Ridge National Laboratory; WC Bigelow; University of Michigan; D Nackashi, J Damiano, SE Mick; Protochips Inc

9:15 AM **668** (Invited) *Four-Dimensional STEM-EELS Tomography of Nano-structured Materials*; K Jarausch; Hitachi High Technologies America; DN Leonard; Appalachian State University; RD Twesten, P Thomas; Gatan

9:45 AM **669** *Electronic Structure Studies of Carbon Materials by High-Energy-Resolution Carbon K-Emission Spectroscopy Measurements*; M Terauchi; Tohoku University, Japan; H Nishihara, T Kyotani; Tohoku University, Japan

10:00 AM *Coffee Break*

10:30 AM **670** (Invited) *Automated Large Scale Tilt Pair Data Collection for TEM*; C Yoshioka, N Voss, J Pulokas, D Fellmann, A Cheng, B Carragher, C Potter; Scripps Research Institute

11:00 AM **671** (Invited) *Aspects of Using a Boersch Type Phase Shifting Device for Contrast Enhancement in Macromolecular Electron Microscopy*; D Typke, RM Glaeser, KH Downing; Lawrence Berkeley National Laboratory; PC Tiemeijer; FEI, The Netherlands; R Cambie, J Jin; Lawrence Berkeley National Laboratory

11:30 AM **672** *Progress on the Development of a Cc/Cs Corrector for TEAM*; M Haider, P Hartel, U Loebau; CEOS GmbH, Germany; R Hoeschen; Max-Planck Institute for Metals Research, Germany; H Müller, S Uhlemann, F Kahl, F Zach; CEOS GmbH, Germany

11:45 AM **673** *Auto-Adjustment of Aberration Correction and Experimental Evaluation of R005 Microscope*; S Hidetaka, H Fumio, K Toshikazu, T Takeshi, K Yukishito, T Takayuki, O Yoshifumi, T Yasumasa, Y Naoki, T Kunio; CREST

**Teaching Microscopy and Microanalysis:
University and Short Courses**

Session Chairs: E Schumacher, McCrone Associates
CE Lyman, Lehigh University

Platform Session
Thursday 8:15 AM Room: Galisteo

8:15 AM **674** (Invited) *Instruction and Training at the University of Georgia EM Lab*; JP Shields; University of Georgia

8:45 AM **675** (Invited) *Teaching Advanced Transmission Electron Microscopy*; PA Crozier, RW Carpenter, DJ Smith, K Weiss; Arizona State University

9:15 AM **676** *Methodologies for Teaching Undergraduate Level Electron Microscopy*; BL McIntyre; University of Rochester

9:30 AM **677** (Invited) *A Personal Perspective on Teaching Microscopy: Lessons Learned from the Classroom and Laboratory*; PM Cooke; MICA and College of Microscopy

10:00 AM *Coffee Break*

10:30 AM **678** (Invited) *Microscopy Short Courses for Industrial, Governmental, and Academic Users*; CE Lyman; Lehigh University

11:00 AM **679** *Design and Implementation of a Practical, Hands-On TEM Short Course*; AW Nicholls; University of Illinois at Chicago; EF Schumacher; McCrone Associates

11:15 AM **680** *Training Objectives and Challenges of Maintaining Competency and Relevancy of Microscopy Staff in an Academic Core Facility*; R Schalek; Harvard University

11:30 AM *Roundtable Discussion*

**Advances in Electron Tomography for the
Physical and Biological Sciences**

Session Chairs: I Arslan, Sandia National Laboratories
Livermore
M Marko, Wadsworth Center

Platform Session
Thursday 8:15 AM Room: San Miguel

8:15 AM **681** (Invited) *3-D Cross-Correlation of Atom Probe and STEM Tomography*; B Gorman, D Diercks, D Jaeger; University of North Texas

8:45 AM **682** *Correlating Electron Tomography and Atom Probe Tomography*; I Arslan; Sandia National Laboratories; EA Marquis; University of Oxford, United Kingdom; M Homer, M Hekmaty, N Bartelt; Sandia National Laboratories

9:00 AM **683** (S)TEM *Dual Axis Tomography*; A Voigt, Y Alevtyna, F de Haas, W Voorhout, R Schoenmakers; FEI, The Netherlands

9:15 AM **684** (Invited) *Three-Dimensional Imaging and Analysis by Optical Sectioning in the Aberration-Corrected Scanning Transmission and Scanning Confocal Electron Microscopes*; PD Nellist, EC Cosgriff, G Behan, AI Kirkland; University of Oxford, United Kingdom; AJ D'Alfonso, SD Findlay, LJ Allen; University of Melbourne, Australia

9:45 AM **685** *Three-Dimensional Reconstruction of Au Nanoparticles Using Five Projections from an Aberration-Corrected STEM*; L Jiang; University of Liverpool, United Kingdom; P Wang, A Bleloch; SuperSTEM Laboratory, United Kingdom; P Goodhew; University of Liverpool, United Kingdom

10:00 AM *Coffee Break*

10:30 AM **686** (Invited) *Discrete Tomography: Exploiting Various Forms of Discreteness in Electron Tomography*; KJ Batenburg, S Bals, J Sijbers, G Van Tendeloo; University of Antwerp, Belgium

11:00 AM **687** *Electron Tomography Using Compositional-Sensitive Diffraction Contrast for 3D Characterization of Self-Assembled Semiconductor Quantum Dots*; R Beanland, JC Hernandez; University of Cambridge, United Kingdom; AM Sanchez; Universidad de Cadiz, Spain; PA Midgley; University of Cambridge, United Kingdom

11:15 AM **688** (MSA Presidential Student) *Reconstruction of 3D Magnetic Induction Using Lorentz TEM*; C Phatak, M DeGraef; Carnegie Mellon University; A Petford-Long, M Tanase, A Imre; Argonne National Laboratory

11:30 AM **689** *Tomographic Imaging Ultra-Thick Specimens with Nanometer Resolution*; E Soutry, B Freitag, D Wall, D Tang; FEI, The Netherlands; K Lu, J Loos; Eindhoven University of Technology, The Netherlands

11:45 AM **690** *Data Interpretation in Real Time: Using Commodity Graphics Cards to Accelerate Tomography*; CR Booth, S Markovic, R Harmon, J Wilbrink; Gatan

21st Century Scanning Microscopy—Electrons and He Ions

Session Chairs: DC Joy, University of Tennessee
R Gauvin, McGill University, Canada

Platform Session

Thursday 8:00 AM Room: Dona Ana

8:00 AM *Introduction*

8:15 AM **691** (Invited) *Application of the Helium Ion Microscope for the Imaging and Analysis of Nanomaterials*; DC Bell; Harvard University; LA Stern, L Farkas, JA Notte; Carl Zeiss SMT Inc

8:45 AM **692** (Invited) *Scanning Electron and Ion Microscope-based Size and Shape Metrology at the Nanometer Scale*; AE Vladar, P Cizmar, MT Postek; National Institute of Standards and Technology

9:15 AM **693** *He Ion Induced Secondary Electron and Backscattered Electron Images Compared Side-by-side With Electron Beam Induced Secondary Electron, Backscattered, and Transmission Electron Images*; S Wight, DC Meier, MT Postek, AE Vladar, J Small, DE Newbury; National Institute of Standards and Technology

9:30 AM **694** (Invited) *Relative Contrast in Ion and Electron Induced Secondary Electron Images*; LA Giannuzzi; FEI Company; M Utlaut; University of Portland; M Scheinfein; FEI Company

10:00 AM *Coffee Break*

10:30 AM **695** (Invited) *Variation of Rutherford Backscattered Ion and Ion-induced Secondary Electron Yield with Atomic Number in the "Orion" Scanning Helium Ion Microscope*; BJ Griffin; The University of Western Australia, Australia; DC Joy; Oak Ridge National Laboratory

11:00 AM **696** *A Study of Helium Ion Induced Secondary Electron Emission*; R Ramachandra; University of Tennessee; BJ Griffin; University of Western Australia, Australia; DC Joy; University of Tennessee

11:15 AM **697** (Invited) *Electron Channeling and Ion Channeling Contrast Imaging of Dislocations in Nitride Thin Films*; C Trager-Cowan; University of Strathclyde, United Kingdom; F Sweeney; University of Sheffield, United Kingdom; PR Edwards, FL Dynowski; University of Strathclyde, United Kingdom; AJ Wilkinson; University of Oxford, United King-

dom; A Winkelmann; Max-Planck-Institut für Mikrostrukturphysik, Germany; AP Day; Aunt Daisy Scientific Ltd, United Kingdom; T Wang, PJ Parbrook; EPSRC National Centre for III-V Technologies, United Kingdom; IM Watson; University of Strathclyde, United Kingdom; DC Joy; University of Tennessee

11:45 AM *Discussion: Where Are We Now with He Ion Microscopy?*

New Analytical Techniques in Microbeam Analysis

Session Chairs: HA Lowers, U.S. Geological Survey
JJ Donovan, University of Oregon

Platform Session

Thursday 8:00 AM Room: Cimarron

8:00 AM **698** (Invited) *Celebrating EDS Technology—30 Years of Turning Photons into Minerals*; AR Butcher, P Gottlieb; Intellection Pty Ltd, Australia

8:30 AM **699** *SLICE, A Database Approach to EDS*; DC Ward, J Colby; xk, Inc

8:45 AM **700** *The Reduction of Pileup Effects in Spectra Collected with Silicon Drift Detectors*; T Elam, R Anderhalt, A Sandborg, J Nicolosi, D Redfern; EDAX Inc

9:00 AM **701** *Anomalous X-ray Emission from Insulator Materials Associated with Low Energy Ion Irradiation*; K Furuya, M Song, M Takeguchi; National Institute for Materials Science, Japan

9:15 AM **702** *SiO₂ Adlayers on Si with a Low Energy Enhancing X-ray Optic*; E Lochner, G Brown, D OHara; Parallax Research, Inc

9:30 AM **703** *A New Approach for Analysis of Thin Films on the Nano-Scale*; PJ Statham, C Penman; Oxford Instruments Analytical Limited, United Kingdom

9:45 AM **704** *Single Particle Analysis Using Microbeam X-rays*; AG Attaelmanan; University of Sharjah, United Arab Emirates

10:00 AM *Coffee Break*

10:30 AM **705** (Invited) *Advances in Quantitative Elemental Analyses by Laser Ablation ICP-MS*; AE Koenig; US Geological Survey

11:00 AM **706** *Improved Analytical Resolution and Sensitivity in EPMA—Some Initial Results from the Ultrachron Development Project*; MJ Jercinovic, ML Williams; University of Massachusetts; DR Snoeyenbos; Cameca Instruments, Inc

11:15 AM **707** *Numerical Calculation of Secondary Fluorescence Effects Near Phase Boundaries in EPMA*; JA Escuder, X Llovet, F Salvat; University of Barcelona, Spain

11:30 AM **708** *Water by EPMA—New Developments*; JJ Donovan; University of Oregon; EP Vicenzi; Smithsonian Institution

11:45 AM **709** *Constructing Ternary Phase Diagrams Directly from EPMA Compositional Maps*; DR Snoeyenbos; Cameca Instruments Inc; DA Wark; General Electric Company; J-C Zhao; Ohio State University

Microscopy Techniques for Ceramics and Composites

Session Chairs: E Corral, Sandia National Laboratories
B Gauntt, Pennsylvania State University

Platform Session

Thursday 9:00 AM Room: La Cienega

9:00 AM **710** (Invited) *Three Dimensional (3D) Visualization of Damage in Metal-Ceramic Nanolayers by Focused Ion Beam (FIB) Serial Sectioning*; N Chawla; Arizona State University

9:30 AM **711** *Quantitative STEM Tomography for Size-controlled Metallic Nanodots on Sintered Titania Photocatalysts*; K Yoshida, L Miao, T Hirayama, S Tanemura; Japan Fine Ceramics Center, Japan; T Torimoto, N Tanaka; Nagoya University, Japan

9:45 AM **712** *EDX Analysis of Grain Boundary Segregation in 1 at% Nd Doped Polycrystalline YAG*; X Li, A Stevenson, G Messing, EC Dickey; Pennsylvania State University

10:00 AM *Coffee Break*

10:30 AM **713** (Invited) *Microstructural and Interface Analysis of Ceramic Eutectic Composites*; EC Dickey, C Philips, AV Polotai; Pennsylvania State University

11:00 AM **714** (Invited) *Hyperspectral Electron Backscattered Diffraction: Applications to Ceramic Materials*; L Brewer; Sandia National Laboratories

11:30 AM **715** *Electron Microprobe Analysis of Glass-to-Metal Seals For Use in Solid-Oxide Fuel Cells*; S Widgeon, E Corral, R Loehman; Sandia National Laboratories

11:45 AM **716** (MAS Distinguished Scholar) *Microbeam Analysis of Plasma Effects in Synthetic Mica-Like Compound*; M Eddy, A Deditius, Q Wei, W Li, R Ewing, L Wang; University of Michigan

Structural Basis of Disease

Session Chair: D Giovannucci, University of Toledo

Platform Session

Thursday 8:30 AM Room: Taos

8:30 AM **717** (Invited) *Visualizing Dynamic Immune Cell Interaction and Function with Two-photon Microscopy*; C Tong, D Barkauskas, J Nthale, E Bays, C Su, H-LR Liou, A Huang; Case Western Reserve University School of Medicine

9:00 AM **718** (Invited) *Intravital Confocal Imaging of Dynamic Behaviors of Langerhans Cells in the Skin*; A Takashima, R Mohr; University of Toledo

9:30 AM **719** (Invited) *Transfer of HIV Infections by Dendritic Cells is Mediated through a Specialized, Surface Accessible Intracellular Compartment*; HJ Yu, M Reuter, D McDonald; Case Western Reserve University School of Medicine

10:00 AM *Coffee Break*

10:30 AM **720** *Spatial and Temporal Interactions of TLR4 Pathway Membrane Components Revealed by Total Internal Reflection Fluorescence (TIRF) Microscopy*; A Carroll-Portillo, RM Noek, B Carson, R Rebeil, JA Timlin; Sandia National Laboratories

11:00 AM **721** *Connexin-43 Facilitates Metastatic Tumor Cell Adhesion to Lung Vasculature*; MK ElZarrad, AB Al-Mehdi; University of South Alabama

11:30 AM **722** *Imaging Cardiac Sympathetic Neurons: A Correlative Study Using Fluorescence and TEM*; K Jackson, C Miller, V Gattone, M Rubart; Indiana University School of Medicine

Microscopy, Microanalysis and Image Analysis in the Pharmaceutical Sciences

Session Chairs: G Torraca, Amgen Inc
LM DiMemmo, Bristol-Myers Squibb

Platform Session

Thursday 8:30 AM Room: Mesilla

8:30 AM **723** (Invited) *In-situ Analysis for Identification of Extraneous Matter in Formulated Drug Product by Raman Spectroscopy*; Y Meléndez; Amgen Inc

9:00 AM **724** (Invited) *Pharmaceutical Research Applications of Transmission Electron Microscopy of Mammalian Cells in Culture*; JR McGill; Bristol-Myers Squibb

9:30 AM **725** (Invited) *Microscopy and Characterization of Triglyceride Polymorphs*; RA Carlton, GR Williams, RL Mueller; GlaxoSmithKline

10:00 AM *Coffee Break*

10:30 AM **726** *Seeing Multifunctional Nano- and Micro-particles Suitable for Imaging & Therapy Using Freeze-fracture Electron Microscopy*; B Papahadjopoulos-Sternberg, J Ackrell; NanoAnalytical Laboratory

11:00 AM **727** (Invited) *Contributions of SEM in Pharmaceutical QbD for Formulation Development and Manufacture Process Control*; JQ Liang, A Lin, W Dulin, M Tesconi, MS Ku; Wyeth Research

11:30 AM **728** (Invited) *Raman Microscopic Applications in Biopharmaceuticals: Unique In Situ Identification of Particulates in Drug Products*; X Cao, Z-Q Wen, A Vance, G Torraca, G Li, W Jing, P Masatani, C Yee; Amgen Inc

Understanding the Synthesis and Properties of Nanostructures and Nanomaterials

Session Chairs: L-M Peng, Peking University, China
S Hofmann, University of Cambridge, United Kingdom

Platform Session

Thursday 8:30 AM Room: Ruidoso

8:30 AM **729** *Analytical Electron Microscopy of InN thin films Prepared by Pulsed Laser Deposition*; G Drazic; Jozef Stefan Institute, Slovenia; E Sarantopoulou, Z Kollia, A-C Cefalas; National Hellenic Research Foundation, Greece; S Kobe; Jozef Stefan Institute, Slovenia

8:45 AM **730** *Microstructural Characterization of InN/GaN Multiple Quantum Wells*; L Zhou; Arizona State University; E Dimakis, TD Moustakas; Boston University; DJ Smith; Arizona State University

9:00 AM **731** *Structural Analysis of Threading Dislocations in AlN Thin Films*; Y Tokumoto, N Shibata, T Mizoguchi, T Yamamoto, Y Ikuhara; University of Tokyo, Japan

9:15 AM **732** *Synthesis and Microstructure of ZnO films deposited on (0001) and r-cut alpha-Al₂O₃ using MOCVD*; CM Wang, LV Saraf, TL Hubler; Pacific Northwest National laboratory; Y Qiang; University of Idaho

9:30 AM **733** *Study of Pd/ZnO Nanocatalysts for Hydrogen Production*; J Liu, J Wang; University of Missouri, St Louis; LF Allard; Oak Ridge National Laboratory

9:45 AM **734** (MSA Presidential Student) *Tin Catalyzed Growth of ZnO Nanostructures*; J Wang, S Liu, J Liu; University of Missouri, St Louis

10:00 AM *Coffee Break*

10:30 AM **735** *TEM/QED Study of FePt Ultrathin Films and Co/CoO Core-Shell Particles*; XZ Li, T George, XH Wei, DJ Sellmyer; University of Nebraska, Lincoln

10:45 AM **736** *Novel 2212-based Fe-rich Strontium Ferrites: Layered and Collapsed Structures*; S Malo, C Lepoitevin, O Perez, D Grebille, M Hervieu; Laboratoire CRISMAT, France

11:00 AM **737** *Microscopy of Clathrate Compounds: Determining the Structure and Hydrogen Encapsulation Properties Through Aberration-Corrected HAADF-STEM*; Q Ramasse; Lawrence Berkeley National Laboratory; NL Okamoto, DG Morgan, D Neiner, CL Condron, J Wang, P Yu, ND Browning, S Kauzlarich; University of California, Davis

11:30 AM **738** *Preparation of Nanoplatelets Using Vacuum Roll Coating*; VZ Poenitzsch, CA Engel, KE Coulter; Southwest Research Institute

11:45 AM **739** *Phase Formation as a Function of Substrate Temperature in Thin Layers of BiTe Grown by CSVT*; F Cruz-Gandarilla, O Vigil-Galan; ESFM-IPN, Mexico; J Stubbs; Johns Hopkins University; S Peripolli, CA Achete; Univ Fed Rio de Janeiro, Brazil; H Calderon; ESFM-IPN, Mexico

High Resolution and Analytical Characterization of Engineered Nanostructures

Session Chairs: B Foran, Aerospace Corporation
Guodo Lian, Texas Instruments

Platform Session

Thursday 8:30 AM Room: Brazos

8:30 AM **740** (Invited) *CNT-FET Schottky Barrier Devices Fabricated by E-beam Lithography*; D Perello; University of Pittsburgh; MJ Kim; University of Texas at Dallas; SY Jeong, BR Kang, DJ Bae, YH Lee; Sungkyunkwan University; M Yun; University of Pittsburgh

9:00 AM **741** *Probing Asymmetric Interfaces of LaMnO₃/SrMnO₃ Superlattices with Aberration-Corrected Scanning Transmission Electron Microscopy*; A Shah; University of Illinois at Urbana-Champaign; S May; Argonne National Laboratory; J Wen, X Zhai, J Eckstein; University of Illinois at Urbana-Champaign; A Bhattacharya; Argonne National Laboratory; J-M Zuo; University of Illinois at Urbana-Champaign

9:15 AM **742** *TEM Characterization of Nanoindentation in Nanoscale Metallic Multilayers*; D Bhattacharyya, N Mara, P Dickerson, R Hoagland, A Misra; Los Alamos National Laboratory

9:30 AM **743** *TEM Correlation between the Structural and Optical Properties Of Rotationally Twinned InP Nanowires*; DC Bell, J Bao, F Capasso; Harvard University; J Wagner, T Martensson, J Tragardh, L Samuelson; Lund University

9:45 AM **744** *Characterization of CNTs-Al Dispersions Using FE-TEM and FE-SEM*; D Poirier, R Gauvin, RAL Drew; McGill University

10:00 AM *Coffee Break*

10:30 AM **745** *Thermal Stability of Hf-Based Gate Dielectric Stacks with Rare-Earth Oxide Capping Layers*; JM LeBeau; University of California Santa Barbara; J Jur, D Lichtenwalner, A Kingon; North Carolina State University; D Klenov; FEI Company; S Stemmer; University of California Santa Barbara

10:45 AM **746** *Electron Energy Loss Spectroscopy Measurements of Amorphization of Polymorphs of TiO₂ Induced by Ion Irradiation*; NJ Zaluzec; Argonne National Laboratory; KL Smith, GR Lumpkin, MG Blackford; Australian Nuclear Science and Technology Organisation

11:00 AM **747** *A TEM Study of Alkaline-Earth Metal Hexaboride Nanowires*; S Li; Northwestern University; S Amin, T Xu; University of North Carolina Charlotte; VP Dravid; Northwestern University

11:15 AM **748** *4D STEM/EELS Characterization of Au Nanodots in a ZnO Thin Film*; DN Leonard; Appalachian State University; K Jarausch; Hitachi High Technologies America, Inc; RD Twesten; Gatan Inc

Image Analysis and Quantitative Microscopy

Session Chairs: RA Panaro, Y-12 National Security Complex
DF Susan, Sandia National Laboratories

Platform Session

Thursday 8:00 AM Room: Pecos

8:00 AM **749** (Invited) *Characterization of Flake Graphite Forms in Gray Iron through Image Analysis*; G Lucas, T Weber, L Barnard; Buehler, Ltd

8:30 AM **750** *The Use of Color in Quantitative Image Analysis*; DF Susan, AC Kilgo; Sandia National Laboratories

8:45 AM **751** *Image Analysis in a Visual Programming Environment*; L Liang; DuPont

9:00 AM **752** *Accuracy of Optical Dimensional Metrology at the Nano-scale*; J Potzick; National Institute of Standards and Technology

9:15 AM **753** *Speed Limitations and Trade-offs for SEM/EDS Particle Analysis*; S Scheller; Bruker AXS Microanalysis

9:30 AM **754** *3D Metrology of Nanoparticles by Tomogram Processing*; X Xu, Z Saghi, G Moebus; University of Sheffield, United Kingdom

9:45 AM **755** (MSA PTSA Award) *Quantifying the Layer Dispersion Degree in Polymer Layered Silicate Nanocomposites by Quantitative Transmission Electron Microscopy*; ZP Luo, RL Littleton, H Kim; Texas A&M University; JH Koo; University of Texas, Austin

10:00 AM *Coffee Break*

10:30 AM **756** (Invited) *Quantitative Analysis of Fracture Surfaces Using Image Analysis*; T Murphy; Hoeganaes Corporation

11:00 AM **757** *BioImageXD Software in Batch Analysis of Integrin Interactions*; KA Pahajoki, PP Kankaanpää, J Heino; University of Turku, Finland

11:15 AM **758** *Correlation of Double Diffraction Pattern and Coincident Site Lattice*; M Shamsuzzoha, R Rahman; University of Alabama

11:30 AM **759** *Spectral Image Aberration Correction Using Image Transformations*; RM Noek, HDT Jones, GA Poulter, JA Timlin; Sandia National Laboratories

11:45 AM **760** *Development of Bayesian Segmentation Techniques for Automated Segmentation of Titanium Alloy Images*; J Simmons, B Bartha; Air Force Research Laboratory; M De Graef; Carnegie Mellon University; M Comer; Purdue University

Hyperspectral Imaging, Cathodoluminescence, and Soft X-ray Analysis

Session Chair: PG Kotula, Sandia National Laboratories

Platform Session

Thursday 1:30 PM Room: Aztec

1:30 PM **761** (Invited) *Multivariate Analysis of XPS Data for Enhanced Chemical Information*; JE Fulghum, K Artyushkova; University of New Mexico

2:00 PM **762** *X-ray Absorption Spectroscopy and Spectrum-Imaging in the SEM*; JA Hunt, BC Gundrum; Gatan

2:15 PM **763** *Acquisition of Combined Real/Reciprocal Space Multi-Dimensional Datasets*; RD Twesten, P Thomas; Gatan

2:30 PM **764** *Hardware and Software for Nano-Area Diffractive Imaging in S/TEM*; VV Volkov, J Wall, Y Zhu; Brookhaven National Laboratory

2:45 PM **765** *Fast Hyperspectral Raman Imaging with Confocal Raman Microscopy at Optimized Spatial Resolution*; M Kalbac; Academy of Sciences Czech Republic; E Lee; HORIBA Jobin Yvon; A Zoubir; HORIBA Jobin Yvon France; A Whitley; HORIBA Jobin Yvon

TEM Accessory Instrumentation and Automation

Session Chairs: A Ziegler, Max Planck Institute for
Biochemistry, Germany
M Marko, Wadsworth Center

Platform Session

Thursday 1:30 PM Room: Picuris

1:30 PM **766** (Invited) *Design and Characterization of 64 MegaPixel Fiber Optic Coupled CMOS Detector for Transmission Electron Microscopy*; H Tietz; TVIPS GmbH, Germany

2:00 PM **767** (Invited) *Spectroscopic Imaging Detectors for Electrons and X-rays*; L Strüder; Max-Planck Institut für Extraterrestrische Physik, Germany; R Hartmann; PNSensor, Germany; H Soltau; PNSensor, Germany; A Ziegler; Max-Planck Institut für Biochemie, Germany

2:30 PM **768** *A Pixel Array Detector for Scanning Transmission Electron Microscopy*; P Ercius, T Caswell, MT Tate, A Ercan, S Gruner, DA Muller; Cornell University

2:45 PM **769** *Development of Fast CCD Cameras for In-situ Electron Microscopy*; L Tsung, B Mollon, Y Jia, P Mooney, C Mao, M Pan; Gatan

3:00 PM **770** (Invited) *Electron Gun Design for Pulsed TEM Operation*; A Ziegler; Max-Planck Institute for Biochemistry, Germany

Problem Solving with Light Microscopy

Session Chairs: DR Rothe, Dow Chemical Company
WA Heeschen, Dow Chemical Company

Platform Session

Thursday 1:30 PM Room: Cimarron

1:30 PM **771** (Invited) *The Importance of Polarized Light Microscopy in the Analytical Setting*; S Sparenga; McCrone Research Institute

2:00 PM **772** *Microscopy Outside the Box*; WA Heeschen; The Dow Chemical Company

2:15 PM **773** (Invited) *Using Light Microscopy in the Analysis of Textile Materials*; M Sullivan; Milliken Research Corporation

2:45 PM **774** (Invited) *Solving Archaeological Mysteries with the Light Microscope*; M King, K Brinsko; McCrone Research Institute; A Bowen; Stoney Forensic, Inc; S Sparenga; McCrone Research Institute

3:15 PM **775** *Dynamic Experiments in Light Microscopy*; DR Rothe, R Samson, E Czerwinski; The Dow Chemical Company

Advances in Electron Tomography for the Physical and Biological Sciences

Session Chairs: A Hoenger, University of Colorado
M Marko, Wadsworth Center

Platform Session

Thursday 1:30 PM Room: San Miguel

1:30 PM **776** (Invited) *Supermounting: Reconstructing Large Cellular Volumes by Stitching Together Laterally Adjacent Tomograms*; D Mastronarde; University of Colorado; P van der Heide, G Morgan, B Marsh; University of Queensland, Australia

2:00 PM **777** *Correlative Cryo-Light and Cryo-Electron Microscopy of Vitreous Sections*; C Schwartz, M Ladinsky, A Hoenger; University of Colorado, Boulder

2:15 PM **778** (Invited) *Image Processing of Vitreous Sections*; D Castano, A Al-Amoudi, A Frangakis; European Molecular Biology Laboratory, Germany

2:45 PM **779** (Invited) *Cryo-Electron Tomography of Coated Vesicles and Modeling the Polyhedral Clathrin Network*; JB Heymann, DC Winkler, Y-I Yim, E Eisenberg, LE Greene, AC Steven; National Institutes of Health

3:15 PM **780** *Bright-Field STEM Tomography of Thick Stained Plastic Sections*; A Sousa, M Hohmann-Marriott, G Zhang, RD Leapman; National Institutes of Health

21st Century Scanning Microscopy—Electrons and He Ions

Session Chairs: R Gauvin, McGill University, Canada
DC Joy, University of Tennessee

Platform Session

Thursday 1:30 PM Room: Dona Ana

1:30 PM **781** (Invited) *Backscattered Electron Imaging in the Scanning Electron Microscope: the Use of Either: (a) High Incident Energy or (b) an Array Detector*; LM Gignac, OC Wells, C-K Hu, J Bruley, CE Murray; IBM T J Watson Research Center; A Frye; IBM Systems & Technology Group

2:00 PM **782** (Invited) *Electron Beam Induced Processing: Experimentation, Simulation, and Applications*; JD Fowlkes; Oak Ridge National Laboratory; DA Smith; The University of Tennessee, Knoxville; PD Rack; Oak Ridge National Laboratory

2:30 PM **783** (Invited) *Imaging in the SEM with X-Rays?*; R Gauvin; McGill University, Canada

3:00 PM **784** *In Situ Imaging of Hydrated Specimens at Room Temperature in ESEM*; J Chen, WAJ Neijssen; FEI Company, China; DJ Stokes; FEI Company, The Netherlands; M Uncovsky; FEI Company, The Czech Republic

3:15 PM **785** *Determination of the Estimated Resolution of SEM Images*; C Probst, H Demers, R Gauvin; McGill University, Canada

Microscopy Techniques for Ceramics and Composites

Session Chairs: L Gammon, The Boeing Company
E Corral, Sandia National Laboratories

Platform Session

Thursday 1:30 PM Room: La Cienega

1:30 PM **786** (Invited) *High Resolution STEM, EELS, and STEM Tomography of Ceramic Materials*; I Arslan; Sandia National Laboratories

2:00 PM **787** *Analytical Electron Microscopy of $K_{0.5}Na_{0.5}NbO_3$ Single Crystal Prepared by Solid State Crystal Growth*; A Bencan; Jožef Stefan Institute, Slovenia; G Matjaž; Institute of Metals and Technology, Slovenia; T Elena, F John, K Marija; Jožef Stefan Institute, Slovenia

2:15 PM **788** *Micro- and Nano-Patterning of Solution-Derived Functional Electronic Ceramics*; GL Brennecka, C Parish, DA Scrymgeour, B Tuttle, L Brewer; Sandia National Laboratories; JG Ekerdt; University of Texas, Austin

2:30 PM **789** *Quantitative STEM-EDS Spectrum Imaging of Phase Transformations in $(Pb,La)(Zr,Ti)O_3$* ; C Parish, GL Brennecka, B Tuttle, L Brewer; Sandia National Laboratories

2:45 PM **790** (Invited) *Toughening of Fiber Reinforced Composite Materials*; B Hayes; Applied Poceramic Inc; L Gammon; The Boeing Company

3:15 PM **791** *New Trends in Morphology Studies of Polymers: A 3D View*; R Kamalakaran; GE India Technology Center, India; O Guise; SABIC Innovative Plastics

Microscopy, Microanalysis and Image Analysis in the Pharmaceutical Sciences

Session Chairs: LM DiMemmo, Bristol-Myers Squibb
G Torraca, Amgen Inc

Platform Session

Thursday 1:30 PM Room: Mesilla

1:30 PM **792** *Negative Stain Transmission Electron Microscopy Quality Assessment of Viruses and Recombinant Virus-Like Particles*; CD Humphrey; Center for Disease Control

2:00 PM **793** *Pore Formation by Antimicrobial Peptide, Magainin 2, in Phospholipid Vesicles Detected and Visualized by Cryo-Electron Microscopy*; M Han; Baylor College of Medicine; Y Mei; Rice University; H Khant, SJ Ludtke; Baylor College of Medicine

2:30 PM **794** *Differentiation Between Foreign Particulate Matter and Silicone Oil Induced Protein Aggregation in Drug Solutions by Automated Raman Spectroscopy*; M Lankers, J Munhall, O Valet; Rap ID Particle Systems GmbH, Germany

2:45 PM **795** *Automatic Acquisition of Large Amounts of 3D Data at the Ultrastructural Level, Using SBFSEM*; C Genoud, S Galloway, S Pfeiffer, B Kraus; GATAN Inc

3:00 PM *Pharma FIB Business Meeting*

Understanding the Synthesis and Properties of Nanostructures and Nanomaterials: Nanoparticles

Session Chairs: P Voyles, University of Wisconsin
R Sharma, Arizona State University

Platform Session

Thursday 1:30 PM Room: Ruidoso

1:30 PM **796** *Synthesis and Characterization of Gold Nanostars, Nanowires and Nanoboxes*; RC Tiruvalam, PL Clasen, MP Harmer, CJ Kiely; Lehigh University

1:45 PM **797** *Investigation of Beam Damage Mechanism of Ball-milled MgH_2 Powder*; M Danaie, M Malac, D Mitlin; University of Alberta, Canada

2:00 PM **798** *Combined Structural and Chemical Investigations of Ceria Nanoparticles in the TEM*; JP Winterstein, J Basu; University of Connecticut; A Herzing, IM Anderson; National Institute of Standards and Technology; CB Carter; University of Connecticut

2:15 PM **799** *Ex Situ and In Situ Synthesis and Characterization of Nickel Nanoparticles on High Surface Area Silica Support*; R Banerjee, PA Crozier; Arizona State University

2:30 PM **800** *3D Characterization and Metrology of Nanostructures by Electron Tomography*; JC Hernandez, AB Hungria; University of Cambridge, United Kingdom; JA Perez-Omil; Universidad de Cadiz, Spain; MS Moreno; Centro Atomico Bariloche, Argentina; EA Coronado; Universidad Nacional de Cordoba, Argentina; G Cempura, A Kruk; AGH University of Science and Technology, Poland; PA Midgley; University of Cambridge, United Kingdom

2:45 PM **801** *Release and Agglomeration Behavior of Nanoscale Iron Core from Carbon-encapsulated Iron Nanoparticles by In-situ TEM Observation*; Z Liu, JC Yang; University of Pittsburgh

3:00 PM **802** *Synthesis, Rietveld Refinement and High Resolution Transmission Electron Microscopy of Yb doped Silicate Oxyapatite for Ultrafast Laser Systems*; Y Shen, Z Dong, A Tok, D Tang; Nanyang Technological University, Singapore; L Wang; University of Michigan

High Resolution and Analytical Characterization of Engineered Nanostructures

Session Chair: J Chung, Texas Instruments

Platform Session

Thursday 1:30 PM Room: Brazos

1:30 PM **803** (Invited) *Characterization of Nanodevices by using In-Situ TEM-STM*; J Kim, D Cha, SY Park, MJ Kim; University of Texas Dallas

2:00 PM **804** *Quantitative Characterisation of Surfaces and Defects on PtRu Nanoparticles Using Combined Exit Wave Restoration and Aberration-Corrected TEM*; LY Chang, C Maunders; McMaster University, Canada; EA Baranova, C Bock; National Research Council, Canada; GA Botton; McMaster University, Canada

2:15 PM **805** (MSA Presidential Student) *Direct Structural Investigation of $Bi_{3.25}La_{0.75}Ti_3O_{12}$ Thin Films on $SrRuO_3/(111) SrTiO_3$* ; L Gunawan; McMaster University, Canada;

O Gautreau, C Harnagea, A Pignolet; INRS Énergie, Matériaux et Télécommunications, Canada; GA Botton; McMaster University, Canada

2:30 PM **806** *Atomic-Level Gas-Solid Interaction during In Situ Redox Processes in Ceria*; R Wang, PA Crozier, R Sharma, J Adams; Arizona State University

2:45 PM **807** *Deep RIE and Cryo-Etching of Nanostructures in Silicon and Polymers*; G DeRose, M Shearn, MD Henry, Y Chen, A Scherer; California Institute of Technology

3:00 PM **808** *Nanobead Formation and Nanopatterning in Glasses*; G Moebus, J Tsai, X Xu, P Bingham, G Yang; University of Sheffield, United Kingdom

3:15 PM **809** *Atomic-resolution Studies of $Ca_3Co_4O_9$ using In-situ Scanning Transmission Electron Microscopy*; G Yang, Y Zhao; University of Illinois at Chicago; K Sader, A Bleloch; SuperSTEM, Daresbury Laboratory, United Kingdom; RF Klie; University of Illinois at Chicago