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Microbeam Analysis Society
Microscopical Society of Canada
Mexican Microscopy Society
Brazilian Society for Microscopy and Microanalysis
Venezuelan Society of Electron Microscopy
European Microbeam Analysis Society

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Microscopy AND Microanalysis

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Aims and Scope

Microscopy and Microanalysis publishes original research papers dealing with a broad range of topics in microscopy and microanalysis. These include articles describing new techniques or instrumentation and their applications, as well as papers in which established methods of microscopy or microanalysis are applied to important problems in the fields of biology or materials science. Microscopy and microanalysis are defined here in a broad sense, and include all current and developing approaches to the imaging and analysis of microstructure. The criteria for acceptance of manuscripts are the originality and significance of the research, the quality of the microscopy or microanalysis involved, and the interest for our readership.

Four types of communications are published in the Journal. **Regular Articles** are of substantial length, and describe the findings of an original research project that satisfies the aims and scope of the Journal, described above. **Communications** are brief technical or scientific articles. **Reviews** summarize the current status of an important area within the aims and scope of the Journal. **Letters to the Editor** usually contain comments on recent articles that have appeared in the Journal.

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59th Annual Meeting

Microbeam Analysis Society
35th Annual Meeting

LONG BEACH, CALIFORNIA

August 5–9, 2001

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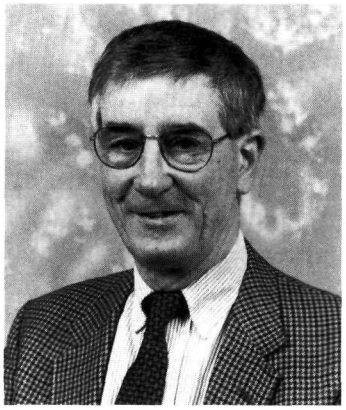

PATRICK ECHLIN
Biological Sciences

Patrick Echlin obtained a B.Sc. degree in Botany from University College, London in 1957 and a Ph.D. in Medical Microbiology from the University of Pennsylvania in 1961. He returned to England to the Department of Plant Sciences, University of Cambridge in 1962 since when he has held a number of research, teaching, administrative, collegiate and ceremonial positions. He was Director of the Multi-Imaging Centre, University of Cambridge until 1999 and an Editor of the Journal of Microscopy for thirty years. He is currently the President of the Royal Microscopical Society and the Director of Cambridge Analytical Microscopy.

Following being severely bitten by the SEM bug in the mid-sixties, his research interests have continued to centre on devising minimally invasive preparation, imaging and analytical procedures for the SEM and x-ray microanalysis of bio-organic samples. His current research centres on localising aluminium in growing tea leaves. He has published 150 research papers, and has written, co-authored and edited nine books on various aspects of electron microscopy and x-ray microanalysis. He continues to enjoy teaching and lecturing all over the world.

THOMAS MULVEY
Physical Sciences

Tom Mulvey's career in Electron Physics has already spanned over 60 years. He began as an apprentice and concluded as a world-renowned expert on the subject with many remembering him producing a lens from his pocket to illustrate the advantages of superconducting technology or simply enjoying his clear lectures on the subject. In 1940, Tom began a pre-University year on a Probationary College Apprentice course at Metropolitan-Vickers Electrical Company (MVE). At the same time he pre-enrolled in the Officers Training Course (OTC) at Manchester University. After this year, Tom joined the Honors Degree Program in Electrical Engineering at Manchester University. He was commissioned as an Electrical Anti-Submarine Officer of the R.N.V.R. with the rank of Sub-Lieutenant.

Returning to civilian life in 1947, Tom rejoined MVE as a staff member of the MV Research Department working on electron microscopes. He also began his Masters research at Manchester and was awarded the M.Sc. in 1948. In the same year he was appointed a staff member at the AEI Research Laboratory at Aldermarston in the lovely County of Berkshire. Here he was involved in early experimental studies with M.E. Haine and J. Dyson to produce the first in-line electron holograms; this work was in connection with Prof. Denis Gabor, the Nobel Laureate and inventor of holography, at Imperial College, London.

In 1965 Tom became Reader and later Professor of Electron Physics at Aston University in Birmingham. He was also appointed Visiting Professor at the University of Delft in the Netherlands, another center of electron optics. His Alma Mater, Manchester University, awarded Tom the degree of D.Sc. in recognition of his important contributions to the understanding of electron physics. He finally took Emeritus status at Aston University in 1986.

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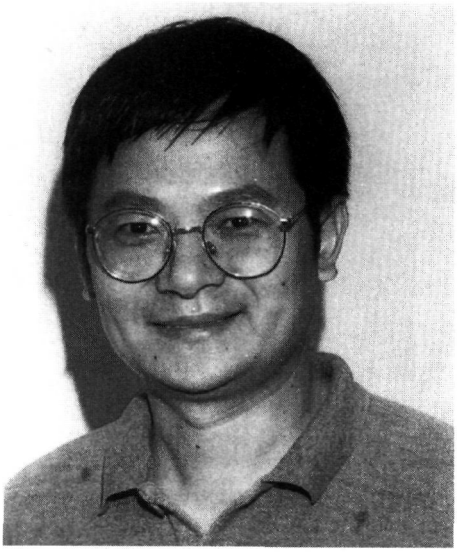

J. M. ZUO

Jian-Min Zuo is an assistant professor of the Department of Materials Science and Engineering and Frederick-Seitz Materials Research Laboratory at University of Illinois, Urbana-Champaign. He received his Ph.D. from Arizona State University in 1989, which was followed by postdoctoral training and research scientist position at ASU before moving to Illinois in 2000. He is the co-author of one book and author of more than 60 publications and several widely used computer programs.

Prof. Zuo's research interest centers on quantitative electron microscopy and the structure and property relationship in advanced materials. His contribution to electron microscopy includes several pioneering works on quantitative electron diffraction, digital detectors and electron diffraction theory. More recently, he has explored new applications of electron diffraction ranging from charge density to phase transitions in complex oxides. Previously, he was a 1989 MSA presidential scholar and the Japan Society for the Promotion of Science postdoctoral research fellow.

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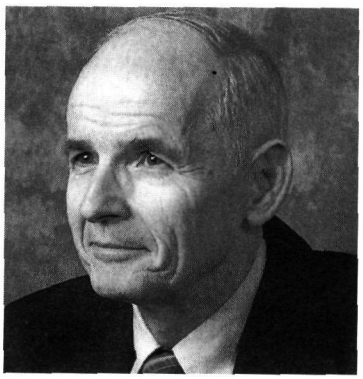

CONRAD BREMER

After receiving his Associate degree in Electrical Technology, Conrad Bremer began what was to become a 44 year career through some of IBM's most interesting advancements: IBM's first Vacuum tube powered computer, diode device development, reed relay and finally to today's most advanced microdevices which IBM supplies worldwide.

In 1960 he moved into IBM's Research Division where he worked on III-V compounds, GaAs injection lasers, third order elastic properties, and then began his association with Dr. O.C. Wells. Together they rebuilt IBM's first SEM into what was to become the vehicle for developing many new techniques for SEM research. Among them, voltage contrast, low-loss imaging, the accurate measurement of low-loss scattering, and forward electron imaging, which was to become the basis of a CD (critical dimension) metrology system some 15 years later at IBM's Burlington Vermont chip plant where he transferred in 1974.

After a 10 year assignment in the E-Beam Lithography area in Burlington, he continued implementing SEM's into CD metrology for in line process control. In association with IBM's Standards lab team he was responsible for the development of an SEM based Fixed Beam Moving Stage metrology system. In his current position as Equipment Engineer for Overlay metrology he continues to bring the latest SEM capability for critical metrology work to IBM's Standards Lab, while supporting manufacturing for overlay and X-ray equipment.

OPTICAL IMAGING ASSOCIATION AWARD
for ACHIEVEMENT in OPTICAL MICROSCOPY

CLARE WATERMAN-STORER

Clare Waterman-Storer became interested in microscopy during her Master's studies at the University of Massachusetts (1991), where she used immuno-electron microscopy to examine changes in muscle after exercise. For this work, she received MSA Presidential and Polaroid scholar awards, and a University of Massachusetts Graduate Fellowship. She received a Ph.D. in 1995 from the University of Pennsylvania where she studied intracellular organelle transport using biochemistry and high resolution confocal and video DIC microscopy of living cells. For this work, she earned her degree with Distinction and was the recipient of the Saul Weingrad Thesis award, as well as fellowships from the American Heart Association and Pennsylvania Muscle Institute. In her post-doctoral studies as a Jane Coffin Childs Fellow in the lab of E.D. Salmon at the University of North Carolina, she used digital multi-mode microscopy to study cytoskeletal dynamics in migrating cells. There, she was a co-discoverer of Fluorescent Speckle Microscopy (FSM), which allows visualization of fluorescent protein dynamics and turnover in living cells. Since 1999, she has been an Assistant Professor in the Department of Cell Biology at the Scripps Research Institute, where she continues her work on the cytoskeleton in cell motility using FSM and multimode imaging. She has authored 29 papers, given 40 invited lectures, been a member of the MSA since 1990, and serves on the editorial board of the Journal of Microscopy.

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BEST PAPER AWARDS
Best Papers Published in Volume 6 of the Journal
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Biological

Y. Zhang, J. Lemasters, and B. Herman, "Localization of rat liver group 11A phospholipase A_2 in secretory pathways: green fluorescent protein approach," Microsc. Microanal. 6 (2000) 150–155.

Physical

O. C. Hellman, J. A. Vandenbroucke, J. Rüsing, D. Isheim, and D. N. Seidman, "Analysis of three-dimensional atom-probe data by the proximity histogram," Microsc. Microanal. 6 (2000) 437–444.

J. Rüsing, J. T. Sebastian, O. C. Hellman, and D. N. Seidman, "Three-dimensional investigation of ceramic/metal heterophase interfaces by atom-probe microscopy," Microsc. Microanal. 6 (2000) 445–451.

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FOR ACHIEVEMENT IN OPTICAL MICROSCOPY

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1961	D. Maxwell Teague
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1963	Charles Schwartz
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1966	Walter Frajola
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1969	W.C. Bigelow
1970	Russell Steere
1971	Robert M. Fisher
1972	Daniel C. Pease
1973	Benjamin Siegel
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1975	Gareth Thomas
1976	Etienne de Harven
1977	T.E. Everhart
1978	Myron Ledbetter
1979	John Silcox
1980	Michael Beer
1981	John Hren
1982	Lee Peachey
1983	David Wittry
1984	J. David Robertson
1985	Dale Johnson
1986	Robert Glaeser
1987	Linn W. Hobbs
1988	John-Paul Revel
1989	Ray Carpenter
1990	Keith R. Porter
1991	Charles Lyman
1992	Patricia Calarco
1993	Michael S. Isaacson
1994	Robert R. Cardell
1995	Terence E. Mitchell
1996	Margaret Ann Goldstein
1997	C. Barry Carter
1998	Ralph M. Albrecht
1999	David Joy
2000	Kenneth Downing

[1]Chair of committee to arrange first meeting
[2]Temporary (pre-constitution)

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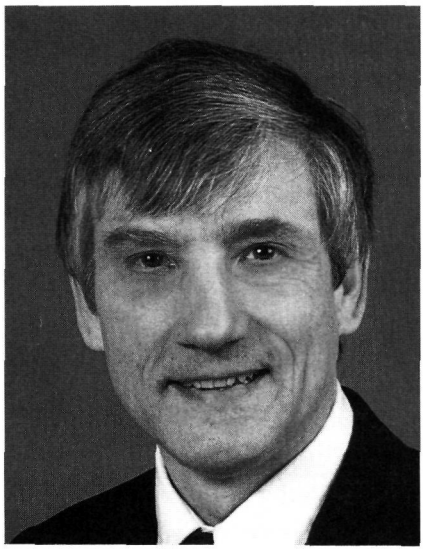
PRESIDENTIAL SCIENCE AWARD



PHILIP BATSON

Philip E. Batson was born in Dexter, Maine and completed both his undergraduate and graduate education at Cornell University, receiving the Ph.D. degree in Applied Physics in 1976 under the direction of John Silcox. After post-doctoral work at the Cavendish Laboratory supported through Glasgow University, he became a Research Staff Member at the IBM Thomas J. Watson Research Center in Yorktown Heights, New York, where he continues to date. His major interest, growing both out of the Cornell and Cavendish experiences, is in the area of EELS-STEM techniques. This led him, in 1986, to build a high energy resolution EELS capability for the STEM which has allowed detailed observation of the conduction bandstructure of silicon-based compounds. He is a Fellow of the American Physical Society, and has served on the board of the New York State Section of the American Physical Society. He is a member of the Institute of Physics, the American Association for Advancement of Science, the Microscopy Society of America and the honor societies, Phi Kappa Phi and Tau Beta Pi.

PRESIDENTIAL SERVICE AWARD

CHARLES E. LYMAN

Charles E. Lyman, Professor of Materials Science and Engineering at Lehigh University, received his B.S. from Cornell in 1968 and his Ph.D. from the Massachusetts Institute of Technology in 1974. Before joining Lehigh in 1984, he worked at the University of Oxford (post-doc), Rensselaer Polytechnic Institute, and the DuPont Co. Dr. Lyman served as the 2000 President of the Microbeam Analysis Society and the 1991 President of the Microscopy Society of America. Currently he is also Editor-in-Chief of the journal Microscopy and Microanalysis, official journal of MAS and MSA. Lyman has organized and participated in many symposia on analytical electron microscopy and the characterization of catalysts sponsored by the American Chemical Society, the Microscopy Society of America, the Microbeam Analysis Society, and the Materials Research Society. Professor Lyman has over 100 technical publications and over 30 years' experience in the application of electron microscopy and microanalysis techniques to materials problems.

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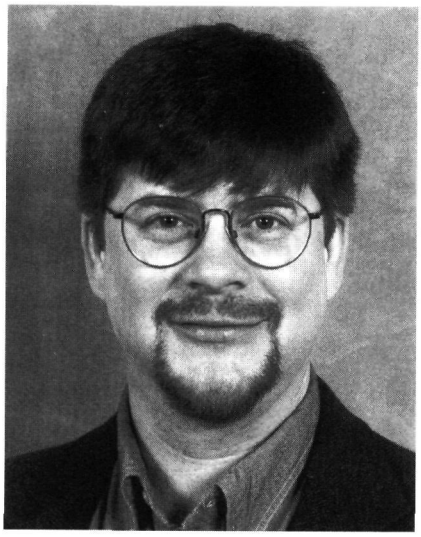

CHRIS JACOBSEN

Chris Jacobsen received his B.A. in Physics from St. Olaf College in 1983, and his PhD in Physics from SUNY Stony Brook in 1988. Following a postdoc at the Center for X-ray Optics at Lawrence Berkeley Laboratory, he returned to Stony Brook first as a postdoc and then as faculty in 1991. His research has centered on coherent x-ray optics, and applications of x-ray microscopy. This has included work in x-ray holography, x-ray lithography, nanofabrication of zone plate optics, x-ray spectroscopy of organic specimens, and image and spectrum analysis; and application of these methods to the study of biological and environmental science specimens. He is the recipient of a Presidential Faculty Fellow award (White House/NSF, 1992), the International Denis Gabor Award (1996), an R&D 100 award (1999), and the MAS Young Scientist Award (2001), and he is a Fellow of the Optical Society of America.

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2001 MAS DISTINGUISHED SCHOLAR AWARDS

P-G Astrand
Stockholm University

S.R. Gilliss
University of Minnesota

P. Horny
Université de Sherbrooke

J.D. Kessler
University of California—Irvine

S.W. Morgan
University of Technology—Sydney

D. Qian
University of Kentucky

S. Rubanov
University of New South Wales

S. Zhu
University of Michigan

MAS PRESIDENTIAL AWARDS

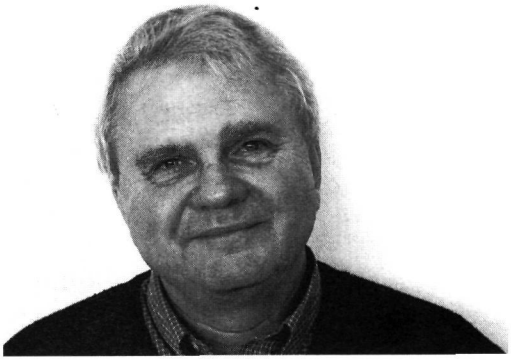
	Science		Service
1977	R. Castaing	1977	P. Lublin
1978	K.F.J. Heinrich	1978	D.R. Beaman
1979	P. Duncumb	1979	M.A. Giles
1980	D.B. Wittry	1980	A.A. Chodos
1981	S.J. Reed	1981	R. Myklebust
1982	R. Shimizu	1982	J. Doyle
1983	J. Philibert	1983	D. Newbury
1984	L.S. Birks	1984	J.I. Goldstein
1985	E. Lifshin	1985	M.C. Finn
1986	R. Myklebust	1986	V. Shull
1987	O.C. Wells	1987	D.C. Joy
1988	J.D. Brown	1988	C.G. Cleaver
1989	J. Hillier	1989	W.F. Chambers
1990	T.E. Everhart	1990	C.E. Fiori
1991	J.I. Goldstein	1991	T.G. Huber
1992	G. Lorimer	1992	E. Etz
	G. Cliff	1993	H.A. Freeman
1993	D.E. Newbury	1994	J.L. Worrall
1994	D.C. Joy	1995	R.W. Linton
1995	G. Bastin	1996	P.F. Hlava
1996	A.V. Somlyo	1997	J.A. Small
	A.P. Somlyo	1998	J.J. McCarthy
1997	D.B. Williams	1999	T.G. Huber
1998	F.H. Schamber	2000	R.B. Marinenko
1999	R.A. Sareen		
2000	R.F. Egerton		

MAS K.F.J. HEINRICH AWARDS

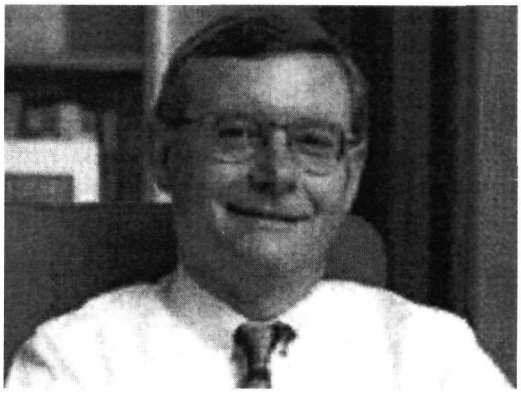
1986	P. Statham	1993	P.E. Russell
1987	J.T. Armstrong	1994	J.R. Michael
1988	D.B. Williams	1995	N. Lewis
1989	R. Leapman	1997	R. Gauvin
1990	R.W. Linton	1998	V.P. Dravid
1991	A.D. Romig, Jr.	1999	J. Bruley
1992	S. Pennycook	2000	H. Ade

MAS PAST PRESIDENTS

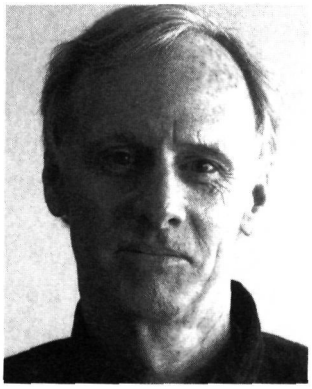
1968	L.S. Birks	1985	D.E. Newbury
1969	K.F.J. Heinrich	1986	C.G. Cleaver
1970	R.E. Ogilvie	1987	C. Fiori
1971	A.A. Chodos	1988	W.F. Chambers
1972	K. Keil	1989	D.B. Wittry
1973	D.R. Beaman	1990	A.D. Romig, Jr.
1974	P. Lublin	1991	J.T. Armstrong
1975	J.W. Colby	1992	D.B. Williams
1976	E. Lifshin	1993	T.G. Huber
1977	J.I. Goldstein	1994	J. Small
1978	J.D. Brown	1995	J. McCarthy
1979	D.F. Kyser	1996	D.E. Johnson
1980	O.C. Wells	1997	Joseph R. Michael
1981	J.R. Coleman	1998	Ryna B. Marineko
1982	R. Myklebust	1999	John J. Friel
1983	R. Bolon	2000	Charles E. Lyman
1984	D.C. Joy		



RONALD M. ANDERSON
MSA President



RICHARD W. LINTON
MAS President



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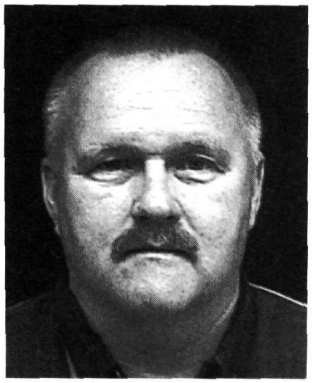
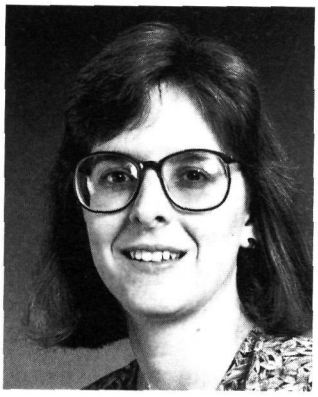
Local Arrangements Chair

ZED MASON
Local Arrangements
Treasurer



ROBERT L. PRICE
MSA Program Chair

EDGAR VOELKL
MSA Program Vice Chair



INGA HOLL MUSSELMAN
MAS Program Co Chair

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FOREWORD

Ronald M. Anderson, President
Microscopy Society of America

Richard W. Linton, President
Microbeam Analysis Society

On behalf of the Microscopy Society of America and the Microbeam Analysis Society, we welcome you to the Microscopy and Microanalysis 2001, meeting.

Once again our thanks are due to Bill Bailey, the MSA Proceedings Editor, whose tireless attention to detail keeps us on schedule with a first-class proceedings available at our meeting. We expect that this will be the last year that our proceedings will be published in this large book format. Our meetings have grown to the point that a single volume will no longer serve our purposes. We are evaluating different options for future proceedings. One attractive suggestion would have invited papers in book format with an enclosed CD, which would contain both invited and contributed papers in a fully searchable electronic format. We cannot predict the final form of the 2002 Proceedings at this writing. We invite interested members of both societies to contact us for more information or to offer suggestions. This is also the last year of our publishing contract with Springer-Verlag. We thank Herb Neimerow and his staff at Springer for five years of professional publishing services. Springer is a first-class operation and a pleasure to work with!

The Program Chair, Bob Price, and Co-Chairs Edgar Voelkl (MSA) and Inga Holl Musselman (MSA), have assembled another excellent technical program that continues the tradition of exciting and current presentations at the meetings. An outstanding list of invited speakers highlight the symposia in a number of key areas. Special symposia this year again cover a wide range, including "Microscopy and Microanalysis in the Real World," a special biological symposium honoring Dr. Inoue, and "Atom Location by Channeling Enhancement of X-Ray and EELS Signals" among others, plus a wide variety of applications in biology and materials research.

A special pre-meeting congress, "Imaging Life: From Cells to Whole Animals," as well as several workshops and short courses on important, basic techniques precedes the meeting. Special symposia, tutorials and presentations sponsored by the Technologists' Forum, the MSA Education Committee, and various commercial exhibitors will be held during the course of the meeting. There are also Presidential Happenings, ceremonies for Award Winners, and the world's largest display of microscopes and related equipment.

Our Local Arrangements Committee, headed by Robert Koch, has provided for an excellent venue at the Long Beach Convention Center for both the scientific sessions and the exhibits. They have also arranged a memorable program of social events including a Sunday night reception on the Queen Mary, the annual golf tournament, a harbor cruise, and a large number of options for enjoying the city and the surrounding area. With its rich history, wealth of educational institutions and active industry, Long Beach provides a wonderful context for this meeting. The Microscopy and Microanalysis Meeting has been managed by the Rebedeau Group, ably directed by Mary Beth Rebedeau in close conjunction with the Local Arrangements and the Program Committees.

We extend congratulations to all the MSA and MAS award winners honored at this meeting. Patrick Echlin and Thomas Mulvey have been selected for MSA Distinguished Scientist Awards in Biological and Physical Sciences, respectively. J. M. Zuo is the Burton medalist, the MSA Outstanding Technologist Award goes to Conrad Bremer, and the MSA Award for Achievement in Optical Microscopy (sponsored by OPIA) goes to Claire Waterman-Storer. The MAS Presidential Science Award goes to Philip Batson and the recipient of the MAS Presidential Service Award is Charles Lyman. This year the K. F. J. Heinrich Award goes to Chris Jacobsen. Special congratulations go to our other award winners: MSA Professional Technical Staff awardees, MSA Presidential Scholars and MAS Distinguished Scholars.

We thank the city of Long Beach for its warm hospitality and all of the organizers and participants for making M&M-2001 the premier event in the world of microscopy. We now look forward to Quebec City, the site of the Microscopy and Microanalysis 2002.

VIDEO AND DIGITAL IMAGING MICROSCOPY: A SYMPOSIUM HONORING DR. SHINYA INOUE (ORGANIZED BY E. SALMON)

LIVING MICROSCOPY: FROM CELLS TO WHOLE ANIMALS (ORGANIZED BY D. PISTON)

BRIDGING THE GAP BETWEEN STRUCTURAL AND MOLECULAR BIOLOGY (ORGANIZED BY B. HERMAN)

BIOLOGICAL ULTRASTRUCTURE (CELLS, TISSUES, ORGAN SYSTEMS)

ELECTRON TOMOGRAPHY: RECENT ADVANCES AND APPLICATIONS (ORGANIZED BY M. MARKO)

ADVANCES IN IMAGING TECHNIQUES FOR BIOMATERIALS (ORGANIZED BY S. EPPEL)

2001: A SPACE ODYSSEY: BIOLOGICAL AND MATERIALS SCIENCE EXPERIMENTS CONDUCTED IN REAL (SPACE) AND SIMULATED (BIOREACTORS) MICROGRAVITY (ORGANIZED BY D. SIMPSON AND L. TERRACIO)

INDUSTRIAL APPLICATIONS OF OPTICAL SPECTROSCOPY IN MICROANALYSIS (ORGANIZED BY F. ADAR AND A. WHITLEY)

EMERGING PATHOGENS: SOMETHING OLD, SOMETHING NEW (ORGANIZED BY S. MILLER AND D. HOWELL)

QUANTITATIVE STEM: IMAGING AND EELS ANALYSIS HONORING THE CONTRIBUTIONS OF JOHN SILCOX (ORGANIZED BY P. BATSON, C. CHEN AND D. MULLER)

QUANTITATIVE TRANSMISSION ELECTRON MICROSCOPY OF INTERFACES (ORGANIZED BY M. RÜEHLE, Y. ZHU AND U. DAHMEN)

APPLICATIONS OF MICROSCOPY: SURFACES/INTERFACES

ATOM LOCATION BY CHANNELING ENHANCEMENT OF X-RAY AND EELS SIGNALS (ALCHEMI) (ORGANIZED BY J. SPENCE)

DIFFRACTION TECHNIQUES IN TEM AND SEM

NOVEL MICROSCOPY ASSISTED CERAMIC DEVELOPMENTS IN MATERIALS SCIENCE AND NANOTECHNOLOGY (ORGANIZED BY P. GAI AND J. LEE)

STUDENT RESEARCH FORUM (ORGANIZED BY R. KOCH AND Z. MASON)

MICROSCOPY IN THE REAL WORLD

FORENSICS AND ENVIRONMENTAL ISSUES (ORGANIZED BY J. WOODWARD AND P. CROZIER)

MICROSCOPY IN THE REAL WORLD: SEMICONDUCTORS AND MATERIALS

MICROSCOPY IN THE REAL WORLD: TRANSMISSION ELECTRON MICROSCOPY

MICROSCOPY IN THE REAL WORLD: NATURAL MATERIALS

MICROSCOPY IN THE REAL WORLD: ALLOYS AND OTHER MATERIALS

SEMICONDUCTORS

THE CELL BIOLOGY OF CANCER (ORGANIZED BY J. JEROME AND B. GUNNING)

APOPTOSIS IN HEALTH AND DISEASE: TECHNIQUES FOR DETECTION AND BIOLOGICAL IMPORTANCE (ORGANIZED BY M. WATANABE)

CORRELATIVE FLUORESCENT MICROSCOPY AND FLOW CYTOMETRY TECHNIQUES (ORGANIZED BY R. SMITH)

MICROSCOPY, MICROANALYSIS AND IMAGING IN THE PHARMACEUTICAL INDUSTRY (ORGANIZED BY S. SAMUELSSON AND B. MALEEFF)

PATHOLOGY

NEUROBIOLOGY

QUANTITATIVE X-RAY MICROANALYSIS IN THE MICROPROBE, IN THE SEM AND IN THE ESEM: THEORY AND PRACTICE (ORGANIZED BY R. GAUVIN AND E. LIFSHIN)

CRYOIMMOBILIZATION, FREEZE SUBSTITUTION AND CRYOEM (ORGANIZED BY S. ERLANDSEN)

MICROBIOLOGY

TUTORIALS
(BIOLOGICAL SCIENCES TUTORIALS ORGANIZED BY G. SOSINSKY)
(PHYSICAL SCIENCES TUTORIALS ORGANIZED BY I. ANDERSON)

TECHNOLOGISTS' FORUM: ESEM/LV/VP: IMAGING AT LOW VACUUM
(ORGANIZED BY J. KILLIUS)

TECHNOLOGISTS' FORUM SPECIAL TOPICS: DUAL BEAM INSTRUMENTATION

TEACHING MICROSCOPY IN THE NEW MILLENNIUM (ORGANIZED BY S. BARLOW)

DIGITAL IMAGING AND ADOBE PHOTOSHOP (ORGANIZED BY J. MACKENZIE)

ASK THE EXPERTS: ADDRESSING ISSUES IN DIGITAL IMAGING FOR THE MICROSCOPIST (ORGANIZED BY J. MASCORRO, R. ANDERSON AND D. SHERMAN)

CAN SCANNING PROBE MICROSCOPES DO MICROANALYSIS? (ORGANIZED BY I. HOLL MUSSELMAN)

CORPORATE SESSION (ORGANIZED BY M. KERSKER)

TEM INSTRUMENT DEVELOPMENT (ORGANIZED BY D. SMITH AND L. ALLARD)

APPLICATIONS AND DEVELOPMENTS OF FOCUSED ION BEAM (FIB) INSTRUMENTS (ORGANIZED BY L. GIANNUZZI)

INSTRUMENT AUTOMATION (ORGANIZED BY W. DeRUIJTER AND C. POTTER)

BIOLOGICAL MICROANALYSIS

CHALLENGES OF CONFOCAL MICROSCOPY IN THE 21ST CENTURY (ORGANIZED BY S. PADDOCK)

LABELING FOR MICROSCOPY AND CORRELATIVE MICROSCOPY (ORGANIZED BY R. ALBRECHT)

FRONTIERS OF X-RAY SPECTROMETRY (EDS AND WDS) IN MICROANALYSIS (ORGANIZED BY D. NEWBURY AND J. H. SCOTT)

CHARACTERIZATION OF CATALYSTS (ORGANIZED BY S. BRADLEY)

ADVANCED COMPOSITES

EELS MICROANALYSIS AT HIGH SENSITIVITY: ADVANCES IN SPECTRUM IMAGING, ENERGY FILTERING AND DETECTION (ORGANIZED BY R. LEAPMAN AND J. BRULEY)

RECENT TECHNIQUES FOR THE FIXATION AND STAINING OF BIOLOGICAL SAMPLES (ORGANIZED BY M. SANDERS AND K. McDONALD)

SPECIMEN PREPARATION FOR MATERIALS SCIENCE

THIN FILMS & COATINGS

METALS AND ALLOYS

OXIDATION/CORROSION

On the cover: Golgi cisternae and microtubules. From Automated Montaging HVEM Tomography of Large Cellular Volumes by D.N. Mastronarde, B.J. Marsh, and M. Otegui, Page 91.

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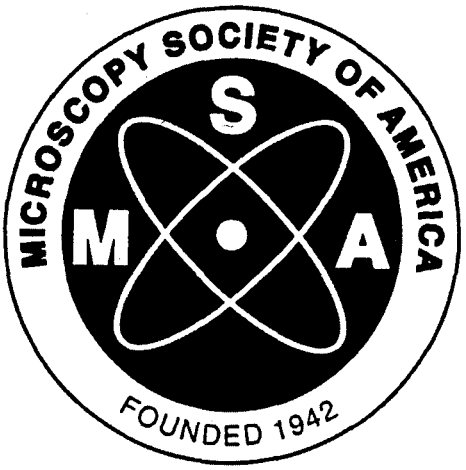

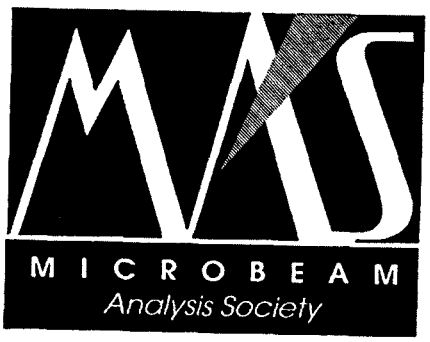

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