Monday, May 13, 2002

3:00 pm	**Registration/Check-In (Hyatt Sendero)**
6:00 pm	**Reception (Hyatt Sendero)**

Tuesday Morning, May 14, 2002

8:20 **Opening Remarks** Gary L. Kellogg, Chair, Local Organizing Committee

8:30 **Welcome** Julia M. Phillips, Director, Physical/Chemical Sciences Center, Sandia Labs

Session 1 Plenary Lecture/Surface Dynamics I
Chair: Jim Hannon

8:45 **Plenary Lecture**
LEEM and PEEM: Past, Present and Future
E. Bauer
Department of Physics and Astronomy, Arizona State University, Tempe, AZ 85287-1504, USA

9:25 **Bulk Defects and Their Role in the Structure and Dynamics of Surfaces**
K. F. McCarty, J. A. Nobel, and N. C. Bartelt
Sandia National Laboratories, Livermore, CA 94551

9:50 ***In-situ* High-Temperature Low-Energy Electron Microscopy Studies of Two-Dimensional TiN Island Decay Kinetics on TiN(111)**
S. Kodambaka, W. Swiech, V. Petrova, I. Petrov, and J. E. Greene
Department of Materials Science, Frederick Seitz Materials Research Laboratory, University of Illinois, 104 South Goodwin Avenue, Urbana, Illinois 61801

10:15 Break

Session 2 Surface Dynamics II
Chair: Raoul van Gastel

10:45 **Bulk Diffusion-limited Surface Dynamics on Pt(111) at High Temperature**
Bene Poelsema[1], J. B. Hannon[2], N. C. Bartelt[3], and G. L. Kellogg[4]
[1] *MESA+ Research Institute and Faculty of Applied. Physics, University of Twente, 7500 AE Enschede, The Netherlands*
[2] *IBM Research Division, T. J. Watson Research Center, Yorktown Heights, NY 10598*
[3] *Sandia National Laboratories*, Livermore, CA 94551*
[4] *Sandia National Laboratories*, Albuquerque, NM 87187-1415*

11:10 **Step-Step Interactions on BCC Refractory Metal Surfaces**
C. P. Flynn, M. Ondrejcek and W. Swiech
Department of Physics and Materials Research Laboratory, University of Illinois at Urbana-Champaign, 104 S. Goodwin Avenue, Urbana, Ill 61820

11:35 **LEEM Studies of Step Fluctuations on Mo(011)**
M. Ondrejcek, W. Swiech and C.P. Flynn
Department of Physics and Materials Research Laboratory, University of Illinois at Urbana-Champaign, 104 S. Goodwin Avenue, Urbana, Ill 61820

12:00 **Lunch**

Tuesday Afternoon, May 14, 2002

Session 3 Phase Transitions on Silicon
Chair: Peter Flynn

1:30 **Si(111) near *Tc*: The Link Between Morphology and Thermodynamics**
J.B. Hannon, J. Tersoff and R.M. Tromp
IBM Research Division, T.J. Watson Research Center, P.O. Box 218, Yorktown Heights, NY 10598

1:55 **Phase Transitions in Indium Layers on Si (111) Studied with LEEM**
A. Pavlovska[1] and M. Giesen[2]
[1] *Department of Physics and Astronomy, Arizona State University, Tempe, AZ 85287-1504, USA*
[2] *ISG 3, Forschungszentrum Juelich, D 52425 Juelich, Germany*

2:20 **Phase Coexistence and Morphology at the Si(110) Surface Phase Transition**
Waclaw Swiech[1], Thomas Schwarz-Selinger[2], and David G. Cahill[1,3]
[1] *Frederick Seitz Materials Research Laboratory, U. of Illinois, 61801, Urbana, IL, USA*
[2] *Centre for Interdisciplinary Plasma Science, Max-Plank-Institut für Plasmaphysik, EURATOM Association, D-85748 Garching, Germany*
[3] *Dept. of Material Science and Engineering, U. of Illinois, 61801, Urbana, IL, USA*

2:45 **Break**

Session 4 Nucleation and Growth/Self-Assembly
Chair: Gayle Thayer

3:15 **The Three-Dimensional Schwoebel-Ehrlich Barrier in Ag Crystallite Growth on Si(111)**
W.X. Tang[1], K.L. Man[1], H. Huang[2] and M.S. Altman[1]
[1] *Department of Physics, Hong Kong University of Science and Technology, Kowloon, Hong Kong*
[2] *Department of Mechanical Engineering, Hong Kong Polytechnic University, Hong Kong*

3:40 **Nucleation, Growth and Diffusion Mechanisms in Silicide Formation**
P. A. Bennett[1] and R. M. Tromp[2]
[1] *Department of Physics and Astronomy, Arizona State University, Tempe AZ 85287-1504*
[2] *T. J. Watson Research Center, Yorktown Heights, NY 10598*

4:05 **LEEM and LEED Study on Growth of Ge on Si(113) Surface**
T.Yasue[1], T.Koshikawa[1] and E.Bauer[2]
[1] *Fundamental Electronics Research Institute and Academic Frontier Promotion Center, Osaka Electro-Communication University, 18-8 Hatsu-cho, Neyagawa, Osaka 572-8530, Japan*
[2] *Department of Physics and Astronomy, Arizona State University, Tempe, AZ 85287-1504, USA*

4:30 **Temperature Dependence of Self-Assembled Pb Domains on Cu(111)**
R. van Gastel[1], N. C. Bartelt[2], and G. L. Kellogg[1]
[1] *Sandia National Laboratories*, Albuquerque, NM 87187-1415*
[2] *Sandia National Laboratories*, Livermore, CA 94551*

Wednesday Morning, May 15, 2002

Session 5 Surface Chemistry/Diamond Films
Chair: Brian Swartzentruber

8:30 **Distinguished Guest Lecture**
Catalytic Surface Reactions Studied with PEEM, SPEM and LEEM
R. Imbihl
Institut für Physikalische Chemie, Universität Hannover, Callinstr. 3-3a, 30167 Hannover, Germany

9:10 **In Situ Emission Microscopy of Field Emitters, Emitter Materials and Emitter Arrays**
G. Mulhollan[1], K. D. Jamison[1], M. E. Kordesch[2]
[1] *Extreme Devices, Inc., 3500 ComSouth Drive, Austin TX 78744*
[2] *Ohio University, Athens OH 45701*

9:35 **Scanning Photoelectron Microscopy Study of As-grown and Heat-treated CVD Boron-doped Diamond Films**
A.A.Zakharov[1], V.Ralchenko[2] and I. Lindau[3]
[1] *Max-Lab, Lund Univ., Box118, S-22100, Lund, Sweden, E-mail: Alex.Zakharov@maxlab.lu.se*
[2] *General Physics Institute, Vavilov str.38, 119991, Moscow, Russia*
[3] *Synch.Rad.Dept., Institute of Physics, Lund Univ., Box118, S-22100, Lund, Sweden*

10:00 **Break**

Session 6 Organic Films
Chair: Ruud Tromp

10:30 **Contacting Pentacene Thin Films**
F.-J. Meyer zu Heringdorf [1], M. C. Reuter[2] and R. M. Tromp[2]
[1] *Universität Essen, 45117 Essen, Germany*
[2] *IBM T.J. Watson Research Center, Yorktown Heights, NY 10510, USA*

10:55 **XPEEM Investigations of Organic Thin Films**
R. Fink [1], Th. Schmidt[2], E. Umbach[2], H. Ade[3], N. Rehse[4] and G. Krausch[4]
[1] *Physikalische Chemie II, Univ. Erlangen, Egerlandstrasse 3, D-91058 Erlangen, Germany*
[2] *Exp. Physik II, Universität Würzburg, Am Hubland, 97074 Würzburg, Germany*
[3] *Dept. of Physics, North Carolina State Univ., Raleigh, NC 27695-8202, USA*
[4] *Physikalische Chemie II, Univ. Bayreuth, D-95440 Bayreuth, Germany*

11:20 **PEEM and MEEM Images of Organic Thin Films Deposited on Structured SiO2/Si(100) Surface**
M. Onoue[1], T. Ibe[1], J. Miyauchi[1], M. Shionoiri[1], A. Abdureym[2], S.Kera[1], K. K. Okudaira[3] and N. Ueno[1]
[1] *Graduate School of Science and Technology, Chiba University, Yayoi-cho, Inage-ku, Chiba 263-8522, Japan*
[2] *Department of Chemistry, Graduate School of Arts and Sciences, The University of Tokyo, Komaba, Meguro, Tokyo 153-8902, Japan*
[3] *Institute for Molecular Science, Myodaiji-cho, Okazaki 444-8585, Japan*

12:45 **Bus Departs for Santa Fe Excursion**

Thursday Morning, May 16, 2002

Session 7 Emerging Emission Microscopies
Chair: George Vizkelethy

8:30 **Distinguished Guest Lecture**
Ion-Induced Electron Emission Microscopy (IEEM)
B. L. Doyle[1], F. D. McDaniel[2], G. Vizkelethy[1], P. Rossi[3] and D. S. Walsh[1]
[1] *Sandia National Laboratories, Albuquerque, NM, USA*
[2] *On sabbatical at SNL from Univ. of North Texas, Denton, TX, USA*
[3] *On sabbatical at SNL from Univ. of Padua and INFN, Italy*

9:10 **Highly Charged Ion Illumination in Emission Microscopy**
A. V. Hamza, A. V. Barnes, Ed Magee, T. Schenkel, J. W. McDonald, M. W. Newman, T. Niedermayr, G. Machicoane, and D. H. Schneider
University of California, Lawrence Livermore National Laboratory
P. O. Box 808, L-353, Livermore, CA 94551

9:35 **The SMART Project: Spectromicroscopy with Aberration Correction**
Th. Schmidt[1], U. Groh[1], R. Fink[1], E. Umbach[1], H. Marchetto[2], W. Engel[2], H.-J. Freund[2], P. Hartel[3], R. Spehr[3], H. Rose[3], G. Lilienkamp[4], E. Bauer[4], D. Preikszas[5], and G. Benner[5]
[1] *Exp. Physik II, Universität Würzburg, Am Hubland, 97074 Würzburg, Germany*
[2] *Fritz-Haber-Institut, Faradayweg 6-8, 14195 Berlin, Germany*,
[3] *TU Darmstadt Hochschulstraße 6, 64289 Darmstadt, Germany*
[4] *Physik. Inst., TU Clausthal, Leibnizstr. 4, 38678 Clausthal-Zellerfeld, Germany*
[5] *LEO Elektronenmikroskopie GmbH, Postfach, 73446 Oberkochen, Germany*

10:00 **Break**

Session 8 Device Applications
Chair: Andreas Schmidt

10:30 **SUPREMA: A Programmable Cathode Lens Mask Technology for E-Beam Lithography**
Ruud M. Tromp and James B. Hannon
IBM T.J. Watson Research Center, P. O. Box 218, Yorktown Heights, NY 10598

10:55 **Imaging of Sub-Nanosecond Processes Using PEEM**
G. Schönhense[1], A. Oelsner[1], A. Krasyuk[1], C.M. Schneider[2], M. Bauer[3] and M. Aeschlimann[3]
[1] *Institut für Physik, Johannes Gutenberg Universität, 55099 Mainz, Germany*
[2] *Institut für Festkörper- und Werkstoffforschung, 01171 Dresden, Germany*
[3] *Fachbereich Physik, Universität Kaiserslautern, 67663 Kaiserslautern, Germany*

11:20 **Scanning Photoelectron Emission Microscopy Images of Band-Bending Across a Silicon PN Junction**
R. J. Phaneuf[1], H. C. Kan[1], L. Gregoratti[2], S. Günther[2], M. Marsi[2] and M. Kiskinova[2]
[1] *Department of Materials and Nuclear Engineering, Department of Physics, and Laboratory for Physical Sciences, University of Maryland College Park, MD 20742-4111*
[2] *Sincrotrone Trieste, Trieste Italy*

11:45 **Photoelectron Emission Microscopy of Ultra-Thin Oxide Covered Devices**
V. W. Ballarotto[1], M. Breban[2], K. Siegrist[2], R.J. Phaneuf[2] and E.D. Williams[2]
[1] *Laboratory for Physical Sciences, 8050 Greenmead Dr, College Park, MD 20740*
[2] *Department of Physics, University of Maryland, College Park, MD 20742*

12:10 **Lunch**

Thursday Afternoon, May 16, 2002

Session 9 Instrumentation
Chair: Ray Phaneuf

1:30 **Distinguished Guest Lecture**
New Developments in Electron Optics for Electron Microscopy
P.E. Batson
IBM Thomas J. Watson Research Center, Yorktown Heights, NY 10598

2:10 **Correction of Chromatic and Spherical Aberrations Utilizing the Time-Structure of Pulsed Excitation Sources**
G. Schönhense[1] and H. Spiecker[2]
[1] *Institut für Physik, Johannes Gutenberg-Universität, 55099 Mainz, Germany*
[2] *LaVision Biotec GmbH, 33619 Bielefeld, Germany*

2:35 **A Comparison of Stigmatically Focusing Magnetic Prisms of Square vs. Round Symmetries**
H.-C. Kan[1] and R. J. Phaneuf[2]
[1] *Department of Physics and Department of Materials and Nuclear Engineering, University of Maryland*
[2] *Laboratory for Physical Sciences, College Park, MD 20740*

3:00 **Break**

Session 10 Magnetic Films 1
Chair: Bene Poelsema

3:30 **Distinguished Guest Lecture**
The Scanning Electron Microscopy with Polarization Analysis (SEMPA): Micromagnetic Structures in Ultrathin Films
H.P. Oepen
Institute of Applied Physics and Microstructure Research Center, University of Hamburg, Jungiusstrasse 11, D-20355 Hamburg, Germany; oepen@physnet.uni-hamburg.de

4:10 **Quantitative Spin-polarized Low Energy Electron Microscopy**
Andreas K. Schmid[1], Norm C. Bartelt[2] and Helmut Poppa[1]
[1] *Lawrence Berkeley Laboratory, MS 72-150, 1 Cyclotron Rd, Berkeley, CA 94720*
[2] *Sandia National Laboratories, Livermore, CA 94550*

4:35 **A LEEM/XMCDPEEM Study of Epitaxial MnAs on GaAs(100)**
E. Bauer[1,2], S. Cherifi[2], L. Daeweritz[3], M. Kaestner[3], S. Heun[2] and A. Locatelli[2]
[1] *Department of Physics and Astronomy, Arizona State University, Tempe, AZ 85287-1504,*
[2] *Sincrotrone Trieste, S.S. 14,km 163.5, 34012 Basovizza, Trieste, Italy,*
[3] *Paul-Drude-Institut fuer Festkoerperelektronik, 10117 Berlin, Germany*

5:15 **Bus Departs for Sandia Tram**

6:00 **Tram Departs for Sandia Crest**

6:30 **Conference Banquet at High Finance Restaurant**

Friday Morning, May 17, 2002

Session 11 Magnetic Films 2
Chair: Ernst Bauer

8:30 **Distinguished Guest Lecture**
Quantum Size Effects
F. J. Himpsel
Dept. of Physics, Univ. of Wisconsin Madison, 1150 University Ave., Madison WI, 53706

9:10 **Magnetic Dichroisms in Absorption and Photoemission for the Element-resolved Magnetic Characterization of Layered Samples in XPEEM**
W. Kuch, L. I. Chelaru, F. Offi, K. Fukumoto, X. Gao, M. Kotsugi, and J. Kirschner
Max-Planck-Institut für Mikrostrukturphysik, Weinberg 2, D-06120 Halle, Germany

9:35 **Shining Light on Interfaces - Using PEEM to Discover Magnetic Coupling**
H. Ohldag, A. Scholl, F. Nolting, T. J. Regan, S. Anders, N. B. Weber, F. U. Hillebrecht, R. L. White and J. Stöhr
Stanford Synchrotron Radiation Laboratory, Stanford, USA
Advanced Light Source, Berkeley, USA
University Düsseldorf, Düsseldorf, Germany
Stanford University, Stanford, USA
Max Planck Institut für Mikrostrukturphysik, Halle, Germany

10:00 **Break**

Session 12 Magnetic Films 3
Chair: Mike Altman

10:30 **Magnetic Domain Structure and Spin Reorientation Transition in Ultrathin Iron Layers on Au(111)**
R. Zdyb[1, 2] and E. Bauer[1]
[1] *Department of Physics and Astronomy, Arizona State University, Tempe, AZ, 85287-1504, USA*
[2] *Institute of Physics, Maria Curie-Sklodowska University, 20031 Lublin, Poland*

10:55 **Photoemission Electron Microscopy Study of $Fe_xNi_{(1-x)}$ Thin Films on Cu(111)**
Y. Sato[1], T. F.Johnson[1], J. A.Giacomo[1], S. Chiang[1], X. D.Zhu[1], D. P.Land[2], F. Nolting[3], and A.Scholl[4]
[1] *Dept. of Physics, University of California, Davis, One Shields Avenue, Davis, CA 95616*
[2] *Dept. of Chemistry, University of California, Davis, CA 95616, One Shields Avenue, Davis, CA 95616*
[3] *Swiss Light Source, Paul Scherrer Institut, CH 5232 Villigen PSI, Switzerland*
[4] *Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, 1 Cyclotron Road, Mail-stop 2-400, CA 94720*

11:20 **A LEEM Study of the Ge(001)-(2x1)-(1x1) Phase Transition; Domain Wall Proliferation and Dimer Break-up**
Esther van Vroonhoven, Harold J.W. Zandvliet and Bene Poelsema
MESA+ Research Institute and Faculty of Applied Physics, University of Twente, P.O.Box 217, Enschede, The Netherlands

11:45 **Closing remarks and open discussion**

12:15 **Workshop ends**