

March 2006 GIMS Newsletter

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GIMS Special Events

Important Reminders

<p>Keithley Award Session 3/15 11:15 AM - 1:39 PM</p> <p>Baltimore Convention Center 308</p> <p>Session # P4</p> <p>Nanocalorimetry: Using Si-micromachined Devices for Thermodynamic Measurements of Thin Films and Tiny Crystals</p> <p><i>Frances Hellman, University of California, Berkeley</i></p> <p><i>and 3 other presenters on related topics...</i></p>	<p>GIMS Business Meeting 3/14 5:30 PM</p> <p>Baltimore Convention Center 301</p> <p>Session # L9</p> <p>All GIMS members welcome!</p> <p>Dinner to follow at the</p> <p><i>Sheraton Inner Harbor Hotel</i></p>
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GIMS Business Meeting Agenda Items

One of the areas we will be discussing is continued work on our GIMS focus areas as outlined here. We are looking for support in creating GIMS focus sessions on these and other topic areas. Please bring ideas to the meeting for topic areas as well as any other way to make GIMS even better for the upcoming year!

New GIMS committees that are focused on specialized areas of instrumentation are being formed for these instrumental areas (chairs are listed):

- Andreas Mandelis: acoustics, acousto-optics, photoacoustics
- Joseph Strosio: scanning probes, STM, AFM
- Robert Duncan: cryogenic instrumentation, thermometry
- Albert Macrander: synchrotron radiation instrumentation

Each committee should:

i) Submit a Call for Papers for a focused session at subsequent March Meetings, and recruit speakers to fill out a reasonably full session. This activity is to be coordinated with the GIMS chair-elect for that particular year. (The chair-elect is always the program chair. For the March 2007 meeting the chair-elect is Carolyn MacDonald, SUNY Albany). An invited speaker slot can be expected for each focused session.

ii) Submit the paperwork to propose a candidate for APS fellowship under the auspices of GIMS.

These activities will start up for the March 2007 meeting in Denver. The above list is not meant to be exhaustive.

GIMS March APS Meeting Session Schedule

Tuesday, March 14, 2006 5:30PM - 6:30PM

Session L9 GIMS: GIMS Business Meeting
Room: Baltimore Convention Center 301

GIMS Business Meeting – Come share your ideas for GIMS and stay for our annual dinner!

Wednesday, March 15, 2006 11:15AM - 1:39PM

Session P4 GIMS: Keithley Award Session
Room: Baltimore Convention Center 308

11:15AM P4.00001 Nanocalorimetry: Using Si-micromachined Devices for Thermodynamic Measurements of Thin Films and Tiny Crystals
FRANCES HELLMAN, Physics Dept., University of California, Berkeley, and Materials Sciences Division, Lawrence Berkeley Lab

11:51AM P4.00002 High-Resolution Microcalorimeter Detectors for X-ray Spectroscopy
TERRENCE JACH, National Institute of Standards and Technology, Gaithersburg, MD

12:27PM P4.00003 Angle-Resolved High Field Low Temperature Calorimetric Measurements of Low Dimensional Materials
NATHANAEL FORTUNE, Smith College

1:03PM P4.00004 Some non-traditional approaches to thermal and thermodynamic measurements¹
ALBERT MIGLIORI, Los Alamos National Laboratory

Wednesday, March 15, 2006 2:30PM - 5:30PM

Session R9 GIMS: Imaging, Signal Detection and Processing
Room: Baltimore Convention Center 301

2:30PM R9.00001 A single pixel camera based on compressed sensing
KEVIN KELLY, Electrical Engineering Dept., Rice University, DHARMPAL TAKHAR,

JASON LASKA, MIKE WAKIN, MARCO DUARTE, BRIAN VAN OSDOL, DROR BARON, RICHARD BARANIUK

2:42PM R9.00002Low temperature confocal microscopy with a 4 K closed-cycle cryostat
ANGELIKA KUENG, CHRISTOPH BOEDEFELD, CHRISTIAN SCHULHAUSER, Attocube System AG, MATTHIAS BUEHLER, JENS HOEHNE, VeriCold Technologies GmbH

2:54PM R9.00003Pi Spectral Self-interference Fluorescence Microscopy
MEHMET DOGAN, Department of Physics, Boston University, ANNA K. SWAN, Department of ECE, Boston University, M. SELIM UNLU, Department of ECE, Boston University, BENNETT B. GOLDBERG, Department of Physics, Boston University

3:06PM R9.00004Enhancing Diffraction-Limited Images Using the Properties of the Point Spread Function
ALEXANDER SMALL, Laboratory of Integrative and Medical Biophysics, National Institute of Child Health and Human Development, NIH, ILKO ILEV, Office of Science and Engineering Laboratories, FDA, AMIR GANDJBAKHCHHE, Laboratory of Integrative and Medical Biophysics, National Institute of Child Health and Human Development, NIH\

3:18PM R9.00005Feasibility of using Backscattered Mueller Matrix Images for Bioaerosol Detection
CHANGHUI LI1, GEORGE W. KATTAWAR2, Texas A&M University

3:30PM R9.00006The Role of Hyperspectral Imaging in the Visualization of Obliterated Writings
HINA AYUB, Oak Ridge Institute for Science & Education

3:42PM R9.00007Femto-second real-time single-shot digitizer
JASON CHOU, OZDAL BOYRAZ, BAHRAM JALALI, Electrical Engineering Department, University of California, Los Angeles

3:54PM R9.00008A photopyroelectric sensor for the high-resolution thermophysical characterization of liquid mixtures
ANNA MATVIENKO, ANDREAS MANDELIS, Center for Advanced Diffusion-Wave Technologies, University of Toronto

4:06PM R9.00009Johnson Noise Thermometry in the range 505 K to 933 K
WESTON TEW, JOHN LABENSKI1, SAE WOO NAM, SAMUEL BENZ, PAUL DRESSELHAUS, NIST, Boulder CO, JOHN MARTINIS, UC Santa Barbara

4:18PM R9.00010Using Temperature-Dependent Phenomena at Oxide Surfaces for Species Recognition in Chemical Sensing
STEVE SEMANCIK, DOUGLAS MEIER, JON EVJU, KURT BENKSTEIN, ZVI BOGER, CHIP MONTGOMERY, Chemical Science and Technology Laboratory, NIST

4:30PM R9.000112D Thermal Imaging of the Surfaces of Optoelectronic Devices by Thermorefectance Microscopy
M. FARZANEH, D. L'UERBEN, Mount Holyoke College, Massachusetts Institute of

Technology, P. MAYER, R. J. RAM, Massachusetts Institute of Technology, JANICE A. HUDGINGS, Mount Holyoke College

4:42PM R9.00012 Suppression of Non-Resonant Background in Broadband Coherent Anti-Stokes Raman Scattering Microscopy with Interferometry

TAK KEE, MARCUS CICERONE, National Institute of Standards and Technology

4:54PM R9.00013 Digital ultrasonic pulse-echo overlap system and algorithm for unambiguous determination of pulse transit time

CRISTIAN PANTEA, DWIGHT RICKEL, ALBERT MIGLIORI, Los Alamos National Laboratory, Materials Science and Technology (MST)-National High Magnetic Field Laboratory (NHMFL), Los Alamos, New Mexico 87545, JIANZHONG ZHANG, YUSHENGZHAO, Los Alamos National Laboratory, Los Alamos Neutron Scattering Center (LANSCE)-12, Los Alamos, New Mexico 87545, SAMI EL-KHATIB, Physics Department, New Mexico State University, Las Cruces, New Mexico 88003, ROBERT LEISURE, Colorado State University, Department of Physics, Fort Collins, Colorado 80523, BAOSHENG LI, Mineral Physics Institute, State University of New York (SUNY) at Stony Brook, Stony Brook, New York 11794

5:06PM R9.00014 Application of the finite element method to resonant ultrasound spectroscopy data analysis

SUSLOV, I. DIXON, S. HEADLEY, E. DEYLE, NHMFL, Tallahassee, FL, A. MIGLIORI, LANL, Los-Alamos, NM.

5:18PM R9.00015 Source distance information and frequency shifts by chirp decomposition

V. GURUPRASAD, Inspired Research, NY

Thursday, March 16, 2006 8:00AM - 10:36AM

Session U9 GIMS: Scanning Probe Microscopy

Room: Baltimore Convention Center 301

8:00AM U9.00001 An in-situ Study of Martensitic Transformation in Shape Memory Alloys using PEEM

GANG XIONG, T. DROUBAY, A. JOLY, W. HESS, Pacific Northwest National Laboratory, Richland, WA 99352, USA, M. CAI, S. LANGFORD, J. DICKINSON, Physics Department, Washington State University, Pullman, WA 99164 USA, M. WU, Q. HE, W. HUANG, School of Mechanical Production Engineering, Nanyang Technological University, 50 Nanyang Ave., Singapore

8:12AM U9.00002 Investigation of ferroelectric materials with scanning microwave microscope

JEWOOK PARK, JONGHOON CHO, SANGYUN LEE, KOOKRIN CHAR, Seoul National University

8:24AM U9.00003 Plasmon-based Enhanced NSOM Spectroscopy

A.T. CHANG, C.L. NEHL, F. TAM, N.J. HALAS, J.H. HAFNER, K.F. KELLY, Rice University

8:36AM U9.00004 Dielectrophoretic Force Microscopy

AL HILTON, BRIAN LYNCH, GARTH SIMPSON, Purdue University Dept. of Chemistry

8:48AM U9.00005 Spectral density of fluctuations for a driven, nonlinear micromechanical oscillator at kinetic phase transition

COREY STAMBAUGH, University of Florida, HO BUN CHAN, University of Florida

9:00AM U9.00006 Nonlinear coupling of nano mechanical resonators to Josephson quantum circuits

XINGXIANG ZHOU, ARI MIZEL, The Pennsylvania State University

9:12AM U9.00007 Nanomanipulation with dynamic AFM

IVAN STICH, PETER DIESKA, Slovak University of Technology, RUBEN PEREZ, Universidad Autonoma de Madrid

9:24AM U9.00008 Assembly of Nanoparticle-Attached AFM Tips for Nano-Optical Applications

TAEKYEONG KIM, SUNG MYUNG, NARAE CHO, SEUNGHUN HONG, School of Physics, Seoul National University, Seoul, Korea

9:36AM U9.00009 Investigation of Electrical Behaviors of Nanostructures through Scanning-Probe Microscopy

BEVERLY CLARK III, HANS HALLEN, NC State University NSOM Lab

9:48AM U9.00010 Scanning Tunneling Potentiometry for Nanoscale Transport Studies

MICHAEL ROZLER, M.R. BEASLEY, Stanford University

10:00AM U9.00011 Alpha Control - A new Concept in SPM Control

P. SPIZIG, D. SANCHEN, G. VOLSWINKLER, W. IBACH, J. KOENEN, WITec GmbH, www.WITec.de

10:12AM U9.00012 Theory of Q-Controlled Dynamic Force Microscopy in Liquids

HENDRIK HOLSCHER, UDO D. SCHWARZ, Dep. Mech. Eng., Yale University

10:24AM U9.00013 Simulation of contact and non-contact AFM images of H-terminated Si(100) surface with a CH₃ impurity

AKIRA MASAGO, SATOSHI WATANABE, Department of Materials Engineering, The University of Tokyo, KATSUNORI TAGAMI, MASARU TSUKADA, Department of Nanoscience and Nanoengineering, Waseda University

Thursday, March 16, 2006 11:15AM - 1:51PM

Session V9 GIMS: Magnetic Force Microscopies

Room: Baltimore Convention Center 301

11:15AM V9.00001 Localized Spectroscopy using a Magnetic Resonance Force Microscope.

, GIORGIO MORESI, QIONG LIN, ETHZ, SCHAHRAZEDE MOUAZIZ, EPFL, ANDREAS HUNKELER, CHRISTIAN DEGEN, URBAN MEIER, ETHZ, JUERGER BRUGGER, EPFL, BEAT MEIER, ETHZ, LABORATORY OF PHYSICAL CHEMISTRY, ETHZ, CH-8093

ZUERICH TEAM, LABORATORY OF MICROSYSTEMS, EPFL, CH-1015 LAUSANNE
TEAM

11:27AM V9.00002High Sensitivity Magnetic Resonance Force Microscopy

P. BANERJEE, Y. CHE, K.C. FONG, T. MEWES¹, V. BHALLAMUDI, YU OBUKHOV, D.V. PELEKHOV, P.C. HAMMEL, Ohio State University

11:39AM V9.00003Using High Coercivity Magnet Particle for High Sensitivity Magnetic Resonance Force Microscopy

K.C. FONG, I.H. LEE, P. BANERJEE, Y. CHE, YU. OBUKHOV, D.V. PELEKHOV, P.C. HAMMEL, Physics Department, Ohio State University

11:51AM V9.00004Experiments in Nuclear Magnetic Resonance Microscopy

YONG LEE, WEI LU, J.-H. CHOI, Korea Research Institute of Standard and Science, H.J. CHIA, U.M. MIRSAIDOV, S. GUCHHAIT, A.D. CAMBOU, R. CARDENAS, K. PARK, J.T. MARKERT, University of Texas at Austin

12:03PM V9.00005Three-dimensional Imaging using Magnetic Resonance Force Microscopy

, I. H. LEE, The Ohio State University, K.C. FONG, The Ohio State University, YU. OBUKHOV, The Ohio State University, D.V. PELEKHOV , The Ohio State University, P.C. HAMMEL, The Ohio State University

12:15PM V9.00006Development of a Room Temperature High Sensitivity Magnetoelectric Scanning Microscope

JASON HATTRICK-SIMPERS, LIYANG DAI, ICHIRO TAKEUCHI, MANFRED WUTTIG, Department of Materials Science and Engineering, University of Maryland

12:27PM V9.00007 Feature doubling in MFM imaging

ZHIFENG DENG, Department of Physics, Stanford University, Stanford CA 94305, USA, ERHAN YENILMEZ, HONGJIE DAI, KATHRYN MOLER

12:39PM V9.00008Progress of Magnetic Force Microscope for detecting spin-polarized electrons in non-magnetic materials

V.P. BHALLAMUDI, The Ohio State University, Y. JUNG, The Ohio State University, D.V. PELEKHOV, The Ohio State University, YU OBUKHOV, The Ohio State University, P.C. HAMMEL, The Ohio State University, T. MEWES, University of Alabama

12:51PM V9.00009Focused ion beam deposition of Co₇₁Cr₁₇Pt₁₂ and Ni₈₀Fe₂₀ on tips for magnetic force microscopy

ALFRED LEE, CHANGBAE HYUN, ALEX DE LOZANNE, Department of Physics, University of Texas at Austin, Austin, TX 78712

1:03PM V9.00010High-resolution scanning hall probe microscopy

CLIFFORD HICKS, LAN LUAN, J. HENDRIK BLUHM, KATHRYN MOLER, Geballe Laboratory for Advanced Materials, Stanford University, JANICE GUIKEMA, Laboratory of Atomic and Solid State Physics, Cornell University, ELI ZELDOV, HADAS SHTRIKMAN, Department of Condensed Matter Physics, Weizmann Institute of Science

1:15PM V9.00011 Scanning Hall Probe Microscopy (SHPM) using Quartz Crystal AFM Feedback

, MUNIR DEDE, KORAY URKMEN, AHMET ORAL, Bilkent, IAN FARRER, DAVID RITCHIE, Cambridge

1:27PM V9.00012 Approach to Dipolar Field Microscopy

CARLOS MERILES, WEI DONG, PHILLIP STALLWORTH, CUNY - City College of New York

1:39PM V9.00013 Force-gradient detection of electron spin resonance

NEIL JENKINS, JOHN MAROHN, Cornell University

Thursday, March 16, 2006 2:30PM - 5:06PM

Session W9 GIMS: X-ray, Light, and Particle Scattering and Diffraction

Room: Baltimore Convention Center 301

2:30PM W9.00001 Strain maps with ppm resolution for single crystal wafers obtained from xray rocking curve maps

ALBERT MACRANDER, YUNCHENG ZHONG, JOSEF MAJ, YONG CHU, Argonne National Laboratory, SZCZESNY KRASNICKI, Carnegie Institute

2:42PM W9.00002 Is Resonant X-ray Scattering Sensitive to the Electronic Structure of the CDW State

J.-D. SU, School of Applied and Engineering Physics, Cornell University, Ithaca, NY 14853, J.D. BROCK, School of Applied and Engineering Physics, Cornell University, Ithaca, NY 14853, K.D. FINKELSTEIN, Cornell High Energy Synchrotron Source, Ithaca, NY 14853

2:54PM W9.00003 Diffraction by Distorted Object – a Unified Description of Coherent X-ray Diffraction and Imaging

QUN SHEN, Argonne National Laboratory, XIANGHUI XIAO, Argonne National Laboratory

3:06PM W9.00004 Recovering Ancient Inscriptions by X-ray Fluorescence Imaging

JUDSON POWERS, NORA DIMITROVA, Cornell University, RONG HUANG, Advanced Photon Source, DETLEF-M. SMILGIES, DON BILDERBACK, Cornell High-Energy Synchrotron Source, KEVIN CLINTON, ROBERT THORNE, Cornell University

3:18PM W9.00005 Site specific valence band structure of SrTiO₃ determined with X-ray standing waves

JORG ZEGENHAGEN, SEBASTIAN THIESS, TIEN-LIN LEE, ESRF, France, FRANCOIS BOTTIN, CEA/DIF, France

3:30PM W9.00006 CMR Manganite Sensors for Total Energy Measurements of the Linear Coherent Light Source Pulsed X-ray Laser

RAJESWARI M. KOLAGANI, G.J. YONG, D.E. COX, R. MUNDLE, A. DAVIDSON III, V.N. SMOLYANINOVA, E. TALANOVA, D. SCHAEFER, Towson University, S. FRIEDRICH, O. DRURY, Z. ALI, L. LI, L. OTT, Lawrence Livermore National Labs, L. YONG, Motorola Labs, TOWSON UNIVERSITY TEAM, LAWRENCE LIVERMORE NATIONAL LABORATORY TEAM, MOTOROLA LABS COLLABORATION

3:42PM W9.00007 Verification and Application of a New Analysis Method for X-ray Diffraction Microscopy

ROBERT SUTER, CHANGSHI XIAO, DANIEL HENNESSY, Department of Physics, Carnegie Mellon University, ULRICH LIENERT, Advanced Photon Source, Argonne National Laboratory

3:54PM W9.00008 Nanometer Focusing X-rays With Multiple Kinoform Lenses

KENNETH EVANSLUTTERODT, AARON STEIN, Brookhaven National Laboratory, NATIONAL SYNCHROTRON LIGHT SOURCE TEAM

4:06PM W9. 00009 Comparison of polycapillary and curved crystal optics for convergent beam powder x-ray diffraction

AYHAN BINGOBALI, WEI ZHOU, CAROLYN MACDONALD, University at Albany, SUNY

4:18PM W9.00010 Light diffraction from a metallic bigrating

RAUL GARCIA-LLAMAS, Departamento de Investigacion en Fisica. Universidad de Sonora, MANUEL LEYVA-LUCERO, Escuela de Ciencias Fisico-Matematicas. Universidad Autonoma de Sinaloa, JORGE GASPAR-ARMENTA, Departamento de Investigacion en Fisica. Universidad de Sonora

4:30PM W9.00011 Electron structure factor: a unique quantity in probing material's properties

JIN-CHENG ZHENG, LIJUN WU, YIMEI ZHU, Center For Functional Nanomaterials, Brookhaven National Laboratory, Upton, New York 11973

4:42PM W9. 00012 ^3He neutron spin filters for polarized neutron scattering

WANGCHUN CHEN, JULIE BORCHERS, YING CHEN, KEVIN O'DONOVAN, ROSS ERWIN, JEFFREY LYNN, CHARLES MAJKRZAK, SARAH MCKENNEY, THOMAS GENTILE, NIST, Gaithersburg, Maryland

4:54PM W9.00013 Alow and hyperthermal energy UHV ion beamline for surface scattering spectroscopies

M.P. RAY, S.A. MOODY, C.E. SOSOLIK, Clemson University Department of Physics and Astronomy

Joseph F. Keithley Award For Advances in Measurement Science

<p>2006 Joseph F. Keithley Award Recipient Frances Hellman University of California, Berkeley</p>	 A portrait photograph of Frances Hellman, a woman with shoulder-length, wavy brown hair, smiling. She is wearing a red top and a thin necklace. The background is a light blue gradient.
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In recognition of using emerging micromachining techniques to significantly extend the range of calorimetry into the realm of nanoscale science by construction of Si based microcalormeters capable of operating in extreme environments with unprecedented sensitivity and accuracy.

Congratulations to the new GIMS Sponsored APS Fellows

Duncan, Robert V.

Condensed Matter Physics

Citation: *For pioneering advances in experimental studies of dynamic critical phenomena near the superfluid transition in 4He , and for the development of novel instrumentation and measurement techniques for use on earth and in space.*

Semancik, Steve

National Institute of Standards and Technology

Citation: *For pioneering work in developing high performance solid state chemical microsensors which are based on the synergistic use of temperature-dependent surface phenomena, nanostructured materials, and micromachined device platforms.*

Budget & Membership Report

As of 12/31/2005 GIMS total assets are \$64,997.48.

GIMS Membership stands at 582 or 1.28% of APS.

2005 Leadership:

A special thank you to all who volunteered time and effort this year including our 2005 Officers

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