March 2006 GIMS Newsletter

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GIMS Special Events

Important Reminders

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<th>GIMS Business Meeting 3/14 5:30 PM</th>
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<td>Baltimore Convention Center 308</td>
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<td>Session # P4</td>
<td>Session # L9</td>
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<td>Nanocalorimetry: Using Si-micromachined Devices for Thermodynamic Measurements of Thin Films and Tiny Crystals</td>
<td>All GIMS members welcome!</td>
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<td>Frances Hellman, University of California, Berkeley</td>
<td>Dinner to follow at the</td>
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<td>and 3 other presenters on related topics…</td>
<td>Sheraton Inner Harbor Hotel</td>
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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 Stroscio: 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 measurements**  
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,
2:42PM R9.00002 Low temperature confocal microscopy with a 4 K closed-cycle cryostat
JASON LASKA, MIKE WAKIN, MARCO DUARTE, BRIAN VAN OSDOL, DROR BARON, RICHARD BARANIUK
ANGELIKA KUENG, CHRISTOPH BOEDEFELD, CHRISTIAN SCHULHAUSER, Attocube System AG, MATTHIAS BUEHLER, JENS HOEHNE, VeriCold Technologies GmbH

2:54PM R9.000034 Pi 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 R9.00004 Enhancing 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 GANDJBAKHCHE, Laboratory of Integrative and Medical Biophysics, National Institute of Child Health and Human Development, NIH

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

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

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

3:54PM R9.00008 A 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 R9.00009 Johnson Noise Thermometry in the range 505 K to 933 K
WESTON TEW, JOHN LABENSKI1, SAE WOO NAM, SAMUEL BENZ, PAUL DRESELHAUS, NIST, Boulder CO, JOHN MARTINIS, UC Santa Barbara

4:18PM R9.00010 Using 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 R9.00011 2D Thermal Imaging of the Surfaces of Optoelectronic Devices by Thermoreflectance Microscopy
M. FARZANEH, D. L’UERBEN, Mount Holyoke College, Massachusetts Institute of Technology
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, YUSHENG ZHAO, 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
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

MICHAEL ROZLER, M.R. BEASLEY, Stanford University

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

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

Session V9 GIMS: Magnetic Force Microscopies
Room: Baltimore Convention Center 301

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

GIORGIO MORESI, QIONG LIN, ETHZ, SCHAHRIZEDE MOUZIZ, EPFL, ANDREAS HUNKELER, CHRISTIAN DEGEN, URBAN MEIER, ETHZ, JUERGER BRUGGER, EPFL, BEAT MEIER, ETHZ, LABORATORY OF PHYSICAL CHEMISTRY, ETHZ, CH-8093
P. BANERJEE, Y. CHE, K.C. FONG, T. MEWES1, V. BHALLAMUDI, YU OBUKHOV, D.V. PELEKHOV, P.C. HAMMEL, Ohio State University

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 V9.00004 Experiments in Nuclear Magnetic Resonance Microscopy

12:03PM V9.00005 Three-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 V9.00006 Development 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

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 V9.00009 Focused 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 V9.00010 High-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
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
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 microcalorimeters 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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