OTST 2009

International Workshop on Optical Terahertz Science and Technology 2009

March 7-11, 2009

Sponsors:

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Welcome to the OTST 2009 website!

Here you will find all the information you need for the International Workshop on Terahertz Science and Technology, 2009 held in Santa Barbara, CA March 7-11. The aim of this workshop is to foster discussion on the newest and most exciting research in the development and applications of terahertz instrumentation based on optical sources. In addition to the presentation of peer reviewed papers, we have added activities for students and newcomers, including a tutorial session immediately before the conference begins. Please see the paper submission page for information on abstract submission. The deadline for abstracts is November 3, 2008. We will emphasize sources and applications at wavelengths between 30 and 3000 microns (0.1-10 THz).
Contemporary scientific topics will be highlighted in areas such as:

- Terahertz pulse generation and detection
- Terahertz time-domain spectroscopy
- THz imaging and nondestructive evaluation
- THz near-field microscopy: developments and applications
- Nanotechnology impact on terahertz instrumentation
- Terahertz characterization of nanomaterials
- Time-resolved terahertz spectroscopy
- Probing ultrafast carrier dynamics and transport in materials
- Novel optical and material development: metamaterials and plasmonics
- Applications to molecular, biomolecular, and liquid phase spectroscopy
- Portal security applications
- Quantum cascade lasers
- Sources based on telecom pumps
- Emerging laser technology for use in optical THz sources and detectors
- Terahertz communications
- Terahertz waveguides
- LIDAR/DIAL systems

Location

We are very happy to announce that OTST 2009 will be held at the Fess Parker Doubletree right on the beach in Santa Barbara. This beautiful location is also very close to the University of California Santa Barbara which includes the **Institute for Terahertz Science and Technology**, the **California Nanosystems Institute** and the Center for Terahertz Science and Technology housing the UCSB free electron laser.

Program

Plenary Speakers:

Alfred Leitenstorfer	(University of Konstanz, Germany)
Daniel Mittleman	(Rice University, USA)

Invited Speakers (confirmed):

S. James Allen	(University of California, Santa Barbara, USA)
Larry Carr	(Brookhaven National Laboratory, USA)
Juraj Darmo	(Vienna University of Technology, Austria)
Daniel Grischkowsky	(Oklahoma State University, USA)
Martina Havenith	(Ruhr-Universität Bochum, Germany)
Janos Hebling	(University of Pecs, Hungary)
Qing Hu	(MIT, USA)
Hiromasa Ito	(RIKEN, Japan)
Peter Uhd Jepsen	(Technical University of Denmark, Denmark)
Michael Johnston	(Oxford University, United Kingdom)
Susumu Komiyama	(University of Tokyo, Japan)
Keith Nelson	(MIT, USA)
Toni Taylor	(Los Alamos National Laboratory, USA)

Program

OTST 2009
March 7 - 11, 2009
Santa Barbara, CA

Saturday March 7, 2009

Tutorials

1:00 - 2:00 pm Mischa Bonn (AMOLF, The Netherlands)
Generation, detection and spectroscopic applications of Thz radiation

2:00 - 3:00 pm Daniel Mittleman (Rice University, USA)
Terahertz waveguiding and near-field optics

3:00 - 3:30 pm Break

3:30 - 4:30 pm Karl Unterrainer (TU Wien, Austria)
THz quantum cascade lasers

4:30 - 5:30 pm Keith Nelson (MIT, USA)
High-power terahertz pulse generation and applications

5:30 - 7:00 pm Welcome Reception
(Exhibit setup)

Main Workshop and Exhibition

- **Sunday March 8, 2009**

8:00 - 9:00	Plenary I
9:00 - 12:00	Invited and Contributed talks
12:00 - 1:30	Lunch Break
1:30 - 5:30	Invited and Contributed talks
5:30 - 7:30	Reception and Poster presentations

- **Monday March 9, 2009**

8:00 - 12:00	Invited and Contributed talks
12:00 - 1:30	Lunch Break
1:30 - 5:30	Invited and Contributed talks
6:30 - 8:30	**Banquet and Grand Challenges speaker** **Prof. Philip H. Bucksbaum, Stanford University**

- **Tuesday March 10, 2009**

8:00 - 9:00	Plenary II
9:00 - 12:00	Invited and Contributed talks
12:00 -1:30	Lunch Break
1:30 - 5:30	Invited and Contributed talks
8:00 - 9:00	Public lecture at UCSB **A journey to the heart of the electromagnetic spectrum** Mark Sherwin

Post Workshop tours and discussions

- **Wednesday March 11, 2009**

9:00 - 11:00 Morning tours of the Center for Terahertz Science and Technology and California Nanosystems Institute on the UCSB Campus

11:00 - 12:30 Presentation and round table discussion: Incorporating THz research into Teaching

Program Committee

We would like to thank all our program committee members for their contribution to making an exciting program. We especially thank our on location committee who tirelessly organized the many events.

Conference Chairs:

Andrea Markelz	(University at Buffalo, USA)
Frank Hegmann	(University of Alberta, Canada)

International Program Committee:

Mark Allen	(Physical Sciences Inc., USA)
Richard Averitt	(Boston University, USA)
Giles Davies	(University of Leeds, UK)
Susan Dexheimer	(Washington State University, USA)
Jerome Faist	(ETH Zurich, Switzerland)
Timothy Korter	(Syracuse University, USA)
Petr Kuzel	(Academy of Sciences of the Czech Republic, Czech Republic)
Paul Planken	(University of Technology Delft, The Netherlands)
Charles Schmuttenmaer	(Yale University, USA)
Jie Shan	(Case Western Reserve University, USA)
Mark Sherwin	(University of California, Santa Barbara, USA)
Alexander Shkurinov	(Moscow State University, Russia)
Koichiro Tanaka	(Kyoto University, Japan)
Masayoshi Tonouchi	(Osaka University, Japan)
Markus Walther	(University of Freiburg, Germany)
Gwyn Williams	(Jefferson Lab, USA)
William Winfree	(NASA Langley Research Center, USA)
David Zimdars	(Picometrix Inc., USA)

Local Organizing Committee (UCSB):

Mark Sherwin	Institute for Terahertz Science and Technology, UCSB
Marlene Rifkin	Institute for Terahertz Science and Technology, UCSB
Elizabeth Strait	Institute for Terahertz Science and Technology, UCSB

We would like to express our appreciation to our break sponsors

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Charlottesville, VA USA

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Cambridge, MA USA

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Picometrix, LLC
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TOPTICA Photonics, Inc.
Victor, NY USA

Virginia Diodes, Inc.
Charlottesville, VA USA

Optical Terahertz Science and Technology 2009 Program

● Saturday, March 7, 2009 ●

Registration Desk Open
12:00 p.m. – 5:00 p.m.
Santa Barbara Ballroom foyer

SaA • Tutorials
1:00 p.m. – 5:30 p.m.
Fiesta Room

SaA1 • 1:00 p.m.
Generation, detection and spectroscopic applications of THz radiation
Mischa Bonn, AMOLF, The Netherlands

SaA2 • 2:00 p.m.
Terahertz waveguiding and near-field optics
Daniel Mittleman (Rice University, USA)

3:00 p.m.–3:30 p.m.
Coffee Break

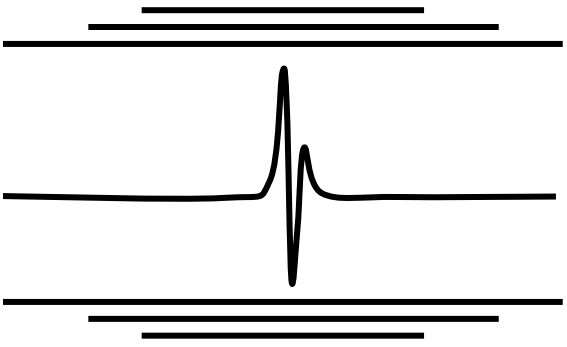
SaA3 • 3:30 p.m.
THz quantum cascade lasers,
Karl Unterrainer, TU Wien, Austria

SaA4 • 4:30 p.m.
High-power terahertz pulse generation and applications,
Keith Nelson, MIT, USA

Welcome Reception

Fiesta Terrace
5:30 - 7:00 p.m.

Registration Desk Open
5:30 p.m. – 7:00 p.m.
Fiesta Room Foyer



● Sunday, March 8, 2009 ●

Registration Desk Open
7:00 a.m. – 5:00 p.m.
San Rafael Foyer

Exhibits Open
9:00 a.m. -5:00 p.m
Santa Ynez

Continental Breakfast
7:00 a.m. – 8:00 a.m.
Santa Ynez

SuA • Waveguides and Near Field Imaging

San Rafael
8:00 a.m.–10:00 a.m.
David Zimdars Presiding

Welcome to OTST 2009 8:00 a.m.

SuA1 8:10 a.m. Plenary
Parallel Plate Metal Waveguides for Extremely Low-Loss Transport of Terahertz Pulses
Rajind Mendis and Daniel M. Mittleman
Rice University, Department of Electrical and Computer Engineering, MS-366, 6100 Main St., Houston, TX 77005, USA

SuA2 9:00 a.m. Invited
Research Opportunities opened by THz-TDS
D. Grischkowsky
School of Electrical and Computer Engineering, Oklahoma State University, Stillwater, OK 74078

SuA3 9:30 a.m.
Near-field terahertz detection on one chip
Yukio Kawano [1,2] and Koji Ishibashi [1]
1 Advanced Device Laboratory, RIKEN, 2-1 Hirosawa, Wako, Saitama 351-0198, Japan
2 PRESTO, Japan Science and Technology Agency (JST), 5-3 Yonbancho, Chiyoda-ku, Tokyo, Japan

SuA4 9:45 a.m.
Imaging the electric and magnetic near-fields in terahertz metamaterials
Andreas Bitzer and Markus Walther
Molecular and Optical Physics, University of Freiburg, Hermann-Herder-Str. 3, D-79104 Freiburg, Germany

10:00 a.m.–10:30 a.m.
Coffee Break
Santa Ynez

SuB • High Power Sources and Nonlinear Response I

San Rafael
10:30 a.m.–12:30 p.m.
Frank Hegmann Presiding

SuB1 10:30 a.m. Invited
Materials Science using Strong-Field Coherent THz Pulses at the NSLS
G. Lawrence Carr, Y. Hidaka, C.-C. Kao, J.B. Murphy, Y. Shen, X.-J. Wang and Y. Xi
National Synchrotron Light Source
Brookhaven National Laboratory, Upton, NY 11973

SuB2 11:00 a.m. Invited
Nonlinear THz spectroscopy of collective vibrational and electronic responses
Matthias C. Hoffmann, Janos Hebling, Harold Y. Hwang, Ka-Lo Yeh, and Keith A. Nelson*
Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA 02139, USA, Department of Experimental Physics, University of Pecs, 7642 Pecs, Hungary

SuB3 11:30 a.m.
Field resolved detection of THz transients tunable from 1 to 107 THz with electric fields up to 108 MV/cm
Alexander Sell, Rüdiger Scheu, Günther Krauss, Alfred Leitenstorfer, and Rupert Huber
Department of Physics and Center for Applied Photonics, University of Konstanz, Universitätsstraße 10, 78464 Konstanz, Germany

SuB4 11:45 a.m.
Terahertz-Induced Extreme Nonlinear Optical Transients in Semiconductor Quantum Wells
Yun-Shik Lee,[1]*, J. R. Danielson,[1] J. P. Prineas,[2] J. T. Steiner,[3] M. Kira,[3] and S.W. Koch[3]
1Department of Physics, Oregon State University, Corvallis, Oregon 97331, USA
2Department of Physics and Astronomy, University of Iowa, Iowa City, Iowa 52242, USA3Department of Physics and Material Sciences Center, Philipps-University, 35032 Marburg, Germany

SuB5 12:00 p.m.
Spatio-temporal control of ultrashort laser pulses using intense single-cycle terahertz pulses
Yuzhen Shen, G. L. Carr, James B. Murphy, Thomas Y. Tsang, Xijie Wang, and Xi Yang,
Brookhaven National Laboratory, Upton, New York

SuB6 12:15 p.m.
Nonlinear terahertz pulse absorption in doped InGaAs
L Razzari(1,2), F H Su(3), G Sharma(1), F Blanchard(1), A Ayesheshim(3), H-C Bandulet(1), R Morandotti(1), JC Kieffer(1), T Ozaki(1), M Reid(4), and F A Hegmann(3)
(1) INRS-EMT, Advanced Laser Light Source, Université du Québec, Varennes, Québec J3X 1S2, Canada
(2) Dipartimento di Elettronica, Università di Pavia, via Ferrata 1, 27100 Pavia, Italy
(3) Department of Physics, University of Alberta, Edmonton, Alberta T6G 2G7, Canada
(4) Department of Physics, University of Northern British Columbia, Prince George, British
Colombia V2N 4Z9, Canada

12:30 p.m.–1:30 p.m.
Lunch

SuC • Metamaterials

San Rafael
1:30 p.m.–3:00 p.m.
Markus Walther Presiding

SuC1 1:30 p.m. Invited
Actively Tunable Terahertz Metamaterials
Antoinette J. Taylor, Hou-Tong Chen, Abul K. Azad and John F. O'Hara,
MPA-CINT, Los Alamos National Laboratory, Los Alamos, NM 87545 USA
Willie J. Padilla,
Department of Physics, Boston College, Chestnut Hill, MA 02467 USA Richard D. Averitt, Department of Physics, Boston University, Boston, MA 02215 USA

SuC2 2:00 p.m.
Tunable Terahertz Metamaterial with Negative Permeability
Hynek Nemec, Petr Kužel, Filip Kadlec and Patrick Mounaix.
Institute of Physics of the AS Czech Republic, Centre de Physique Moléculaire Optique et Hertzienne, Université Bordeaux

SuC3 2:15 p.m.
Frequency Selective Surfaces investigated by Time-Domain THz Spectroscopy based on ASOPS
G. Klatt[1], M. Nage[l2], A. Bartels1,[3], T. Dekorsy[1]
1 Department of Physics and Center for Applied Photonics, University of Konstanz, D-78457 Konstanz, Germany
2 Institute of Semiconductor Electronics, RWTH Aachen University, 52074 Aachen, Germany
3Gigaoptics GmbH, Blarerstrasse 56, 78462 Konstanz, Germany

SuC4 2:30 p.m.
Modulators For Terahertz Quantum Cascade Lasers Using Electrically-Driven Active Metamaterials
X. G. Peralta[1], I. Brener[1], W. J. Padilla[2], E. W. Young[1], A. J. Hoffman[3],M. J. Cich[1], R. D. Averitt[4], M. C. Wanke[1], J. B. Wright[1], H.-T. Chen[5], J. F. O'Hara[5] A. J. Taylor[5], J. Waldman[6], W. D. Goodhue[6], J. Li[6]
1CINT and Sandia National Laboratories, P. O. Box 5800, MS 1082, Albuquerque, NM 87185, USA 2Boston College, Department of Physics, Chestnut Hill, MA 02467, USA 3Princeton University, Department of Electrical Engineering, Princeton, NJ 08540, USA 4Boston University, Department of Physics, Boston, MA 02215, USA 5MPA-CINT, Los Alamos National Laboratory, P. O. Box 1663, MS K771, Los Alamos, NM 87545, USA
6University of Massachusetts Lowell, Department of Physics, Lowell, MA 01854, USA

SuC5 2:45 p.m.
Terahertz Plasmonics Using Subwavelength Fractal Structures
Amit Agrawal[1], Tatsunosuke Matsui[3], Wenqi Zhu1, Z. Valy Vardeny2, and Ajay Nahata[1]
1 Department of Electrical and Computer Engineering, University of Utah, Salt Lake City, UT 84112
2 Physics Department, University of Utah, Salt Lake City, Utah 84112
3 Department of Electrical and Electronic Engineering, Mie University, Tsu, Mie, 514-8507 Japan

3:00 p.m.–3:30 p.m.
Coffee Break
Santa Ynez

SuD • High Power Sources and Nonlinear Response II

San Rafael
3:30 p.m.–5:00 p.m.
Koichiro Tanaka Presiding

SuD1 3:30 p.m. Invited
High energy THz pulse generation by tilted pulse front excitation and their nonlinear optical and spectroscopic application
János Hebling, József A. Fülöp, László Pálfalvi, György Tóth, Gábor Almási
Department of Experimental Physics, University of Pécs, 7624 Pécs, Hungary
Ka-Lo Yeh, Matthias C. Hoffmann, Harold Y. Hwang, Keith A. Nelson
Department of Chemistry, Massachusetts Institute of Technology, Cambridge, Ma 02139, USA

SuD2 4:00 p.m.
Nonlinear Carrier dynamics in Semiconductors probed by THz-Pump/THz-probe spectroscopy
Harold Y. Hwang[1],*, Matthias C. Hoffmann[1], János Hebling[2], Ka-Lo Yeh[1]and Keith A. Nelson[1]
1 Department of Chemistry, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, USA
2 Department of Experimental Physics, University of Pécs, 7624 Hungary

SuD3 4:15 p.m.

Nonlinear carriers dynamics induced by intense terahertz pulses in photoexcited GaAs
F. H. Su(1), F. Blanchard(2), G. Sharma(2), L. Razzari(2,3), A. Ayesheshim(1), T. Cocker(1), R. Morandotti(2), T. Ozaki(2), and F. A. Hegmann(1)
(1) Department of Physics, University of Alberta, Edmonton, Alberta T6G 2G7, Canada
(2) INRS-EMT, Advanced Laser Light Source, Université du Québec, Varennes, Québec J3X 1S2, Canada
(3) Dipartimento di Elettronica, Università di Pavia, via Ferrata 1, 27100 Pavia, Italy

SuD4 4:30 p.m.
Nonlinear THz Interactions with Matter: Application to Semiconductors and Ferroelectrics
H. Wen, D. Daranciang, H. Navirian, and A.M. Lindenberg,
Dept. of Materials Science and Engineering Stanford University, Palo Alto, CA

SuD5 4:45 p.m.
Terahertz emission from BiFeO3 by mean of direct optical modulation of ferroelectric spontaneous polarization
M. Tonouchi , D.S. Rana, K. Takahashi, K.R. Mavani, I. Kawayama, and H. Murakami
Institute of Laser Engineering, Osaka University, 2-6 Yamadaoka, Suita 565-0871, Osaka, Japan

SuE • Poster Session and Reception

Plaza Del Sol Pavilion
5:10 – 7:30 p.m.

Poster presenters can place their posters on the stand marked with their number after 12:30 p.m. on Sunday. To give all participants an opportunity to view the many exciting posters during the poster session please note

Odd numbered posters will be presented between 5:15. – 6:00 p.m.

and

Even numbered posters will be presented between 6:00 - 6:45 p.m..

After 6:45 p.m., poster presenters are welcome to either continue to present their posters or view others. All posters will be moved to the Santa Ynez and San Miguel rooms after Sunday night for continued discussion throughout the workshop. All posters must be removed by 1:30 pm on Tuesday.

Sources

SuE1 Frequency Switching with Bias Polarity in Resonant Tunneling Diodes Oscillating at Around 600GHz
S. Suzuki [1], A.Teranishi [1], K. Hinata [1], M. Asada [1], H. Sugiyama [2], and H. Yokoyama [2]
1 Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology,
2-12-1-S9-3 Ookayama, Meguro-ku, Tokyo 152-8552, Japan.
2 NTT Photonics Laboratories, 3-1 Morinosato Wakamiya, Atsugi, Kanagawa 243-0198, Japan

SuE2 Selecting Wide Band-gap Semiconductor Materials for Laser Induced Semiconductor
Dane J. Phillips, Haojun Luo, John F. Muth, John V. Foreman, Eric R. Smith, Patrick Wellenius and Henry O. Everitt
Digital Fusion Solutions, North Carolina State University, Department of Army

SuE3 Study of Terahertz Emission from High Resistivity Bulk Ga0.69In0.31As Photoconductive Antenna
Suranjana Sengupta[a], Ingrid Wilke[a], and Partha Dutta[b]
a Rensselaer Polytechnic Institute, Department of Physics, Applied Physics and Astronomy, 110 8th Street,
Troy, New York 12180
b Rensselaer Polytechnic Institute, Department of Electrical, Computer and Systems Engineering, 110 8th
Street, Troy, New York 12180

SuE4 Terahertz radiation induced by impact ionization of shallow centers in semiconductor structures
A.V. Andrianov[1], A.O. Zakhar'in[1], V.A. Shalygin[2], D.A. Firsov[2], L.E. Vorobjev[2], A.N. Sofronov[2], V.Yu. Panevin[2],
A.Yu. Egorov[1], A.G. Gladyshev[1], V.S. Mikhrin[1], A.E. Zhukov[1], V.M. Ustionov[1] and N.N. Zinov'ev[1]
1 Ioffe Physical Technical Institute, St. Petersburg, 194021, Russia
2 St. Petersburg State Polytechnic University, St. Petersburg, 195251, Russia

SuE5 Thz Radiation From Nanophononic Structures
*Ji-hoon Jeong Hoonil Jeong and Young-Dahl Jho**
Dep. of Info. and Comm., Gwangju Institute of Science and Technology, Gwangju, 500-712 Koreaa
Eunsoon Oh
Dep. of Physics, Chungnam National University, Daejeon 305-764, Korea
Dai-Sik Kim
Dep. of Physics, Seoul National University, Seoul 151-747, Korea

SuE6 Tunable THz Radiation from a DARC Source
P. Muggli[a], G. Travish[b] and R. Tikhoplav[c]
a University of Southern California, Los Angeles, CA 90089, USA
b University of California, Los Angeles, CA 90094, USA
c RadiaBeam Technologies, Los Angeles, CA 90292, USA

SuE7 THz LASER Emission from Various Types of Mesas of Superconducting Intrinsic
Kazuo Kadowaki, Manabu Tsujimoto, Kazuhiro Yamaki, Hayato Yamaguchi, Takash Yamamoto, Hidetoshi Minami, Richard Klemm, Ulrich Welp, Kenneth Gray and Wai Kwok.
Univeristy of Tsukuba, University of Central Florida, Argonne National Laboratory

SuE8 Terahertz Emission from Super-Superlattice Resonators
Greg Dyer[1], Pavlos Savvidis[1], Borys Kolasa[1], Jing Xu[1], S.J. Allen[1], Gehong Zeng[1], John Bowers[1], Shigeki Kobayashi[1],3, Peter Robrish[2], Rick Trutna[2], Dan Mars[2] andGreg Lee[2]
1 UC Santa Barbara, 2 Agilent, 3 University of Tokyo

SuE9 Toward a 1550 nm InGaAs Photoconductive Switch
Kimani K. Williams, J.Y. Suen, Z.D. Taylor, Hong Lu, R.S. Singh, A.C. Gossard, and E.R. Brown,
University of California, Santa Barbara

SuE10 Terahertz wave emission from an InGaAsN large area emitter
F. Peter[1], S. Winnerl1, H. Schneider[1], M. Helm[1], K. Köhler[2]
[1] Forschungszentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research,
P.O. Box 510119, D-01314 Dresden, Germany
2 Fraunhofer-Institute for Applied Solid State Physics, 79108 Freiburg, Germany

SuE11 Fiber-coupled terahertz transceiver antenna
N. Krumbholz, C. Jördens, T. Hasek, N. Vieweg, B. Scherger, L. Bähr, and M. Koch
TU Braunschweig, Institut für Hochfrequenztechnik, Schleinitzstr. 22, 38106 Braunschweig
M. Mikulics

Institute of Bio and Nanosystems, Research Centre Jülich, D-52425 Jülich and Jülich-Aachen Research Alliance, JARA, Fundamentals of Future Information Technology

Detectors and Metrology

SuE12 Hot-Electron 2DEG Micro-bolometer for a Terahertz Mixer
Rahul Ramaswamy, Kai Wang, Matthew Bell, Andrei Sergeev, Aleksandr Verevkin, Gottfried Strasser and Vladimir Mitin
EE Department State University of New York at Buffalo

SuE13 Ge Quantum Dots on Silicon for Terahertz applications
S.G.E Wissmar[1], H.H. Radamsson[2], M.Kolahdouz[2], J.Y. Andersson[1]
1Acreo AB, Electrum 236, 164 40 Kista, Sweden
2 School of Information & Communication Technology, Royal Institute of Technology, Kista, Sweden

SuE14 Accurate Power Measurement in the Terahertz Region
A. Steiger[1], H.-W. Hübers[2], P. Meindl[1], R. Müller[1], H. Richter[2] and L. Werner[1]
1 Physikalisch-Technische Bundesanstalt (PTB), Berlin, Germany
2 German Aerospace Center (DLR), Berlin, Germany

SuE15 Josephson detector with a high-Tc supercontductgor for the THz pulse radiation
I. Kawayama[1,2], R. Kaneko[1], H. Murakami[1], M. Tonouchi[1]
1 Institute of Laser Engineering, Osaka University
2 PREST-Japan Science and Technology Agency

SuE16 Terahertz Detection in Bundles of Single-Wall Carbon Nanotubes
E. Carrion, M. Muthee, J. Donnovan, R. Zannoni, J. Nicholson, K. S. Yngvesson, and E. Polizzi,
Dept. of Electrical and Computer Engineering, Univ. of Massachusetts, Amherst, MA 01003 USA

SuE17 Narrowband Plasmonic Terahertz Detection with Grating Gated Transistors
G.C. Dyer[2], G.R. Aizin[1], E.A. Shaner[3], M.C. Wanke[3], J.L. Reno[3], J. Mikalopas1, J.D.Crossno[2], and S.J. Allen[2]
1 CUNY, New York, 2 UC Santa Barbara, 3 Sandia National Laboratories

Waveguides and Near Field Imaging

SuE18 Study of field distribution and responsiveness of near-field terahertz imaging probes
M. Berta and F. Kadlec
Institute of Physics, Academy of Sciences of the Czech Republic, Na Slovance 2, CZ-182 21 Prague, Czech Republic

SuE19 Terahertz apertureless near-field microscopy of a vanadium dioxide thin film
Hui Zhan, Michael Hvasta, Victoria Astley, Jason A. Deibel, and Daniel M. Mittleman
Rice University, ECE Dept., MS 366, Houston, TX 77251-1892, USA

SuE20 Terahertz near-field microscopy of metallic microstructures
Markus Walther and Andreas Bitzer
Molecular and Optical Physics, University of Freiburg, Hermann-Herder-Str. 3, D-79104 Freiburg, Germany

SuE21 Terahertz near-field measurements of subwavelength antenna structures
Aurèle J. L. Adam[1], Joseph R. Knab[1], Lucie A. Guestin[1], Eric A. Shaner [2] and Paul C. M. Planken[1]
1 Delft University of Technology, Delft, The Netherlands.
2 Sandia National Laboratories, Albuquerque, New Mexico, USA.

SuE22 Scattering-Probe-Imaging of the Field Confinement on Tapered Metal-Wire Waveguides
Victoria Astley, Hui Zhan, Rajind Mendis, and Daniel M. Mittleman
Rice University, Department of Electrical and Computer Engineering, MS 366, Houston, TX 77251-1892, USA

SuE23 Planar Plasmonic Terahertz Guided-Wave Devices
Wenqi Zhu, Amit Agrawal and Ajay Nahata
Department of Electrical and Computer Engineering, University of Utah, Salt Lake City, UT 84112

SuE24 Solid-State Density Functional Theory Analyses of High-Resolution Waveguide Terahertz Spectra
*Keith C. Oppenheim and Timothy M. Korter**
Department of Chemistry, Syracuse University, Syracuse, NY 13244
Joseph S. Melinger,
U.S. Naval Research Laboratory, Washington, DC 20375
Norman Laman, S. Sree Harsha, and Daniel Grischkowsky
School of Electrical and Computer Engineering, Oklahoma State University, Stillwater, OK 74078

Metamaterials, Plasmonics and Optics

SuE25 Metamaterials For Terahertz Polarimetric Components
X. G. Peralta[1], I. Brener[1], A. Azad2, E. Smirnova[3], A. J. Taylor[2], J. F. O'Hara[2]
1CINT, Sandia National Laboratories, P. O. Box 5800, MS 1082, Albuquerque, NM 87185, USA
2MPA-CINT, Los Alamos National Laboratory, P. O. Box 1663, MS K771, Los Alamos, NM 87545, USA
3ISR-6, Los Alamos National Laboratory, P. O. Box 1663, MS H851, Los Alamos, NM 87545, USA

SuE26 Surface polariton resonance in two-dimensional electric and magnetic metamaterials
Yosuke Minowa[1], Masaya Nagai[1], Hu Tao[2], Xin Zhang[2], Richard D. Averitt[3], and Koichiro Tanaka[1, 4]
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3Department of Physics, Boston University, 590 Commonwealth Ave, Boston, Massachusetts 02215, USA
4Institute for Integrated Cell-Material Sciences, Kyoto University, Kyoto 606-8501, Japan

SuE27 A Beam-Scanning THz Prism with Effective Refractive Index Less than Unity
Rajind Mendis and Daniel M. Mittleman
Rice University, Department of Electrical and Computer Engineering, MS-366, 6100 Main St., Houston, TX 77005, USA

SuE28 A Spatial Light Modulator for Terahertz Beams
Wai Lam Chan[1], Hou-Tong Chen[2], Antoinette J. Taylor[2], Igal Brener[3], Michael Cich[3], Daniel M. Mittleman[1]
1Rice University, Department of Electrical and Computer Engineering, MS 366, Houston, TX 77251-1892
2Center for Integrated Nanotechologies, Los Alamos National Laboratory, PO Box 1663, MS K771, Los Alamos, NM 87545
3Center for Integrated Nanotechologies, Sandia National Laboratories, PO Box 5800, MS1082, Albuquerque, NM 87185

SuE29 EMMs for terahertz modulator applications
Yong Yin
University of Electronic Science and Technology of China, Chengdu, China, 610054

SuE30 Polymer-Jetting Rapid Prototyping Technique for Fabricating THz Components
Hao Xin[1, 2], M. E. Gehm[2], Ziran Wu1, [2]
1Department of Physics, University of Arizona, Tucson AZ 85719, USA
2Department of Electrical and Computer Engineering, University of Arizona, Tucson AZ 85721, USA

SuE31 Low-cost THz achromatic waveplates.
D.G. Sahota, H. K. Haugen, and J. PrestonDepartment of Engineering Physics, McMaster University

SuE32 Tunable THz plasmon resonances and photo-response in InGaAs/InP HEMT
R. E. Peale, H. Saxena
Department of Physics, University of Central Florida, Orlando FL 32816
W. R. Buchwald
AFRL/RYHC Hanscom AFB MA 01731
G. Dyer and S. J. Allen
Department of Physics, University of California Santa Barbara

SuE33 Generation of THz surface plasmons using a compact electron accelerator
Willem Op 't Root, Peter Smorenburg and Jom Luiten
Eindhoven University of Technology, Netherlands

SuE34 Plasmonic Properties of an Individual Slit in a Thin Metallic Film
J. W. Lee and Daniel M. Mittleman
Department of Electrical and Computer Engineering, Rice University, 6100 Main Street, Houston, TX 77005, USA

Quantum Cascade Lasers

SuE35 Design and Testing of a MIR-Pumped Electrically Driven Terahertz Quantum Cascade Heterostructure
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SuE36 Spectral Behavior of a Terahertz Quantum-Cascade Laser
J.M. Hensley, J. Montoya, David J. Cook, M.G. Allen
Physical Sciences Inc., 20 New England Business Center, Andover, Massachusetts 01810-1077
J. Xu, L. Mahler, A. Tredicucci
NEST-INFM and Scuola Normale Superiore, Piazza dei Cavalieri 7, 56126 Pisa, Italy
H.E. Beere and D.A. Ritchie
Cavendish Laboratory, University of Cambridge, Madingley Road CB3 0HE, Cambridge, United Kingdom

SuE37 Third order distributed feedback terahertz quantum cascade laser
M.I.Amanti, M.Fischer, M.Beck, G. Scalari and J.Faist
ETH Zürich, Institute for Quantum Electronics, Wolfgang-Pauli-Strasse 16, 8093 Zürich, Switzerland

SuE38 Investigation on Temperature Performance of Terahertz Quantum Cascade Lasers
Qi Jie Wang1, Mikhail A. Belkin2, Christian Pflügl, and Federico Capasso3
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2 Now with Department of Electrical and Computer Engineering, University of Texas at Austin, Austin, TX 78758, USA
Yannick Chassagneux, and Raffaele Colombelli
Institut d'Electronique Fondamentale, Universite Paris-Sud and CNRS, UMR8622, 91405, Orsay, France
Suraj P. Khanna, Mohamed Lachab, A. Giles Davies, and Edmund H. Linfield
School of Electronic and Electrical Engineering, University of Leeds, Leeds LS29JT, UK

SuE39 Measurement of diffuse scattering from powdered samples using a terahertz quantum cascade laser
P. Dean, M. U. Shaukat, S. P. Khanna, S. Chakraborty, A. G. Davies, and E. H. Linfield*
School of Electronic and Electrical Engineering, University of Leeds, Leeds, LS2 9JT, UK

SuE40 Time-domain spectroscopy of semiconductor terahertz gain medium: theory and experiment
J. Darmo, M. Martl and K. Unterrainer
Photonics Institute, Vienna University of Technology, Gusshausstrasse 25, A-1040 Vienna, Austria

Imaging and Applications

SuE41 Real-time portable THz imaging system and prospective industrial applications
K. Fukunaga[1], N. Sekine[1], I. Hosako[1], N. Oda[2], H. Yoneyama[2], T. Sudoh[3]
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2 NEC Corporation, Tokyo 183-8501, Japan
3 NEC-Avio Infrared Technologies Co., Ltd., Tokyo 141-5835, Japan

SuE42 Video Rate Terahertz Interferometric and Synthetic Aperture Imaging
Zhiwei Liu[1], Ke Su[1], John F. Federici[1], Robert B. Barat[2], Dale E. Gary[1], and Zoi-Heleni Michalopoulou[3]
1 Department of Physics, New Jersey Institute of Technology, Newark, New Jersey 07102, USA
2 Otto York Department of Chemical Engineering, New Jersey Institute of Technology, Newark, New Jersey 07102, USA
3 Department of Mathematical Sciences, New Jersey Institute of Technology, Newark, New Jersey 07102, USA

SuE43 Effects of spatial coherence distortion on terahertz time domain spectroscopy
Francis Théberge, Marc Châteauneuf, and Jacques Dubois
Defence Research & Development Canada (DRDC) Valcartier, 2459 Pie-XI Blvd North,Québec (Québec), Canada, G3J 1X5

SuE44 Required THz developments for military applications
Marc Châteauneuf, Francis Théberge, and Jacques Dubois
Defence Research & Development Canada (DRDC) Valcartier, 2459 Pie-XI Blvd North,
Québec (Québec), Canada, G3J 1X5

SuE45 Active Continuous-wave THz Imaging System in the 0.66-0.76 Terahertz Spectral Region
Martin Heimbeck and Henry Everitt.
University of Alabma, Huntsville, AL ,US Army AMRDEC

SuE46 A Terahertz Radar Imager for the Detection of Concealed Explosives
Christian Drouet d'Aubigny, Abram Young, Dathon Golish, William Peters, Robert
Stickney, Blaine Barker and Christopher Walker
TeraVision Inc., University of Arizona, Pheonix, AZ,

SuE47 Real-Time THz Imaging Using Full-Field Electro-Optic Sampling

A. Ayesheshim, I.Bushfield, and F.A. Hegmann
Department of Physics, University of Alberta, Edmonton, Alberta, Canada T6G 2G7

SuE48 Double Resonance Spectroscopy – A Method for Extending THz Sensing Technologies to Remote Sensing Applications
Dane J. Phillips, Henry O. Everitt and Frank C. De Lucia
Digital Fusion Solutions, Department of Army,Ohio State University

SuE49 Photoconductive antenna array for generation and detection of pulsed and continuous-wave terahertz radiation with application in dual-mode spectroscopy and imaging systems
Daryoosh Saeedkia[1] and Michael Nagel[2]
1 Department of Electrical and Computer Engineering, University of Waterloo, Waterloo, Ontario, Canada
2 Institut fur Halbleitertechnik, RWTH Aachen University, Sommerfeldstr, Aachen, Germany

SuE50 Principal component analysis of time-domain terahertz reflection waveforms to detect composite delamination
*Jeffrey S. White, Artur Chernovsky, Greg Fichter, and David Zimdars**
Picometrix LLC, 2925 Boardwalk Dr., Ann Arbor, MI 48104 USA

SuE51 Paint Thickness Measurement with Multiplexed Time-Domain THz Detection
David J. Cook,
Physical Sciences Inc., 2110 Omega Road, Suite D, San Ramon, California 94583
Richard T. Wainner, Joel M. Hensley, and Mark G. Allen
Physical Sciences Inc., 20 New England Business Center, Andover, Massachusetts 01810

SuE52 Advanced Signal Processing Techniques Applied to Terahertz Inspections on Aerospace Foams
Long Buu Trinh
Lockheed Martin Space Systems Company, Technology Laboratories, 11380 Old Gentilly Rd., New Orleans, LA 70129

SuE53 Contrast-agent-enabled TeraHertz Imaging for Cancer Diagnosis
*Seung Jae Oh[1,2], Inhee Maeng[1], Jinyoung Kang[3], Seungjoo Haam[3], Yong-Min Huh[4], Jin-suck Suh[4] and Joo-Hiuk Son[1]**
1 Laboratory for Terahertz Biophotonics, Department of Physics, University of Seoul, Seoul 130-743, Korea
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3Department of Chemical Engineering, Yonsei University, Seoul 120-752, Korea
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SuE54 Time-domain terahertz measurements of bilayer pharmaceutical tablet mass and compression force
*Jeffrey White, Irl Duling, Mark Kemper, Greg Fichter, and David Zimdars**
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SuE55 Reflective Pulsed THz System for Biomedical Imaging
J.Y.Suen, Z.D.Taylor, W. Li, P. Tewari, R. S. Singh, M. O. Culjat, W. S. Grundfest, H. Lee and E. R. Brown
Electrical Engineering Dept., University of California, Santa Barbara, CA

SuE56 Improved terahertz imaging with synthetic aperture focusing and coherence weighting
Z. Zhang and T. Buma
Department of Electrical and Computer Engineering, University of Delaware, Newark, DE 19716

SuE57 Scattering of THz waves at rough surfaces and its influence on spectral identification
C. S. Wiegand, M. Herrmann, J. Jonuscheit, R. Beigang
Fraunhofer Institute for Physical Measurement Techniques, Erwin-Schrödinger-Str., 67663 Kaiserslautern, Germany

SuE58 Measuring the properties of paper using terahertz time-domain spectroscopy
P. Mousavi[1], F. Haran[2], D.R. Jez[2], and J.S. Dodge[1]
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500 Brooksbank Ave, North Vancouver, British Columbia, CANADA V7J-3S5

SuE59 Terahertz optical properties of high explosives
Joe Hooper, Chris Konek, and John Wilkinson
Research Department, Naval Surface Warfare Center, Indian Head, MD 20640

SuE60 Origin of Wood Birefringence at Terahertz Frequencies
Tara M. Todoruk[a], Ian Hartley[b], and Matthew Reid[a]
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Molecular and Biomolecular Spectroscopy

SuE61 Recent Developments of Miniature THz Spectrometry and Imaging
Brian Schulkin,[1] Thomas Tongue,[1] David Brigada[2] and X.-C. Zhang[2]
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SuE62 Picosecond Dynamics Evolution During Function For Photoactive Yellow Protein
Deepu George, Joseph Knab, Yunfen He, Wei Liang and A. G. Markelz
Physics Department, University at Buffalo, SUNY, Buffalo, NY 14260
Miwa Hara and Wouter Hoff
Microbiology & Molecular Genetics Dept., Oklahoma State University, Stillwater, OK

SuE63 Dielectric relaxation processes in ethanol/water mixtures measured with attenuated total reflection terahertz time-domain spectroscopy
Uffe Møller[1,2], Hiriyuki Yada[2], Takashi Arikawa[2], Jacob Riis Folkenberg[3], Peter Uhd Jepsen[1], and KoichiroTanaka[2,4]
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4 Institute for Integrated Cell-Material Sciences, Kyoto University, Yoshidakonoe-cho, Sakyo-ku, Kyoto 606-8501, Japan

SuE64 Title: Terahertz spectroscopy of explosives
Christopher T. Konek, John Wilkinson, Joseph P. Hooper, Stanley M. Caulder
Indian Head Division, Naval Surface Warfare Center

Indian Head, MD 20640

SuE65 THz molecular rotational spectroscopy
Abram Young, Christopher Walker, Jeffrey Seligman and Christian Drouet d'Aubigny
Teravision Inc., University of Arizona

SuE66 Far-infrared vibrational dynamics of photoactive yellow protein in aqueous solution studied by terahertz time-domain spectroscopy.
E. Castro-Camus, J. Lloyd-Hughes, and M. B. Johnston***
Department of Physics, University of Oxford, Clarendon Laboratory, Parks Road, Oxford OX1 3PU, United Kingdom

SuE67 Hydration dynamics of proteins in vitro and in vivo
Simon Ebbinghaus[1], Seung Joong Kim[2], Matthias Heyden[1], Benjamin Born[1], Xin Yu[3], David M. Leitner[3], Martin Gruebele[2], and Martina Havenith[1]
1 Department of Physical Chemistry II, Ruhr-University Bochum, Germany
2 Department of Physics, University of Illinois, Urbana, USA
3 Department of Chemistry, University of Nevada, Reno, USA

SuE68 THz microscopic investigation for molecular and cellular biology
A.Treizebre[1], D. Legrand[2], J. Mazurier[2], B. Bocquet[1]
1 Institute of Electronic, Microelectronic and Nanotechnology, University of Lille, France
2 Laboratory of Structural and Functionnal Glycobiology, University of Lille, France

Spectroscopy of Materials

SuE69 THz Cyclotron Resonance in Ultrahigh-Mobility Two-Dimensional Electron Gases: Overcoming the Saturation Effect
*X. Wang,[1] D. J. Hilton,[2] D. M. Mittleman,[1] J. Kono,[1], * and J. L. Reno[3]*
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3 Sandia National Laboratories, P.O. Box 5800, Albuquerque, New Mexico 87185

SuE70 Temperature dependence of InP characterized by terahertz time-domain spectroscopy
Caihong Zhang[1], Yuanyuan Wang[1], Jinlong Ma[1], Biaobing Jin[1], Weiwei Xu[1], Lin Kang[1], Jian Chen[1], and Peiheng Wu[1],and Masayoshi Tonouchi[2]*
1 Research Institute of Superconductor Electronics, Nanjing University, Nanjing, 210093, P.R. China
2 Institute of laser Engineering, Osaka University, 2-6 Yamadaoka, Suita, Osaka 565-0871, Japan

SuE71 Terahertz Characterization of Ultra-thin Carbon Nanotube Films
Ziran Wu[1, 2], Xiong Yao[3], Lu Wang[1, 2], Liwei Chen[3], Hao Xin[1, 2]
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SuE72 Using THz Spectroscopy as a Compliment to X-ray Diffraction for Materials Characterization
J. M. Schleicher,[1] A. B. True,[1] E. L. Mierzejewski,[1] A. Mërtiri,[2] K.C. Manda[1,2] N. Fernelius,[3] and C. A. Schmuttenmaer[1]
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2 EIC Laboratories, Inc., 111 Downey St, Norwood, MA 02062-2612 USA
3 AFRL/RXPSO, WPAFB, Dayton, OH 45433-7077, USA

SuE73 Terahertz resonances on a single-walled carbon nanotube
Daniel Santavicca, Joel Chudow, Anthony Annunziata, Luigi Frunzio, Daniel Prober, Meninder Purewal and Philip Kim
Chemistry Department, Yale University, New Haven, CT

SuE74 Superconducting hot electron bolometers for THz spectroscopy
Daniel Santavicca, Anthony Annunziata, Joel Chudow, Luigi Frunzio, Daniel Prober and Charles Schmuttenmaer.
Chemistry Department, Yale University, New Haven, CT

SuE75 Large Magnetodielectric effect observed in multiferroic $CoCr_2O_4$ film using terahertz time-domain spectroscopy
K. R. Mavani[a], M. Nagai[b], D. S. Rana[c], M. Tonouchi[c], K. Tanaka[a,b]
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b Deparment of Physics, Kyoto University, Kitashirakawa, Kyoto 606-8502, Japan
c Institute of Laser Engineering, Osaka University, Suita, Osaka 565-0871, Japan

SuE76 Effect of analytical and experimental errors in Terahertz Differential Time-domain Spectroscopy (THz DTDS)
S. Ramani-Reiten and Alan Cheville
Electrical Engineering Department, Oklahoma State Unversity, Stillwater, OK

SuE77 Time-Domain THz Vibrational Spectroscopy of a Charge-Density-Wave System
A. Bandyopadhyay, C.R. Hamner and S.L. Dexheimer
Department of Physics and Astronomy, Washington State University, Pullman, WA 99164-2814

Time-Resolved Spectroscopy and Ultrafast Dynamics

SuE78 Non-equilibrium carrier dynamics in CdSe nanostructures
P. C. Upadhya, N. Smith, A. K. Azad, J. Hollingsworth, A. J. Taylor, and R. P. Prasankumar
Center for Integrated Nanotechnologies, Los Alamos National Laboratory, Los Alamos, NM 87545, USA

SuE79 A Facility for Pump-probe THz Magnetospectroscopy at the NSLS*
G.L. Carr
National Synchrotron Light Source, Brookhaven National Laboratory
J.J. Tu
Physics Department, City College of the City University of New York

SuE80 Charge dynamics in semiconductors and quantum wells from THz emission
James N. Heyman
Department of Physics and Astronomy, Macalester College, St. Paul MN 55105 USA

SuE81 Terahertz response of free charge carriers localized in semiconductor Nanoparticles
Hynek Nemec and Petr Kuzel
Institute of Physics, Academy of Sciences of the Czech Republic, Na Slovance 2, 18221 Prague 8, Czech Republic

SuE82 Conductivity of nanoporous InP membranes investigated using terahertz spectroscopy

S. K. E. Merchant, J. Lloyd-Hughes, P. Parkinson, L. M. Herz, and M. B. Johnston
Clarendon Laboratory, Department of Physics, University of Oxford, Parks Road, Oxford, OX1 3PU, United Kingdom.
L. Sirbu and I. M. Tiginyanu
Laboratory of Low Dimensional Semiconductor Structures, Institute of Applied Physics,
Academy of Sciences and Technical University of Moldova, 2004 Chisinau, Moldova.

SuE83 Monte-Carlo simulation of the terahertz conductivity of electrons confined to nanometer-size boxes
D. M. J. Baillie, T. Cocker, F. Marsiglio, R. D. Sydora, and F. A. Hegmann
Department of Physics, University of Alberta, Edmonton, Alberta T6G 2G7, Canada

SuE84 THz Spectroscopy and Carrier Dynamics of InN Nanorod Arrays
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SuE85 Charge carrier dynamics in ZnO nanowires measured by Terahertz Time-Domain Spectroscopy
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The Netherlands
2 Department of Condensed Matter and Interfaces, Debye Institute, Utrecht University,
Princetonplein 5, 3508 TA Utrecht, The Netherlands

SuE86 Probing Carbon Nanotubes with Terahertz Time-Domain Spectroscopy
Hugen Yan, Yang Wu, and Tony F. Heinz
Departments of Physics and Electrical Engineering
Columbia University, New York, NY 10027 USA

SuE87 Origin of the suppression in low frequency terahertz conductivity in dilute GaAs nitride and bismide alloys
T Cocker(1), X Lu(2), D G Cooke(3), E C Young (2), T Tiedje(2), and F A Hegmann(1)
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(2) Department of Physics, University of British Columbia, British Columbia, V6T 1Z4, Canada
(3) DTU Fotonik, Department of Photonics Engineering, Technical University of Denmark, 2800 Kgs.
Lyngby, Denmark

SuE88 Ultrafast carrier response of InGaAs with embedded ErAs nanoislands
Abul K. Azad[1], Rohit P. Prasankumar[1], Diyar Talbayev[1], Antoinette J. Taylor[1], Richard D. Averitt[2], Joshua. M. O. Zide[3], Hong Lu[4], Arthur C. Gossard[4], and John F. O'Hara[1]
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2 Department of Physics, Boston University, 590 Commonwealth Avenue, Boston, MA-02215
3 Electrical and Computer Engineering, University of Delaware, DE-19716
4 Materials Department, University of California, Santa Barbara, CA-93106

SuE89 Ultra-broadband time domain spectroscopy from sub-THz to near- infrared region
M. Ashida[a,b], R. Akai[a], H. Shimosato[a], I. Katayama[c], K. Miyamoto[d] and H. Ito[d,e]
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c Interdisciplinary Research Center, Yokohama National University, Yokohama, 240-8501, Japan
d RIKEN, 519-1399 Aramaki-Aoba, Aoba, Sendai 980-0845, Japan
e Graduate School of Engineering, Tohoku University, Aoba, Sendai 980-8579, Japan

SuE90 Photoinduced Carrier Dynamics in Organic Bulk Heterojunctions Studied by Optical Pump-THz Probe Time Domain Spectroscopy
Yi-Hsing Peng, Weilou Cao, Danilo Romero, Warren N. Herman, and Chi H. Lee
Laboratory for Physical Sciences and Department of Electrical and Computer Engineering,
University of Maryland, College Park, MD 20742

SuE91 Single Shot High Resolution THz Upconversion Spectrometer
Benjamin Zaks[a], James Heyman[b], Dominik Stehr[a], Dan Allen[a], Nelson Coates[a,b], and Mark Sherwin[a]
a Physics Department and Center for Terahertz Science and Technology, University of California at
Santa Barbara, Santa Barbara, CA 93106 USA
b Macalaster College, St. Paul, MN 55105 USA

SuE92 Ultrafast terahertz conductivity and transient optical absorption spectroscopy of silicon nanocrystal thin films
L. V. Titova(1), R. Al Harthy(1), T. Cocker(1), D. G. Cooke(2), A.N. MacDonald(1), A. Hryciw(1), S. Kuai(1), A. Meldrum(1),
and F.A. Hegmann(1)
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SuE93 Ultrafast carrier dynamics in Br+-bombarded semiconductors investigated by optical pump - THz probe spectroscopy
J.C. Delagnes[1], P. Mounaix[1], J. Mangeney[2], M. Martin[2], L. Fekete[3], H. Němec[3], F. Kadlec[3], and P. Kužel[3]
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351 Cours de la Libération 33405 Talence Cedex, France
2 Institut d'Electronique Fondamentale, Université Paris XI CNRS, UMR 8622, 91405 Orsay Cedex, France
3 Institute of Physics, Academy of Sciences of the Czech Republic, Na Slovance 2, 18221 Prague 8, Czech Republic

High Power Sources and Nonlinear Response

SuE94 High-power monocycle terahertz pulse generation beyond excitation bandwidth limitation via χ(2) cascaded processes in LiNbO3
Mukesh Jewariya [a], Masaya Nagaia,[b], Yuki Ichikawa [c], Hideyuki Ohtake [c], Toshiharu Sugiura [c], Yuzuru Uehara [c] and Koichiro Tanaka [a,d]
a Department of Physics, Kyoto University, Kyoto 6068502, Japan
b Japan Science and Technology agent (JST)
cAisin Seiki Co., Ltd. Kojiritsuki, Hitotsugi-cho, Kariya 4480003, Japan
d Institute for Integrated Cell-material Sciences, Kyoto University, Kyoto 6068501, Japan

SuE95 Polarization Dependence of THz Radiation Generated in Laser Induced Plasmas
Daniel Dietze, Juraj Darmo and Karl Unterrainer

Photonics Institute, Vienna University of Technology, 1040 Vienna, Austria

SuE96 Model for the nonlinear transmission of intense THz pulses in doped InGaAs
F. H. Su(1), L. Razzari(2,3), G. Sharma(2), F. Blanchard(2), A. Ayesheshim(1), H-C Bandulet(2), R. Morandotti(2), J-C Kieffer(2), T. Ozaki(2), M. Reid(4), and F. A. Hegmann(1)
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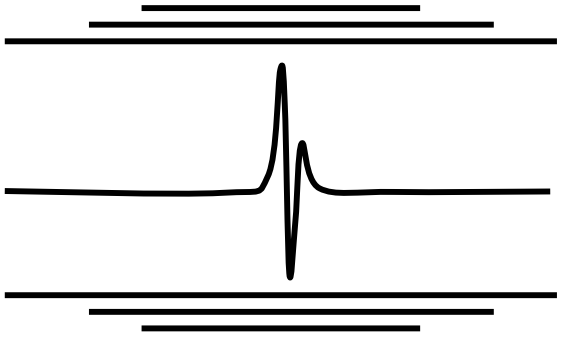
(2)INRS-EMT, Advanced Laser Light Source, Université du Québec, Varennes, Québec J3X 1S2, Canada
(3)Dipartimento di Elettronica, Università di Pavia, via Ferrata 1, 27100 Pavia, Italy
(4)Department of Physics, University of Northern British Columbia, Prince George, British Colombia V2N 4Z9, Canada

SuE97 Observation of Maker fringes in the Terahertz radiation generated by 2-color laser field inside a long femtosecond filament
Y. Liu, A. Houard, M. Durand, B. Prade, A. Mysyrowicz
Laboratoire d'Optique Appliquée, ENSTA, Ecole Polytechnique, CNRS UMR 7639, Palaiseau, 91761, France

SuE98 Effect of focal shifting on terahertz frequency mixing sources
F. Blanchard, G. Sharma, X. Ropagnol, L. Razzari, R. Morandotti and T. Ozaki
INRS-EMT, Advanced Laser Light Source, Université du Québec, Varennes, Québec J3X 1S2, Canada

SuE99 Laser sliced coherent synchrotron THz pulses at new ALS infrared beamline
Michael Martin, Hans Bechtel, Peter Nico and Fernando Sannibale
Lawrence Berkeley National Laboratory, Berkeley, CA

SuE100 Carrier generation in InSb studied by THz-Pump/THz-probe spectroscopy
Matthias C. Hoffmann[1],, János Hebling[2], Harold Y. Hwang[1], Ka-Lo Yeh[1]and Keith A. Nelson[1]*
1 Department of Chemistry, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, USA
2 Department of Experimental Physics, University of Pécs, 7624 Hungary



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● Monday, March 9, 2009 ●

Registration Desk Open
7:00 a.m. – 5:00 p.m.
San Rafael Foyer

Exhibits Open
9:00 a.m. -5:00 p.m
Santa Ynez

Continental Breakfast
7:00 a.m. – 8:00 a.m.
Santa Ynez

MA • Imaging

San Rafael
8:00 a.m.–10:00 a.m.
S. James Allen Presiding

MA1 8:00 a.m. Invited
Charge-Sensitive Infrared Phototransistors (CSIPS) And Passive Terahertz Microscopy
Susumu Komiyama
Department of Basic Science, The University of Tokyo, Komaba 3-8-1, Meguro-ku, Tokyo, Japan Science and Technology Corporation (JST)

MA2 8:30 a.m. Invited
Ultra-broadband, frequency-agile THz-wave generator and it's application to carrier density mapping of GaN wafers
Hiromasa Ito[1,2], Seigo Ohno[1], K. Miyamoto[1] and H. Minamide RIKEN Sendai, The Institute of Physical and Chemical Research 519-1399 Aramaki Aoba, Aoba, Sendai 980-0845, Japan

MA3 9:00 a.m.
Multicycle THz pulse generation and improved imaging techniques in a lithium niobate slab waveguide
Christopher A. Werley[1], Kung-Hsuan Lin[1], Qiang Wu[2], and Keith A. Nelson[1]
1 Department of Chemistry, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, USA 2 The Key Laboratory of Weak Light Nonlinear Photonics, Ministry of Education, Nankai University, Tianjin 300457, P. R. China

MA4 9:15 a.m.
Time-domain terahertz computed axial tomography for aerospace non-destructive evaluation
David Zimdars, Greg Fichter and Artur Chernovsky
Picometrix LLC, 2925 Boardwalk Dr., Ann Arbor, MI 48104 USA

MA5 9:45 a.m.
Plasmon grating-gate GaN HEMT structures for terahertz applications
A.V. Muravjov, D.B. Veksler, V.V. Popov, M.S. Shur,
ECSE, Rensselaer Polytechnic Institute, Troy NY, 12180 also with Institute of Radio Engineering and Electronics, Russian Academy of Sciences, Saratov, 410019, Russia N. Pala, Electrical & Computer Engineering, Florida International University, Miami, FL 33174 X. Hu, R. Gaska,
Sensor Electronic Technology, Inc., Columbia, SC, 29209 H. Saxena, R.E. Peale Department of Physics, University of Central Florida, Orlando FL, 32816

10:00 a.m.–10:30 a.m.
Coffee Break
Santa Ynez

MB • Novel Devices and Photonic Bandgap Materials

San Rafael
10:30 a.m.–12:30 p.m.
Masayoshi Tonouchi

MB1 10:30 a.m. Invited
Frequency Agile, Terahertz, Plasmonic Detectors
S James Allen, Gregory C. Dyer, Jess D. Crossno, Greg R. Aizin, John Mikalopas, Mike C. Wanke, John L. Reno, and Eric A. Shaner
Center for Terahertz Science and Technology, UC Santa Barbara, Santa Barbara, CA 93106;

Kingsborough College of the City University of New York, Brooklyn, NY 11235;
Sandia National Laboratories, P.O. Box 5800, Albuquerque, NM 87185

MB2 11:00 a.m.
Fast, Room Temperature Detection at 1 THz with Antenna-Coupled GaAs Field-Effect-Transistors
Sangwoo Kim[1], Jeramy D. Zimmerman[2], Paolo Focardi[3], Dong Ho Wu[4], Arthur C. Gossard[2], and Mark S. Sherwin[1]
1Physics Department, University of California, Santa Barbara, CA 93106 USA
2Materials Department, University of California, Santa Barbara, CA 93106 USA
3Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109 USA
4Naval Research Laboratory, Washington D.C. 20375 USA

MB3 11:15 a.m.
Self-assembled InGaAs quantum posts for frequency tunable THz nanostructures
C. M. Morris[1], D. Stehr[1],T. A. Truong[2], H. C. Kim[2], C. Pryor[3], P. M. Petroff[2,4] and M. S. Sherwin1
1Physics Dept. and Institute for Terahertz Science and Technology, UCSB 2Materials Dept., UCSB
3Dept. of Physics and Astronomy, University of Iowa
4Dept. of Electrical and Computer Engineering UCSB

MB4 11:30 a.m.
Generation of Terahertz Radiation with Semiconductor Heterostructures
S. W. Koch, M. Kira and J.V. Moloney
Department of Physics and Material Sciences Center, Philipps University, Renthof 5, 35032 Marburg, Germany

MB5 11:45 a.m.
Dispersion-tailored, low-loss photonic crystal fibers for the THz range
Kristian Nielsen[1], Ole Bang[1], Henrik Rasmussen[2], Aurele J. L. Adam[3], Paul C. M. Planken[3,] and Peter Uhd Jepsen[1]
1Department of Photonics Engineering, Technical University of Denmark, DK-2800 Kongens Lyngby, Denmark 2DTU Mechanics – Department of Mechanical Engineering, Technical University of Denmark, DK-2800 Kongens Lyngby, Denmark 3Delft University of technology, Faculty of Applied Physics, Department of Imaging Science and Technology, Lorentzweg 1, 2628CJ Delft, the Netherlands

MB6 12:00 p.m.
Time and frequency domain spectroscopy of High-Q cavities in silicon terahertz photonic crystal slabs
Cristo Yee, Stephen Parham, Dominik Stehr and Mark Sherwin
Institute for Quantum Complex Dynamics and Physics Department,University of California Santa Barbara, Santa Barbara, CA 93106-4170.

MB7 12:15 p.m.
Narrow-line Bragg gratings within THz parallel plate waveguides
N. Laman a), S. Sree Harsha and D. Grischkowsky
School of Electrical and Computer Engineering, Oklahoma State University, Stillwater, OK 74078
a) Present and permanent address: Zomega THz Corp., 1223 Peoples Ave., Troy, NY 12180

12:30 p.m.–1:30 p.m.
Lunch

MC • Quantum Cascade Lasers I
San Rafael
1:30 p.m.–3:00 p.m.
Karl Unterrainer Presiding

MC1 1:30 p.m. Invited
Terahertz quantum cascade lasers and video-rate THz imaging
Qing Hu,
Department of EECS, MIT, Cambridge, MA/USA

MC2 2:00 p.m.
Terahertz time-domain spectroscopy of low-frequency terahertz quantum cascade lasers: spectral gain and doping density
J. Lloyd-Hughes, C. Walther, M. I. Amanti, M. Fischer, G. Scalari, and J. Faist
ETH Z¨urich, Institute for Quantum Electronics, Wolfgang-Pauli-Strasse 16, 8093 Z¨urich, Switzerland.

MC3 2:15 p.m.
Surface-emitting THz quantum cascade laser source based on intracavity difference-frequency generation
C. Pflügl1), M. Geiser1), Q. J. Wang1), M. A. Belkin1) a), A. Belyanin2), M. Fischer3), A. Wittmann3), J. Faist3), and F. Capasso1) 1)School of Engineering and Applied Sciences, Harvard University, Cambridge, MA 02138, USA
2)Department of Physics, Texas A&M University, College Station, TX 77843, USA 3)Institute of Quantum Electronics, ETH Zürich, CH-8093 Zürich, Switzerland
a)Present address: Department of Electrical and Computer Engineering, University of Texas at Austin, Austin, TX 78758, USA

MC4 2:30 p.m.
Designing THz QCLs top-down: Tuning the emission frequency of a THz QCL over a range of 2.9 THz
Inès Waldmueller, Michael C. Wanke, Maytee Lerttamrab, and Weng W. Chow
Sandia National Laboratories Albuquerque, New Mexico 87185-1086

MC5 2:45 p.m.
Slow light terahertz quantum-cascade laser
A. Benz[1], Ch. Deutsch[1], G. Fasching[1,] K. Unterrainer[1], A. M. Andrews[2], P. Klang[2], W. Schrenk[2], and G. Strasser[2]
1 Photonics Institute and Center for Micro- and Nanostructures, Vienna University of Technology, Gusshausstrasse 29/387, A-1040 Vienna, Austria2 Institute of Solid-State Electronics and Center for Micro- and Nanostructures, Vienna University of Technology, Floragasse 7/362, A-1040 Vienna, Austria

3:00 p.m.–3:30 p.m.
Coffee Break
Santa Ynez

MD • Spectroscopy of Liquids and Biomolecules
San Rafael
3:30 p.m.–5:45 p.m.
Timothy Korter Presiding

MD1 3:30 p.m. Invited
The THz dance of the protein with the water
Martina Havenith,
Department of Chemistry, Ruhr University Bochum, 44780 Bochum, Germany

MD2 4:00 p.m.
Proton Hydration Studied with THz Spectroscopy
K.J. Tielrooij, H.J. Bakker, M. Bonn
FOM-institute for Atomic and Molecular Physics (a.m.OLF), Kruislaan 407, Amsterdam, the Netherlands

MD3 4:15 p.m.
Abnormal Thz Absorption Behavior Of Interfacial Water

Wei Liang, Yunfen He, Deepu George and A.G. Markelz,
Physics Department, University at Buffalo, SUNY, Buffalo, NY, 14260

MD4 4:30 p.m.
Broadband Terahertz Time-Domain Attenuated Total Reflection Spectroscopy
Hiroyuki Yada[1], Masaya Nagai[1], and Koichiro Tanaka[2]
1Department of Physics, Graduate School of Science, Kyoto University, Kyoto, 606-8502, Japan
2Institute for Cell-Material Sciences (iCeMS), Kyoto University, Kyoto, 606-8501, Japan

MD5 4:45 p.m.
THz Time-Domain Spectroscopy of Room-Temperature Ionic Liquids
Andreas Thoman[1], Alexander Stoppa[2], Johannes Hunger[2], Richard Buchner[2] Hanspeter Helm1 and Markus Walther[1]
1Molecular and Optical Physics, University of Freiburg, Hermann-Herder-Str. 3, D-79104 Freiburg, Germany

MD6 5:00 p.m.
Characterization of the THz modes and coupling strengths affecting water permeability dynamics of simple dipeptide models for nanopores
Hailiang Zhang†, Karen Siegrist‡, David F. Plusquellic, and Susan K. Gregurick*
*Department of Chemistry and Biochemistry, University of Maryland, Baltimore County, Baltimore, Maryland 21250‡Electro-Optical and Infrared Systems and Technologies, Johns Hopkins University Applied Physics Laboratory, Laurel, MD 20723 *Biophysics Group, Physics Lab, National Institute of Standards and Technology, Gaithersburg, Maryland 20899-8443*

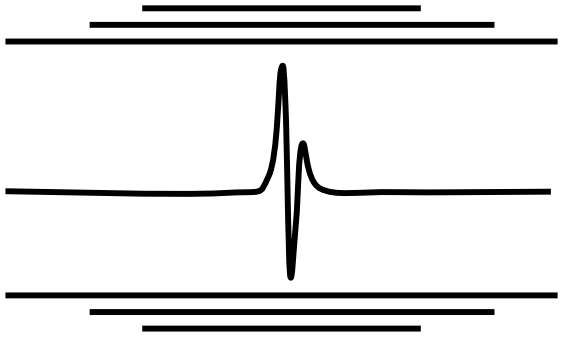
MD7 5:15 p.m.
Understanding Intermolecular Dynamics of Amino Acid Crystals by THz Time-Domain Spectroscopy
Michael R. C. Williams, Benjamin K. Ofori-Okai, Alan B. True and Charles A. Schmuttenmaer
Yale University, Department of Chemistry, 225 Prospect St., PO Box 208107, New Haven, CT 06520-8107 USA

MD8 5:30 p.m.
The effects of freeze drying on the polymorphic state of Mannitol studied with THz spectroscopy
Reshmi Chakkittakandy[1] , J. A. W. M. Corver[2], and P. C. M. Planken[1]
1Department of Imaging Science and Technology, Faculty of Applied Sciences, Delft University of Technology,Lorentzweg 1, 2628 CJ Delft, The Netherlands.
2IMA Edwards Pharmaceutical Systems, Steenstraat 7, 5107 NE Dongen, The Netherlands.

Conference Banquet

Reagan Room
6:30 – 9:30 p.m.

8:00 - 8:30 p.m. Banquet Lecture
Grand Challenges in Basic Energy Science
Philip Bucksbaum
Stanford University, SLAC National Accelerator Laboratory Menlo Park, CA



● Tuesday, March 10, 2009 ●

Registration Desk Open
7:00 a.m. – 4:00 p.m.
San Rafael Foyer

Exhibits Open
9:00 a.m. -4:00 p.m
Santa Ynez

Continental Breakfast
7:00 a.m. – 8:00 a.m.
Santa Ynez

TuA • Sources and Applications from CW to Broadband
San Rafael
8:00 a.m.–10:00 a.m.
Susan Dexheimer Presiding

Opening Remarks 8:00 a.m.

TuA1 8:10 a.m. Plenary
Pursuing Physics with Ultrabroadband Terahertz Technology
Alfred Leitenstorfer and Rupert Huber
Department of Physics and Center for Applied Photonics, University of Konstanz D-78457 Konstanz, Germany

TuA2 9:00 a.m.
Terahertz waves generation from new organic ionic nonlinear optical crystal bis[4- dimethylamino- N-methyl- 4-stilbazolium] terephthanate (BDAS-TP)
T. Matsukawa[1], H. Umezawa[2], K. Takeya[3], Y. Takahashi1, M. Yoshimura[1], I. Kawayama[3], S. Okada[4], M. Tonouchi[3], Y. Kitaoka[1], Y. Mori1, and T. Sasaki[1]
1 Graduate School of Engineering, Osaka University
2 Department of Chemistry and Biochemistry, Fukushima National College of Technology
3 Institute of Laser Engineering, Osaka University
4 Faculty of Engineering, Yamagata University

TuA3 9:15 a.m.
Application of Plasmon-Resonant Microchip Emitters to Broadband Terahertz Spectroscopic Measurement
Yuki Tsuda, Tsuneyoshi Komori, Haibo Chen, Tetsuya Suemitsu and Taiichi Otsuji.
Research Institute of Electrical Communication, Tohoku University, Sendai 980-8577 Japan

TuA4 9:30 a.m.
First CW-THz System Combining Photodiode Emitters with Coherent Photoconductive Receivers
Dennis Stanze, Michael Schlak, Helmut Roehle, Detlef Schmidt, Harald Kunkel, Heinz-Gunter Bach, Martin Schell and Bernd Sartorius.

Fraunhofer-Institute for Telecommunications, Heinrich-Hertz-Institute
10587 Berlin, Germany

TuA5 9:45 a.m.
Terahertz spectrum analyzer for precise frequency measurement of CW THz source
T. Yasui[1)], R. Nakamura[1)], A. Ihara[1, 2)], S. Yokoyama[1)], H. Inaba[2)], K. Minoshima[2)],and T. Araki[1)]
1) Grad. Sch. Engg. Sci., Osaka Univ., Toyonaka, Osaka 560-8531, Japan
2) Metrology Institute of Japan, AIST, Tsukuba, Ibaraki 305-8563, Japan

10:00 a.m.–10:30 a.m.
Coffee Break
Santa Ynez

TuB• Time-Resolved Spectroscopy and Ultrafast Dynamics

San Rafael
10:30 a.m.–12:30 p.m.
Charles Schmuttenmaer Presiding

TuB1 10:30 a.m. Invited
Charge dynamics at nanostructured interfaces
Patrick Parkinson, James LloydHughes,Laura M. Herz and Michael B Johnston
Department of Physics, University of Oxford, Clarendon Laboratory, Parks Road, Oxford, OX1 3PU, United Kingdom

TuB2 11:00 a.m.
Optical-pump THz-probe studies of above and below gap excitations in P3HT/PCBM
Paul D. Cunningham, *L. Michael Hayden*
Department of Physics, University of Maryland, Baltimore County 1000 Hilltop Circle, Baltimore, MD 21250-0001, USA

TuB3 11:15 a.m.
THz studies of exciton dynamics in InAs quantum dots
J.J.H. Pijpers[1], M.T.W. Milder[1], R. Ulbricht[1], K.J. Tielrooij[1], C. Delerue[2], and M. Bonn[1]
1FOM Institute for Atomic and Molecular Physics, Kruislaan 407, 1098 SJ, Amsterdam, The Netherlands
2Département ISEN, Institut d'Electronique de Microélectronique et de Nanotechnologie (UMR CNRS 8520), 41 Boulevard Vauban, F-59046 Lille Cedex, France

TuB4 11:30 a.m.
Time-resolved THz studies of dispersive transport in hydrogenated amorphous SiGe alloys
C.R. Hamner and S.L. Dexheimer
Department of Physics and Astronomy, Washington State University, Pullman, WA

TuB5 11:45 a.m.
Evidence for the formation of metallic nanodomains in the transient terahertz conductivity of vanadium dioxide
T Cocker(1), L V Titova(1), H–C Bandulet(2), S Fourmaux(2), D Brassard(2), J-C Kieffer(2),M A El Khakani(2), and F A Hegmann(1)
(1) Department of Physics, University of Alberta, Edmonton, Alberta T6G 2G7, Canada
(2) INRS-EMT, Université du Québec, Varennes, Québec J3X 1S2, Canada

TuB6 12:00 p.m.
Time-resolved THz spectroscopy of superconductors in a magnetic field*
J. Hwang, *X. Xi, H. Zhang, C. Stanton, D.H. Reitze, D.B. Tanner and G. Lawrence Carr*
University of Florida,Gainesville, FL Brookhaven National Laboratory, NY

TuB7 12:15 p.m.
Time-resolved terahertz spectroscopy in a parallel-plate waveguide
D. G. Cooke and P. Uhd Jepsen
DTU Fotonik - Department of Photonics Engineering, Technical University of Denmark,
Building 343 Ørsteds Plads, 2800 Kgs. Lyngby, Denmark

12:30 p.m.–1:30 p.m.
Lunch

TuC • Quantum Cascade Lasers II

San Rafael
1:30 p.m.–3:00 p.m.
Mark Sherwin Presiding

TuC1 1:30 p.m. Invited
Non-linear optics in quantum cascade lasers
J. Darmo[1], W. Partz[1], M. Martl[1], S. Schartner[2], W. Schrenk[3], P. Klang[2], M.A. Andrews[3], K. Unterrainer[1,3], and G. Strasser[4,2 1]
Photonics Institute, Vienna University of Technology, Gusshausstrasse 25, A-1040 Vienna, Austria
2 Institute of Solid-State Electronics, Vienna University of Technology, Floragasse 7, Vienna, Austria
3 Center for Micro- and Nano-Structures,Floragasse 7, A-1040 Vienna, Austria 4 University at Buffalo, the State University of New York, Buffalo, NY

TuC2 2:00 p.m.
Gain and dynamics of terahertz quantum cascade lasers using terahertz time domain spectroscopy
N. Jukam[1], S. Dhillon[1], D. Oustinov[1], J. Madéo[1], S. Hameau[1], S. Barbieri[2], C. Manquest[2], X. Marcadet[2], C. Sirtori[2], and J. Tignon[1]
1Laboratoire Pierre Aigrain, Ecole Normale Supérieure, 75005 Paris, France
2Matériaux et Phénomènes Quantiques, Université Denis Diderot - Paris 7, 75013 Paris, France 3Thales Research and Technology, 91404 Orsay, France

TuC3 2:15 p.m.
Integration of Terahertz Quantum Cascade Lasers with Lithographically Micromachined Rectangular Waveguides
Michael C. Wanke, Christopher D. Nordquist, Mark Lee, Christian L. Arrington, Adam M Rowen, Michael J. Cich, Albert D. Grine*, Chuck T. Fuller, Eric A. Shaner, Erik W. Young**,and John L. Reno*
*Sandia National Laboratories, Albuquerque, NM, USA *LMATA Government Services, Albuquerque, NM, USA*
***Now at Lumileds, San Jose, CA, USA*

TuC4 2:30 p.m.
Generation of Bessel beams using a terahertz quantum cascade laser
P. Dean, M. U. Shaukat, S. P. Khanna, S. Chakraborty, M. Lachab, A. G. Davies, and E. H. Linfield*
School of Electronic and Electrical Engineering, University of Leeds, Leeds, LS2 9JT, UK

TuC5 2:45 p.m.
Comparison of the performance of terahertz quantum cascade lasers with single- and double-resonant-phonon depopulation
Mikhail Belkin
Department of Electrical and Computer Engineering, University of Texas at Austin, Austin, TX 78758
Qi Jie Wang, Jonathan Fan, and Federico Capasso

School of Engineering and Applied Sciences, Harvard University, Cambridge, Massachusetts 02138
Suraj P. Khanna, A. Giles Davies, and Edmund H. Linfield
School of Electronic and Electrical Engineering, University of Leeds, Leeds LS29JT, UK

3:00 p.m.–3:30 p.m.
Coffee Break
Santa Ynez

TuD • Spectroscopy of Materials

San Rafael
3:30 p.m.–5:15 p.m.
Andrea Markelz Presiding

TuD1 3:30 p.m. Invited
THz spectroscopy of liquids – applications and future challenges
Peter Uhd Jepsen, David Cooke, Uffe Møller
DTU Fotonik – Department of Photonics Engineering, Technical University of Denmark, DK-2800 Kongens Lyngby, Denmark

TuD2 4:00 p.m.
Terahertz vibrational modes in non-polar non-hydrogen-bonding crystalline solids
Jonathan P. Laib and Daniel M. Mittleman
Rice University, Department of Electrical and Computer Engineering, MS 366, Houston, TX 77251-1892, USA

TuD3 4:15 p.m.
Simulation and Assignment of Terahertz Spectra Using Solid-State Density Functional Theory
Damian G. Allis, Patrick M. Hakey, Keith C. Oppenheim, Tanieka L. Motley, and Timothy M. Korter
Department of Chemistry, Syracuse University, Syracuse, NY 13244

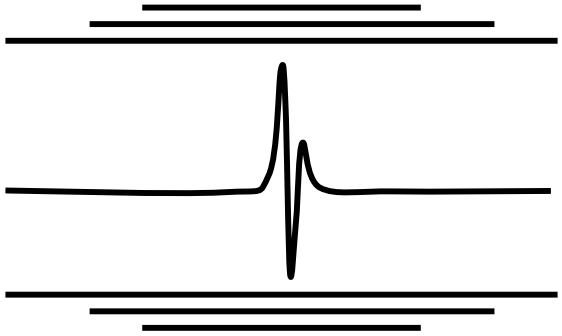
TuD4 4:30 p.m.
Using Terahertz Spectroscopy to Study Nanoparticulate Titanium Dioxide Systems for Catalytic Water Oxidation
Rebecca L. Milot, Christiaan Richter, Charles A. Schmuttenmaer
Yale University, Department of Chemistry, 225 Prospect St., PO Box 208107, New Haven, CT 06520-8107
USA

TuD5 4:45 p.m.
Thermally-Induced THz Transparency in n-InSb
X. Wang,[1] A. A. Belyanin[2] S. A. Crooker[3] D. M. Mittleman,[1] and J. Kono[1,]*
1Department of Electrical and Computer Engineering, Rice University, Houston, Texas 77005
2Department of Physics, Texas A&M University, College Station, Texas 77843
3National High Magnetic Field Laboratory, Los Alamos, New Mexico 87545

TuD6 5:00 p.m.
Investigation of Scattering and Impurities in Carbon Nanotubes with THz Time-Domain Spectroscopy
Finn Eichhorn and Peter U. Jepsen
Department of Photonics Engineering, Technical University of Denmark Ørsteds Plads, Building 343, 2800 Kgs. Lyngby, Denmark
Nicholas Schroeder, Gregory Kozlowski, and Jason A. Deibel
Department of Physics, Wright State University, 3640 Colonel Glenn Hwy., Dayton, OH 45435
Krzysztof K.K. Koziol
Department of Materials Science and Metallurgy, University of Cambridge, Pembroke St., Cambridge, CB2 3QZ, UK

Public Lecture

8:00 p.m. – 9:00 p.m.
A Journey To The Heart Of The Electromagnetic Spectrum
Mark Sherwin
Director of The Institute for Terahertz Science and Technology
1610 Broida Hall UCSB campus
All attendees are welcome to come to this general public lecture.



● Wednesday, March 11, 2009 ●

Tours of UCSB Center for Terahertz Science and Technology and workshop on incorporating THz into teaching

9:00 a.m. First tour
UCSB Center for Terahertz Science and Technology

10:30 a.m. Second tour
UCSB Center for Terahertz Science and Technology

11:00 a.m.- noon
Program Committee Meeting
State Street room
University Center
UCSB

12:30 noon – 2:00 p.m.
Incorporating Thz Into Teaching Roundtable Discussion and Conference Conclusion
Alan Cheville
Electrical Engineering Department, Oklahoma State Univeristy, Stillwate, OK

State Street Room
University Center
UCSB

Bus schedule: Please meet at front entrance of Fess Parker Hotel

8:15 a.m. First tour leaves Fess Parker for UCSB.
9:25 a.m. Bus returns to Fess Parker.
9:45 a.m. Second tour leaves Fess Parker for UCSB.
10:40 a.m. Bus leaves from bus stop at Steck Circle, UCSB
2:30 p.m. Last bus leaves from Parking Lot 3, UCEN Road