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FULL TECHNICAL PROGRAM

Monday, August 24, 2015

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University of California, Berkeley, United States

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¹Physikalischs Institut, Goethe-University, Germany; ²Department of Physics, Chemistry and Biology, Linköping University, Sweden

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Fursenko⁴; Evgeniy Pestrikov²; Vladimir Uskov²; Gil'man Shakurov⁶; Reinhard Kremer⁷; Anatoliy Prokhorov²; Martin Dressel⁸

¹Faculty of Physics, Southern Federal University, Russian Federation; ²Moscow Institute of Physics and Technology, Russian Federation; ³Institute of Physics, ASCR, Czech Republic; ⁴Institute of Geology and Mineralogy, Russian Academy of Sciences, Russian Federation; ⁵Institute of Laser Physics, Russian Academy of Sciences, Russian Federation; ⁶Kazan Physical-Technical Institute, Russian Academy of Sciences, Russian Federation; ⁷Max-Planck-Institut für Festkörperforschung, Germany; ⁸1. Physikalisches Institut, Universität Stuttgart, Germany

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¹University of Leeds, United Kingdom; ²Rutherford Appleton Laboratory, United Kingdom

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¹Istituto di Fisica del Plasma, Consiglio Nazionale delle Ricerche, Italy; ²Japan Atomic Energy Research Institute, Japan

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	¹ Research Center for Development of Far-Infrared Region, University of Fukui, Japan; ² Department of Technology, University of Fukui, Japan; ³ National Institute of Materials Physics, Romania; ⁴ National Institute of Physics, University of Philippines Diliman, Philippines; ⁵ Department of General Physics, University of Nizhny Novgorod, Russian Federation	
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¹Paul Scherrer Institut, Switzerland; ²Joint Institute for High Temperatures of RAS, Moscow, Russian Federation

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¹Center for Free-Electron Laser Science, DESY, Germany; ²CFEL, DESY, Germany; ³Department of Electrical Engineering and Computer Science and Research Laboratory of Electronics, MI, United States

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¹Osaka University, Japan; ²Screen Holdings, Japan



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	¹ Istituto Nazionale di Ricerca Metrologica (INRiM), Italy; ² Laboratoire national de métrologie et d'essais (LNE), France; ³ Physikalisch-Technische Bundesanstalt (PTB), Germany; ⁴ Politecnico di Torino, Italy	
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¹Capital Normal University, China; ²Harbin Institute of Technology, China

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Tuesday, August 25, 2015

08:45 - 09:00	Morning Announcements	Lecture Theatre 1
09:00 - 10:30	Tuesday Plenary Session	Lecture Theatre 1
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	<u>Xiang Zhang</u> University of California, Berkeley, United States	
09:45	Terahertz Quantum Cascade Lasers -- The Past, Present, And Potential Future....236	P4
	<u>Edmund Linfield</u> ; A Giles Davies; Paul Dean School of Electronic and Electrical Engineering, University of Leeds, United Kingdom	
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	<u>Dan Corcos</u> ¹ ; Noam Kaminski ¹ ; Danny Elad ¹ ; Thomas Morf ² ; Winnie Tatiana Silatsa Saha ² ; Ute Drechsler ² ; Lukas Kull ² ; André Bischof ³ ; Yingyun Zha ³ ¹ IBM Research Haifa, Israel; ² IBM Research Zurich, Switzerland; ³ CSEM, Switzerland	
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	<u>Jan Hieronymus</u> ¹ ; Sven Augustin ² ; Heinz-Wilhelm Hübers ³ ¹ German Aerospace Center (DLR), Germany; ² Federal Institute for Materials Research and Testing (BAM), Unter den Eichen 87, 12205 Berlin, Germany; ³ German Aerospace Center (DLR), Rutherfordstr. 2, 12489 Berlin,	

Germany

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Boris Knyazev¹; Yulia Choporova²; Mikhail Mitkov²; Vladimir Pavelyev³; Boris Volodkin³

¹Novosibirsk State University, Russian Federation; ²Budker Institute of Nuclear Physics SB RAS, Russian Federation; ³Samara Aerospace University, Russian Federation

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¹Ecole Normale Supérieure/CNRS, France; ²University Paris Sud, France; ³University of Leeds, United Kingdom

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University of Cambridge, United Kingdom

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Paul Dean¹; Hanond Nong²; Tobias Fobbe²; A. Giles Davies¹; Reshma A. Mohandas¹; Nathan Jukam²; Sergej Markmann²; Lianhe Li¹; Rüdiger Schott²; Andreas D. Wieck²; Shovon Pal²; Edmund H. Linfield¹; Negar Hekmat²
¹University of Leeds, United Kingdom; ²Ruhr-Universität Bochum, Germany

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¹Ruhr-Universität Bochum, Germany; ²University of Leeds, United Kingdom

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¹Virginia Diodes, Inc., United States; ²University of Leeds, United Kingdom; ³Chalmers University of Technology, Sweden; ⁴University Of Leeds, United Kingdom; ⁵University of Virginia, United States

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Sergeev
Institute of Applied Physics RAS, Russian Federation

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Ping Sun¹; Yun Zou¹; Wei Liu²

¹Beijing Normal University, China; ²Capital Normal University, China



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Environmental Science, Shinshu University, Japan; ³Department of Physics,
Faculty of Science, Shinshu University, Japan; ⁴XLIM, Limoges University,
France

Wednesday, August 26, 2015

08:45 - 09:00 Morning Announcements

Lecture
Theatre 1

09:00 - 10:30 Wednesday Plenary Session

Lecture
Theatre 1

Chairperson: Kiyomi Sakai

09:00 Imaging Ultrafast Dynamics On The Nanoscale With THz-STM....480 P5

V Jelic¹; T Cocker¹; P Nguyen¹; C Rathje²; G Hornig¹; J Hoffman¹; H Sharum¹; R Miller¹; S Molesky¹; Margaret Gupta³; J Burgess¹; G De los Reyes¹; L Titova¹; C Ropers²; Y Tsui³; M Freeman¹; Frank Hegmann⁴

¹Department of Physics, University of Alberta, Edmonton, Canada; ²4th Physical Institute, University of Göttingen, Germany; ³Department of Electrical and Computer Engineering, University of Alberta, Canada; ⁴University of Alberta, Canada

09:45 It Is Water What Matters: THz Absorption Spectroscopy As A New Tool To Study Solvation Dynamics....482 P6

Martina Havenith
Ruhr University Bochum, Germany

11:00 - 12:30 W1A - Metamaterial Structures and Applications IV Lecture
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Chairperson: Can-Ming Hu

11:00 Integrated Spoof Surface Plasmon Devices And Circuits....483 W1A-1

Tie Jun Cui
Southeast University, China, China

11:30 Total Internal Reflection At Conductive Interfaces: Monolayer Graphene For Terahertz Modulation....485 W1A-2

Xudong Liu; Edward Parrott; Benjamin Ung; Emma Pickwell-MacPherson
The Chinese University of Hong Kong, Hong Kong

11:45 Strong Coupling Of Intersubband Resonance In A Single Triangular Well To A THz Metamaterial....487 W1A-3

Shovon Pal; Hanond Nong; Sergej Markmann; Nadezhda Kukharchyk; Sascha R. Valentin; Sven Scholz; Arne Ludwig; Claudia Bock; Ulrich Kunze; Andreas D. Wieck; Nathan Jukam
Ruhr University Bochum, Germany

12:00	Direct Observation Of Terahertz Wavefront Converted By A Metal Hole Array....489	W1A-4
	<u>Shintaro Hisatake</u> ; Hai Huy Nguyen Pham; Tadao Nagatsuma Osaka University, Japan	
12:15	Sensitivity Improvement Of Split-Ring Resonators For Thin-Film Sensing Using Floating Electrodes....491	W1A-5
	<u>Matthias Maasch</u> ; Christian Damm Technische Universität Darmstadt, Germany	

11:00 - 12:30	W1B - Metrology II	Lecture Theatre 3
Chairperson: Thomas Kleine-Ostmann		

11:00	Wavefront Measurement Of Terahertz Pulses Using A Hartmann Sensor Combined With 2D Electro-optic Imaging....492	W1B-1
	Emmanuel Abraham ¹ ; Harsono Cahyadi ² ; Jérôme Degert ³ ; Eric Freysz ³ ; Takeshi Yasui ² ¹ Laboratoire Ondes et MAtière d'Aquitaine, Univ. Bordeaux, France; ² Univ. Tokushima, Japan; ³ Univ. Bordeaux, France	
11:45	Emission Measurement Of A Full Body Mm Wave Scanner....493	W1B-2
	<u>Thomas Kleine-Ostmann</u> ; Thorsten Schrader Physikalisch-Technische Bundesanstalt (PTB), Germany	
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	<u>Tae Weon Kang</u> ; Jeong Hwan Kim; Jae Yong Kwon; No Weon Kang Korea Research Institute of Standards and Science, Korea, Republic of	
12:15	Simple De-embedding And Simulation Technique To Find Permittivity With A THz Vector Network Analyser....497	W1B-4
	<u>Jonathan Hammel</u> ; Andrew Gallant; Claudio Balocco Durham University, United Kingdom	

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	<u>Fritz Keilmann</u> Ludwig-Maximilians-Universitaet, Germany	
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	<u>Dhanvir Rana</u> ¹ ; Rakesh Rana ¹ ; Parul Pandey ¹ ; Shriganesh Prabhu ² ¹ Indian Institute of Science Education and Research Bhopal, India; ² Tata Institute of Fundamental Research Mumbai, India	

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	¹ University of Oxford, United Kingdom; ² Ecole Polytechnique Federale de Lausanne, Switzerland; ³ École Polytechnique Fedérale de Lausanne, Switzerland; ⁴ University of Cambridge, United Kingdom	
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	¹ SHANGHAI NORMAL UNIVERSITY, China; ² University of Fukui, Japan; ³ University of the Philippines, Philippines; ⁴ Saga University, Japan	
12:15	Generation Of Terahertz Radiation In Thin Vanadium Dioxide Films Undergoing Metal-Insulator Phase Transition....504	W1C-5
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	¹ Lomonosov Moscow State University, Russian Federation; ² Institute on Laser and Information Technologies of the RAS, Russian Federation; ³ Huazhong University of Science and Technology, China; ⁴ University of Rochester, United States	

11:00 - 12:30	W1D - Sources, Detectors, and Receivers V	Lecture Theatre 6
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	Irmantas Kasalynas ¹ ; Rimvydas Venckevicius ¹ ; Vytautas Jakstas ¹ ; Vytautas Janonis ¹ ; Justas Lauzadis ¹ ; Gediminas Seniutinas ² ; Edmundas Sirmulis ¹ ; Gintaras Valusis ¹ ; Karolis Pozela ¹ ; Saulius Juodkazis ² ; Paweł Prystawko ³ ; Michał Leszczyński ³ ¹ Center for Physical Sciences and Technology, Lithuania; ² Swinburne University of Technology, Australia; ³ Institute of High Pressure Physics UNIPRESS, Poland	
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12:15	A Wideband Profiled Corrugated Horn For Multichroic Applications....523 <u>Lingzhen Zeng</u> ¹ ; Cheukyu Edward Tong ¹ ; Edward Wollack ² ; David Chuss ³ ¹ Harvard-Smithsonian Center for Astrophysics, United States; ² NASA GSFC, United States; ³ Villanova University, United States	W1E-5

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15:00	Modulation Of The Hydration Water Around Monoclonal Antibodies On Addition Of Excipients Detected By Terahertz-time Domain Spectroscopy....530 <u>Vincent Wallace</u> ¹ ; Christopher Van Der Walle ² ; Robert Falconer ³ ; Shahid Uddin ² ; Axel Zeitler ⁴ ¹ University of Western Australia, Australia; ² Medimmune, United Kingdom; ³ University of Sheffield, United Kingdom; ⁴ University of Cambridge, United Kingdom	W2A-4
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14:45	Effect Of The Plasmonic Enhanced Absorption And Bias Field Enhancement In Nano-Electrode THz Photo-Conductive Antennas....539 <u>Kiwon Moon</u> ; Il-Min Lee; Jun-Hwan Shin; Kyeong Sun Choi; Kyung Hyun Park Electronics and Telecommunications Research Institute, Korea, Republic of	W2B-3

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	<u>Lei Du</u> ; Gang Chen; Lin Wang; Xiaoshuang Chen; Wei Lu Shanghai Institute of Technical Physics, China	
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	<u>Andreas K. Klein</u> ¹ ; Yi Pan ² ; Claudio Balocco ³ ; Dagou Zeze ³ ; Andrew Gallant ³ ¹ Durham University, School of Engineering and Computing Sciences, United Kingdom; ² School of Engineering and Computing Sciences, Durham University, United Kingdom; ³ School of Engineering and Computing Sciences, United Kingdom	
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	<u>Mohammed Reza Hashemi</u> ¹ ; Shang Hua Yang ² ; Tongyu Wang ³ ; Nelson Sepúlveda ³ ; Mona Jarrahi ¹ ¹ University of California Los Angeles, United States; ² University of Michigan Ann Arbor, United States; ³ Michigan State University, United States	

14:00 - 15:30 W2E - Gyro-Oscillators and Amplifiers III**Lecture
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	<u>Toshitaka Idehara</u> FIR Center, University of Fukui, Japan	

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	¹ University of Fukui, FIR Center, Japan; ² O. Ya Usikov Institute for Radiophysics and Electronics, Ukraine; ³ O. Ya. Usikov Institute for Radiophysics and Electronics, Ukraine; ⁴ The Institute of Solid State Physics, University of Latvia, Latvia; ⁵ Institute of Protein Research, Osaka University, Japan	
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	<u>Jean-Philippe Hogge</u> ¹ ; Stefano Alberti ¹ ; Falk Braunmueller ¹ ; Jérémie Genoud ¹ ; Trach-Minh Tran ¹ ; Minh-Quang Tran ¹ ; Konstantinos Avramidis ² ; Ioannis Gr. Pagonakis ² ; Jianbo Jin ² ; Stefan Illy ² ; Gerd Gantenbein ² ; John Jelonnek ² ; Fabio Cismondi ³	
	¹ Ecole Polytechnique Fédérale de Lausanne, Switzerland; ² Karlsruhe Institute of Technology, Germany; ³ Fusion for Energy (F4E), ITER Department, Spain	
15:15	Development Of A Wide-Band Window In HE1,1 Guide For Gyrotrons....569	W2E-5
	<u>Lawrence Ives</u> ¹ ; Michael Read ¹ ; Thuc Bui ¹ ; David Marsden ¹ ; George Collins ¹ ; William Guss ² ; Richard Temkin ² ; Jeffrey Neilson ³	
	¹ Calabazas Creek Research, Inc., United States; ² Massachusetts Institute of Technology, United States; ³ LEXAM Research, United States	

16:00 - 17:30	W3A - MMW systems, Transmission Lines and Antennas II	Lecture Theatre 2
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Chairperson: Nuria Llombart-Juan

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	<u>Giovanni Grossetti</u> ¹ ; John Jelonnek ¹ ; Emanuele Poli ² ; Dirk Strauss ¹ ; Alessandro Vaccaro ¹ ; Hartmut Zohm ²	
	¹ Karlsruhe Institute of Technology, Germany; ² Max Planck Institute for Plasma Physics, Germany	

16:00 - 17:30 W3B - R&D, Future Applications, and Market Directions

Lecture
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Chairperson: Xi-Cheng Zhang

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¹National Institute of Information and Communications Technology, Japan; ²Waseda University, Japan

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Shingo Saito¹; Takeyoshi Onuma²; Kohei Sasaki³; Akito Kuramata³; Norihiko Sekine¹; Akifumi Kasamatsu¹; Masataka Higashiwaki¹
¹National Institute for Information and Communications Technology, Japan; ²Kogakuin University, Japan; ³Tamura Corporation, Japan

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Ieva Beleckaitė¹; Gediminas Molis²; Ramūnas Adomavičius¹; Aloyzas Siusys³; Anna Reszka³; Arūnas Krotkus¹; Janusz Sadowski⁴
¹Center for Physical Sciences and Technology, Lithuania; ²UAB TERAVIL, Lithuania; ³Institute of Physics, Polish Academy of Sciences, Poland; ⁴MAX-

Lab, Lund University, Sweden

**Circularly Polarized Terahertz Leaky-Wave Antenna With Metamaterial
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Shaghik Atakaramians¹; Yasuaki Monnai²; Withawat Withayachumnankul³

¹The University of Sydney, Australia; ²Department of Applied Physics and
Physico-Informatics, Keio University, Japan; ³School of Electrical & Electronic
Engineering, The University of Adelaide, Australia

Thursday, August 27, 2015

08:45 - 09:00 Morning Announcements

Lecture
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09:00 - 10:30 Thursday Plenary Session

Lecture
Theatre 1

Chairperson: Xi-Cheng Zhang

09:00 SubTHz Photons In The Universe And In My Life....727

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Philippe Goy
AB Millimetre, France

09:45 Frontiers Of Sub-cycle Terahertz Science: The Fast, The Strong And The Small....731

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Matthias Hohenleutner; Fabian Langer; Olaf Schubert; Sebastian Baierl; Thomas Maag; Christoph Lange; Michael Porer; Christoph Pöllmann; Philipp Steinleitner; Max Eisele; Markus A. Huber; Markus Plankl; Tyler L. Cocker; Rupert Huber
University of Regensburg, Germany

11:00 - 12:30 H1A - Applications in Biology and Medicine - Applications in Industry

Lecture
Theatre 2

Chairperson: Dannie Mittleman

11:00 Large-Area Transmission And Reflection Imaging With 640x480 Pixel Terahertz Camera....735

HA1-1

Tsutomu Ishi; Takao Morimoto; Takayuki Sudou; Naoki Oda
NEC Corporation, Japan

11:15 The Analysis Of Hydration Processes In Porous Materials Using Terahertz Pulsed Imaging....737

HA1-2

Samy Yassin; Kirby Lam; Edward Kwok; Lynn Gladden; Axel Zeitler
University of Cambridge, United Kingdom

11:30 An Evolutionary Algorithm Based Approach To Improve The Limits Of Minimum Thickness Measurements Of Multilayered Automotive Paints....739

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Soufiene Krimi¹; Jens Klier¹; Joachim Jonuscheit¹; René Beigang²; Ralph Urbansky³; Frank Ellrich¹; Georg von Freymann¹

¹Fraunhofer Institute for Physical Measurement Techniques IPM, Germany; ²University of Kaiserslautern, Department of Physics and Research Center, Germany; ³University of Kaiserslautern, Department of Communications Engineering, Germany



11:45	High-resolution Interdigitated Back Contact Solar Cell Inspection Using Terahertz Microprobes....740	HA1-4
	<u>Simon Sawallich</u> ¹ ; Christopher Matheisen ¹ ; Michael Nagel ¹ ; Ilkay Cesar ² ¹ Protemics GmbH, Germany; ² ECN Solar Energy, Netherlands	
12:00	Effects Of Mm-waves On Human Fibroblasts In-vitro....742	HA1-5
	<u>Gian Piero Gallerano</u> ¹ ; Andrea Doria ¹ ; Emilio Giovenale ¹ ; Andrea De Amicis ² ; Stefania De Sanctis ² ; Sara Di Cristofaro ² ; Valeria Franchini ² ; Florigio Lista ² ; Elisa Regalbuto ² ; Antonella Sgura ³ ; Elisa Coluzzi ⁴ ; Jessica Marinaccio ⁴ ; Roberto Bei ⁵ ; Massimo Fantini ⁵ ; Monica Benvenuto ⁶ ; Laura Masuelli ⁷ ¹ ENEA, Italy; ² Army Medical and Veterinary Research Center, Italy; ³ University "Roma Tre" Department of Science, Italy; ⁴ University "Roma Tre" Department of Science, Italy; ⁵ University of Rome "Tor Vergata" - Dep. of Clinical Sciences and Translational Medicine, Italy; ⁶ University of Rome, Italy; ⁷ University of Rome "Sapienza" - Dep. of Experimental Medicine, Italy	
12:15	Investigation Of Pharmaceutical Film Coating Process With Terahertz Sensing, Optical Coherence Tomography And Numerical Modelling....744	HA1-6
	<u>Hungyen Lin</u> ¹ ; Yue Dong ² ; Chunlei Pei ¹ ; James Elliott ¹ ; Yaochun Shen ¹ ; Axel Zeitler ¹ ¹ University of Cambridge, United Kingdom; ² University of Liverpool, United Kingdom	

11:00 - 12:30 H1B - Quantum Cascade Lasers II Lecture
Theatre 3

Chairperson: Juncheng Cao

11:30	Double Pulse Injection Seeding Of A Terahertz Quantum Cascade Laser....746	H1B-2
	<u>Sergej Markmann</u> ¹ ; Hanond Nong ¹ ; Shovon Pal ² ; Negar Hekmat ¹ ; Sven Scholz ¹ ; Nadezhda Kukharchyk ¹ ; Arne Ludwig ¹ ; Sukhdeep Dhillon ³ ; Xavier Marcadet ⁴ ; Claudia Bock ¹ ; Ulrich Kunze ¹ ; Andreas D. Wieck ¹ ; Nathan Jukam ¹ ¹ Ruhr-Universität Bochum, Germany; ² University of Leeds, Germany; ³ Ecole Normale Supérieure, France; ⁴ Alcatel-Thales III-V Lab, France	
11:45	Far-field Engineering Of Metal-metal Terahertz Quantum Cascade Lasers With Integrated Horn Antennas....748	H1B-3
	<u>Feihu Wang</u> ¹ ; Iman Kundu ² ; Lianhe Li ² ; Edmund Linfield ² ; Giles Davies ² ; Souad Moumdji ³ ; Raffaele Colombelli ³ ; Juliette Mangeney ¹ ; Jerome Tignon ¹ ; Sukhdeep Dhillon ¹ ¹ Ecole Normale Supérieure/CNRS, France; ² University of Leeds, United Kingdom; ³ University Paris Sud, France	

12:00	Efficient Terahertz-wave Generation In Mid-infrared Quantum-cascade Lasers With A Common Dual-upper-state Active Region....749	H1B-4
	<u>Kazuue Fujita</u> ¹ ; Akio Ito ¹ ; Masahiro Hitaka ¹ ; Tatsuo Dougakiuchi ¹ ; Tadataka Edamura ¹ ; Masamichi Yamanishi ¹ ; Seungyong Jung ² ; Mikhail Belkin ²	
	¹ Hamamatsu Photonics K.K., Japan; ² The University of Texas at Austin, United States	

11:00 - 12:30	H1C - Modeling and Analysis Techniques I	Lecture Theatre 4
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Chairperson: Chao Zhang

11:00	Modulation Of Terahertz Radiation Based On Dc-ac-field Tuned Coherent Dynamics Of Dipolaritons....751	H1C-1
	<u>Wei Zhang</u> Institute of Applied Physics and Computational Mathematics, China	
11:15	Steady-State Thermal Analysis Of An Integrated 160 GHz Balanced Quadrupler Based On Quasi-Vertical Schottky Diodes....753	H1C-2
	<u>Souheil Nadri</u> ; Linli Xie; Naser Aljabbari; John Gaskins; Brian Foley; Patrick Hopkins; Robert Weikle University of Virginia, United States	
11:30	Comparison Of Model-Based Material Parameter Extraction In Frequency- And Time-Domain....755	H1C-3
	Daniel Stock; <u>Peter Haring Bolívar</u> University of Siegen - High Frequency and Quantum Electronics, Germany	
11:45	A Network Formulation For Characterization Of Plasmonic Interactions In A Semiconductor Nanodimer....757	H1C-4
	Thomas T Y Wong ¹ ; Zhijing Hu ¹ ; <u>Tao Shen</u> ² ; Yanlin Li ¹ ¹ Illinois Institute of Technology, United States; ² Kunming University of Science and Technology, China	
12:00	Hybrid Analysis Of Terahertz Photoconductive Antennas Using Energy Balance Transport Model....759	H1C-5
	Ramin Emadi; Navid Barani; Asad Amirhosseini; <u>Reza Safian</u> Isfahan University of Technology, Iran	
12:15	Theory And Simulation Of A Terahertz Single Grating Rectangular Waveguide Back-ward Wave Oscillator....761	H1C-6
	<u>Wenqiu Xie</u> ; Zi-Cheng Wang; Jirun Luo; Ding Zhao Institute of Electronics, Chinese Academy of Sciences; University of Chinese Academy of Sciences, Bei, China	

11:00	Emission And Detection Of Terahertz Radiation In Double-Graphene-Layer Van Der Waals Heterostructures....763	H1D-1
	Stephane Boubanga Tombet ¹ ; Deepika Yadav ² ; Stevanus Arnold ¹ ; Takayuki Watanabe ¹ ; Victor Ryzhii ¹ ; Taichii Otsuji ¹ ¹ Tohoku University, Research Institute of Electrical Communication, Japan; ² Research Institute of Electrical Communication, Tohoku University, Japan	
11:30	Fast Pyroelectric Response Of Semiconducting YBaCuO Detectors With High IR Sensitivity; Development Of THz Imaging Arrays....764	H1D-2
	Xavier Galiano ¹ ; Annick Dégardin ¹ ; Vishal Jagtap ² ; Alain Kreisler ¹ ¹ UPMC; CentraleSupelec / GeePs, France; ² CentraleSupelec / GeePs, France	
11:45	500 GHz Sensor System In SiGe For Gas Spectroscopy....766	H1D-3
	Klaus Schmalz ¹ ; Philipp Neumaier ² ; Ruoyu Wang ¹ ; Johannes Borngräber ¹ ; Wojciech Debski ³ ; Mehmet Kaynak ¹ ; Dietmar Kissinger ¹ ; Heinz-Wilhelm Hübers ² ¹ IHP, Germany; ² Deutsches Zentrum für Luft- und Raumfahrt (DLR), Germany; ³ Silicon Radar, Germany	
12:00	A Turn-key Cryogenic Superconducting Bolometer Detector System....768	H1D-4
	Adam Woodcraft ¹ ; Peter Ade ² ; James Cox ¹ ; Chris Dunscombe ² ; Rashmi Sudiwala ² ; Tyrone Jones ¹ ; Ken Wood ¹ ¹ QMC Instruments Ltd., United Kingdom; ² Cardiff University, United Kingdom	
12:15	Antenna-Coupled Microcavity Enhanced THz Photodetectors....770	H1D-5
	Daniele Palaferri ¹ ; Yanko Todorov ¹ ; Stefano Barbieri ² ; Djamal Gacemi ² ; Yuk Nga Chen ¹ ; Angela Vasanelli ¹ ; Lianhe Li ³ ; Giles Davies ³ ; Edmund Linfield ³ ; Carlo Sirtori ¹ ¹ Laboratoire Matériaux et Phénomènes Quantiques, Université Paris Diderot - CNRS UMR 7162, 75205 Paris, France; ² University Paris Diderot, France; ³ School of Electronic and Electrical Engineering, University of Leeds, Leeds LS2 9JT, United Kingdom	

11:00 - 12:30 H1E - Gyro-Oscillators and Amplifiers IV

Lecture
Theatre 7

Chairperson: Manfred Thumm

11:00	Recent Experimental Results Of The European 1MW, 170 GHz Short-Pulse Gyrotron Prototype For ITER....772	H1E-1
	<u>Tomasz Rzesnicki</u> ¹ ; Ioannis Gr. Pagonakis ¹ ; Andrey Samartsev ¹ ; Kostantinos Avramidis ¹ ; Gerd Ganterbein ¹ ; Stefan Illy ¹ ; John Jelonnek ¹ ; Jianbo Jin ¹ ; Carsten Lechte ² ; Markus Losert ¹ ; Bernhard Piosczyk ¹ ; Manfred Thumm ¹ ¹ Karlsruhe Institute of Technology, Germany; ² University of Stuttgart, Germany	
11:15	Development Of A High Power 300 GHz Band Gyrotron For Practical Use In Collective Thomson Scattering Diagnostics In LHD....774	H1E-2
	<u>Teruo Saito</u> ¹ ; Jun Kasa ¹ ; Yuusuke Yamaguchi ¹ ; Yoshinori Tatematsu ¹ ; Masaki Kotera ¹ ; Shin Kubo ² ; Takashi Shimozuma ² ; Kenji Tanaka ² ; Masaki Nishiura ³ ¹ University of Fukui, Japan; ² National Institute for Fusion Science, Japan; ³ The University of Tokyo, Japan	
11:30	Novel Self-consistent Linear Theory Of A Gyrotron Oscillator And Experimental Validation....776	H1E-3
	<u>Stefano Alberti</u> ; Jeremy Genoud; Falk Braunmueller; Jean-Philippe Hogge; Minh Quang Tran; Trach Minh Tran Ecole Polytechnique Federale Lausanne, Switzerland	
11:45	Further Experiments Of A W-band Gyro-TWA Based On A Helically Corrugated Interaction Region....778	H1E-4
	<u>Wenlong He</u> ; Craig Donaldson; Liang Zhang; Paul McElhinney; Huabi Yin; Jason Garner; Kevin Ronald; Adrian Cross; Alan Phelps Department of Physics, SUPA, University of Strathclyde, United Kingdom	
12:00	Development Status Of Gyrotron Setup For ITER ECW System....780	H1E-5
	<u>Grigory Denisov</u> ; Alexander Litvak Institute of Applied Physics, Russian Federation	

14:00 - 15:30 H2A - Protein Dynamics and Molecular Spectroscopy - Spectroscopy of Gases, Liquids, and Solids

Lecture
Theatre 2

Chairperson: Axel Zeitler

14:00	Terahertz Dynamics Of Amorphous (Bio)Pharmaceutical Mixtures....782	H2A-1
	<u>Juraj Sibik</u> ; Axel Zeitler University of Cambridge, United Kingdom	
14:30	Spatiotemporal Features Of Nucleic Acid Hydration And Their Changes During Denaturation Revealed By THz Spectroscopy....784	H2A-2
	<u>Heyjin Son</u> ¹ ; Jinyoung Jung ¹ ; Sunmyoung Kim ¹ ; Jaehun Park ² ; Jungmin Jang ¹ ; Kihoon Eom ¹ ; Inkyung Park ¹ ; Gun-Sik Park ¹ ¹ Seoul National University, Korea, Republic of; ² Pohang Accelerator Laboratory, Korea, Republic of	

14:45	Low-frequency Vibrational Dynamics Of Poly(lactic Acid) Stereocomplex Studied By THz Spectroscopy And Solid-state DFT Simulation....786	H2A-3
	<u>Feng Zhang</u> ¹ ; Keisuke Tominaga ¹ ; Michitoshi Hayashi ² ; Houng-Wei Wang ² ; Takashi Nishino ³ ¹ Molecular Photoscience Research Center, Kobe University, Japan; ² Center for Condensed Matter Sciences, National Taiwan University, Taiwan; ³ Department of Chemical Science and Engineering, Graduate School of Engineering, Kobe University, Japan	
15:00	Accelerated Terahertz Water Dynamics Under Osmotic Interaction Of Lipid Bilayers And Polyethylene Glycol....788	H2A-4
	<u>Kihoon Eom</u> ; Heyjin Son; Jin-Young Jeong; Jungmin Jang; In-Kyung Park; Seonmyeong Kim; Gun-Sik Park Seoul National University, Korea, Republic of	

15:15	Sensitive Analytical Gas Spectroscopy Based On Free-electron Laser And Multistage Tunable Fabry-Perot Interferometer....790	H2A-5
	<u>Vitaly Kubarev</u> Budker Institute of Nuclear Physics, Russian Federation	

14:00 - 15:30	H2B - High-Field THz Wave Generation and Nonlinear THz Physics III	Lecture Theatre 3
	Chairperson: Dino Jaroszynski	
14:00	Effect Of Nonlinearity On Surface Plasmon Polaritons In Graphene In The Terahertz Region....791	H2B-1
	<u>Matthew Sanderson</u> ; Yee Sin Ang; Chao Zhang Wollongong University, Australia	
14:30	Out-of-plane THz Electric Field Enhancement In Vertical Nano-slit Arrays....792	H2B-2
	<u>Yannik Waeber</u> ¹ ; Salvatore Bagiante ² ; Justyna Fabianska ¹ ; Thomas Feurer ¹ ; Hans-Christian Sigg ² ¹ Institute of Applied Physics - University of Bern, Switzerland; ² Paul Scherrer Institute, Switzerland	
14:45	Ultrafast Electron Field Emission From Gold Resonant Antennas Studied By Two Terahertz Pulse Experiments....794	H2B-3
	<u>Krzysztof Iwaszcuk</u> ; Maksim Zalkovskij; Andrew Strikwerda; Peter Jepsen DTU Fotonik, Denmark	
15:00	High Power Terahertz Emission At Plasma And Double Plasma Frequencies During REB-Plasma Interaction....795	H2B-4
	<u>Andrey Arzhannikov</u> ¹ ; Alexandr Burdakov ² ; Vladimir Burmasov ² ; Ivan Ivanov ² ; Alexandr Kasatov ² ; Sergey Kuznetsov ² ; Maksim Makarov ² ; Konstantin Mekler ² ; Sergey Polosatkin ² ; Vladimir Postupaev ² ; Andrey Rovenskikh ² ; Stanislav Sinitsky ² ; Vladislav Sklyarov ² ; Vasili Stepanov ² ; Igor Timofeev ² ; Leonid Vyacheslavov ² ¹ Novosibirsk State University, Russian Federation; ² Budker Institute of Nuclear Physics, Russian Federation	

15:15	Optical Depolarization In Liquids And Second Harmonic Generation From The Surface Induced By Intense THz Pulses....797	H2B-5
	<u>Sergey Bodrov</u> ; Aleksey Murzanev; Yury Sergeev; Yury Malkov; Andrey Stepanov Institute of Applied Physics of the Russian Academy of Sciences, Russian Federation	

14:00 - 15:30	H2C - Metamaterial Structures and Applications VI	Lecture Theatre 4
Chairperson: Yusuke Kajihara		

14:00	Epsilon-Near-Zero Lens For Beamshaping Of Sub-Terahertz Waves....799	H2C-1
	Víctor Torres ¹ ; Víctor Pacheco-Peña ¹ ; Bakhtiyor Orazbayev ¹ ; Jorge Teniente ¹ ; Miguel Beruete ¹ ; <u>Miguel Navarro-Cia</u> ² ; Mario Sorolla ¹ ; Nader Engheta ³ ¹ Universidad Pública de Navarra, Spain; ² Imperial College London, United Kingdom; ³ University of Pennsylvania, United States	
14:15	Active Modulation Of Terahertz Wavefront....801	H2C-2
	<u>Yan Zhang</u> ¹ ; Xinkle Wang ¹ ; Jingwen He ² ; Zhenwei Xie ² ¹ Capital Normal University, China; ² Harbin Institute of Technology, China	
14:30	Time-domain High-speed Read-out Of Terahertz Resonator Arrays With Sub-single-resonator Resolution....802	H2C-3
	<u>Michael Nagel</u> ; Christopher Matheisen; Simon Sawallich Protomics GmbH, Germany	
14:45	Plasmonic Metasurfaces: From Perfect Absorption To Phase Modulation....804	H2C-4
	<u>Jiaming Hao</u> National Laboratory for Infrared Physics, Shanghai Institute of Technical Physics, Chinese Academy o, China	
15:00	Flexible Film With Paired Cut Wires For A Uniquely High FOM Above 300....805	H2C-5
	<u>Koki Ishihara</u> ; Yuki Takebayashi; Takehito Suzuki Ibaraki University/Major in Electrical and Electronic Engineering, The Graduate School of Science an, Japan	
15:15	Launching Terahertz Surface Wave With Desired Directions....807	H2C-6
	<u>Xueqian Zhang</u> ¹ ; Yuehong Xu ¹ ; Zhen Tian ¹ ; Jianqiang Gu ¹ ; Chunmei Ouyang ¹ ; Weili Zhang ² ; Jiaguang Han ¹ ¹ Center for Terahertz Waves of Tianjin University, China; ² School of Electrical and Computer Engineering, Oklahoma State University, United States	

14:00 - 15:30 H2D - Sources, Detectors, and Receivers VIII**Lecture
Theatre 6****Chairperson: Gerd Gantenbein**

14:00	Superconducting Detectors For Terahertz Imaging....809	H2D-1
	<u>Jian Chen</u> Nanjing University, China	
14:30	First Absolute Power Measurement Of A Terahertz Time Domain Spectroscopy System Based On InGaAs/InAlAs Photoconductors....811	H2D-2
	<u>Björn Globisch</u> ¹ ; Roman J. B. Dietz ¹ ; Andreas Steiger ² ; Werner Bohmeyer ³ ; Thorsten Göbel ¹ ; Martin Schell ¹ ¹ Fraunhofer Heinrich Hertz Institute, Germany; ² Physikalisch-Technische Bundesanstalt PTB, Germany; ³ Sensor- und Lasertechnik, Germany	
14:45	Sub-THz/THz Amplification In A Semiconductor Superlattice....813	H2D-3
	Alexander Hramov ¹ ; Vladimir Makarov ² ; Alexey Koronovskii ³ ; Kirill Alekseev ⁴ ; Vladimir Maximenko ² ; <u>Nikita Frolov</u> ² ; Mark Greenaway ⁵ ; Mark Fromhold ⁵ ; Olga Moskalenko ² ; Alexander Balanov ⁴ ¹ Saratov State Technical University, Russian Federation; ² REC 'Nonlinear Dynamics of Complex Systems', Saratov State Technical University, Russian Federation; ³ Faculty of Nonlinear Processes, Saratov State University, Russian Federation; ⁴ Department of Physics, Loughborough University, United Kingdom; ⁵ School of Physics and Astronomy, University of Nottingham, United Kingdom	
15:00	Nanostructured Interdigitated Electrodes For Microlensless Photoconductive Terahertz Emitters....815	H2D-4
	<u>Abhishek Singh</u> ¹ ; S. S. Prabhu ² ¹ Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Germany; ² Tata Institute of Fundamental Research, India	
15:15	High Quality Beams Of MV/cm THz Pulses Generated From DSTMS....817	H2D-5
	<u>Pernille Klarskov</u> ; Peter Uhd Jepsen Technical University of Denmark, Denmark	

14:00 - 15:30 H2E - Laser Driven THz Sources II**Lecture
Theatre 7****Chairperson: Richard J. Temkin**

14:00	Coherent Radiation Sources Based On Laser Driven Plasma Waves....818	H2E-1
	<u>Dino Jaroszynski</u> University of Strathclyde	
14:30	Tunability Enhancement Of Injection-seeded THz Parametric Generator....822	H2E-2
	<u>Kosuke Murate</u> ¹ ; Kazuki Imayama ¹ ; Shin'ichiro Hayashi ² ; Kodo Kawase ¹ ¹ Nagoya University, Japan; ² RIKEN, Japan	



14:45	Terahertz Wave Emission From Dual Color Laser-Induced Microplasma....824	H2E-3
	<u>Fabrizio Buccheri</u> ; Xi-Cheng Zhang University of Rochester, United States	
15:00	Studies Of Powerful Terahertz Radiation From Laser-Produced Plasmas....826	H2E-4
	<u>Yutong Li</u> ; Guoqian Liao Institute of Physics, Chinese Academy of Sciences, China	

16:00 - 17:30	H3A - Laser Driven THz Sources III	Lecture Theatre 2
Chairperson: George Neil		

16:00	THz Emission From Graphene Induced By Dynamical Photon Drag....830	H3A-1
	<u>Juliette Mangeney</u> ¹ ; Jean Maysonnave ¹ ; Simon Huppert ² ; Feihu Wang ¹ ; Claire Berger ³ ; de Heer Walt ⁴ ; Ted Norris ⁵ ; Louis-Anne De Vaulchier ¹ ; Sukhdeep Dhillon ¹ ; Jerome Tignon ¹ ; Robson Ferreira ¹ ¹ CNRS/LPA, France; ² CNRS/MPQ, France; ³ School of Physics, Georgia Institute of Technology, Atlanta,, United States; ⁴ School of Physics, Georgia Institute of Technology, Atlanta, Georgia, United States; ⁵ Center for Ultrafast Optical Science, University of Michigan, United States	
16:30	Ultra-intense Laser-Driven Target Normal Sheath Radiation In The Terahertz Region....831	H3A-2
	<u>Zhan Jin</u> ¹ ; HongBin Zhuo ² ; Junghun Shin ¹ ; Noburo Yugami ³ ; MingYang Yu ⁴ ; ZhengMing Sheng ⁵ ; Ryosuke Kodama ¹ ¹ Osaka University, Japan; ² College of Science, National University of Defense Technology, China; ³ Utsunomiya University, Japan; ⁴ Zhejiang University, China; ⁵ Shanghai Jiao Tong University, China	
16:45	Optical Generation Of Terahertz Based On All Fiber Highly Coherent Optical Parametric Light Source....833	H3A-3
	<u>Sigang Yang</u> ; Xiaojian Wang; Chen Jin; Donghui Jin; Hongwei Chen; Minghua Chen; Shizhong Xie; Sigang Yang Tsinghua University, China	
17:00	Simulation Of Laser Pulse Driven Terahertz Generation In Corrugated Plasma Channels....835	H3A-4
	<u>Chenlong Miao</u> ¹ ; John Palastro ² ; Andrew Pearson ¹ ; Thomas Antonsen ¹ ¹ Institute for Research in Electronics and Applied Physics, University of Maryland, College Park 207, United States; ² Icarus Research, Inc., Bethesda, Maryland 20824, United States	

17:15	Spectrum And Polarization Of THz Radiation From Two-color Femtosecond Laser Breakdown: Theory And Experiment....837	H3A-5
	<u>Mikhail Esaulkov</u> ¹ ; Vera Andreeva ² ; Vladimir Makarov ² ; Petr Solyankin ² ; Alexander Shkurinov ² ; Olga Kosareva ² ; Nikolay Panov ² ; Daniil Shipilo ²	
	¹ Institute on Laser and Information Technologies of the Russian Academy of Sciences (ILIT RAS), Russian Federation; ² Physics Department and International Laser Center of M.V. Lomonosov Moscow State University, Russian Federation	

16:00 - 17:30	H3B - Spectroscopy and Material Properties	Lecture Theatre 3
	Chairperson: Vincent Wallace	

16:00	Magnon Polariton And Psudo-Magnon-Polariton....839	H3B-1
	<u>Can-Ming Hu</u> ¹ ; Bimu Yao ² ; Sandeep Kaur ¹ ; Yongshen Gui ¹ ; Wei Lu ²	
	¹ University of Manitoba, Canada; ² National Laboratory for Infrared Physics, Chinese Academy of Sciences, China	
16:30	THz Emission From InP And InGaAs Nanowires Fabricated Using Electron Beam Lithography....842	H3B-2
	<u>Soner Balci</u> ¹ ; Ju-Hyung Kim ¹ ; David Czaplewski ² ; Il Woong Jung ² ; Fariba Hatami ³ ; Patrick Kung ³ ; Seongsin Margaret Kim ¹	
	¹ University of Alabama, Electrical and Computer Engineering, United States; ² Center for Nanoscale Materials, Argonne National Laboratory, United States; ³ Department Physics, Humboldt University, Germany	
16:45	THz Near-field Nanoscopy Of Graphene Layers....844	H3B-3
	Damien Ducatteau; <u>Jean-Francois Lampin</u> ; Dominique Vignaud; Geetanjali Deokar; Antoine Pagies	
	IEMN, France	
17:00	Charge Carrier Dynamics In Benzoporphyrin Thin Films Investigated By Time-Resolved THz Spectroscopy....846	H3B-4
	<u>Kaoru Ohta</u> ¹ ; Sho Hiraoka ² ; Yuto Tamura ³ ; Hiroko Yamada ³ ; Keisuke Tominaga ⁴	
	¹ Molecular Photoscience Research Center, Kobe University, Japan; ² Graduate School of Science, Kobe University, Japan; ³ Graduate School of Materials Science, Nara Institute of Science and Technology, Japan; ⁴ Molecular Photoscience Research Center, Graduate School of Science, Kobe University, Japan	
17:15	Magnetic Field Induced Spin Reorientation Transition In YFeO₃ Probed With THz Spectroscopy....848	H3B-5
	GuoHong Ma; Junjie Jiang	
	Shanghai University, China	

16:00 - 17:30	H3C - Applications in Security and Defense - Applications in Art Conservation studies	Lecture Theatre 4
Chairperson: Zengxiu Zhao		

16:00	Terahertz Time-domain Imaging Of A 17th Century Lacquered Cabinet: A Contribution To European Lacquerwares Characterization....849	H3C-1
	Corinna Ludovica Koch Dandolo ¹ ; Vincent Cattersel ² ; Peter Uhd Jepsen ¹ ¹ DTU Fotonik, Denmark; ² Department Conservation Studies, research group Heritage and Sustainability, University of Antwerp, Belgium	
Cyclododecane As A Reversible Contrast Enhancer For The Terahertz Imaging Of Frescos....851		
J. Bianca Jackson ¹ ; Tom Owen ¹ ; Gillian Walker ¹ ; John Bowen ¹ ; David Giovannacci ² ; Dominique Martos-Levif ² ; Vincent Detalle ² ¹ University of Reading, United Kingdom; ² Laboratoire de Recherche des Monuments Historique, France		
16:30	Terahertz Time Of Flight Imaging Of Hidden Layers In Oleo Paintings...853	H3C-3
	A. M. Gomez-Sepulveda ¹ ; A. I. Hernandez-Serrano ² ; E. Castro-Camus ² ¹ Escuela de Conservación y Restauración de Occidente Secretaría de Innovación, Ciencia y Tecnología, Mexico; ² Centro de Investigaciones en Optica, A. C., Mexico	
16:45	Non-destructive Inspection Of Chemicals In Mail Envelopes Using An Injection-seeded Terahertz-wave Parametric Generator....854	H3C-4
	Ryo Yamazaki; Mikiya Kato; Kosuke Murate; Kazuki Imayama; Kodo Kawase Nagoya University, Japan	
17:00	On The Development Of A Quasi-optical System For Short And Long Range Standoff Imagers....856	H3C-5
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16:00 - 17:30	H3D - Devices, Components, and Systems V	Lecture Theatre 6
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16:30	An Active Terahertz Magneto-plasmonic Device Based On A Cobalt Aperture Array....860	H3D-3
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17:00	Passive Electric Monopole Array For Terahertz Surface Wave Launcher....862	H3D-5
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	<u>Lei Ding</u> ¹ ; Wei Lu ² ¹ Shanghai Institute of Technical Physics, CAS, China; ² Shanghai Institute of Technical Physics, CAS, China	
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¹Jet Propulsion Laboratory, United States; ²Applied Physics Laboratory, United States; ³Goddard Space Flight Center, United States; ⁴Radiometer Physics GmbH, Germany

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	¹ Department of Mechanical Engineering, Boston University, United States; ² Department of Physics, Boston University, United States; ³ Microelectronics Research Center, The University of Texas at Austin, United States; ⁴ Department of Physics, UC-San Diego, United States	
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11:30	Curing Monitoring Of Two-Component Epoxy Adhesives At THz Frequencies....880	F1A-2
	<u>Amin Soltani</u> ; Thorsten Probst; Stefan Sommer; Martin Koch	
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	Junliang Dong; <u>David Citrin</u> ; Nico Declercq; Alexandre Locquet	
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12:15	Transfer Matrix Method For Precise Determination Of Thicknesses In A 150-ply Polyethylene Composite Material....886	F1A-5
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	¹ Military University of Technology, Poland; ² Fraunhofer Institute for Physical Measurement Techniques IPM, Germany	

11:00 - 12:30	F1B - High-Field THz Wave Generation & Nonlinear THz Physics IV	Lecture Theatre 3
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11:00	Revision Of Photo-current Model Of Terahertz Wave Generation By Two-color Femtosecond Laser Filamentation In Air....888	F1B-1
	Jiayu Zhao ¹ ; Yizhu Zhang ² ; Weiwei Liu ¹	
	¹ Nankai University, China; ² Shanghai Advanced Research Institute, Chinese Academy of Sciences, China	
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	¹ Seoul National University, Korea, Republic of; ² Ajou University, Korea, Republic of; ³ Sejong University, Korea, Republic of	
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	<u>Mostafa Shalaby</u> ¹ ; Christoph. P. Hauri ²	
	¹ Paul Scherrer Institute, Switzerland; ² Paul Scherrer Institute and Ecole Polytechnique Federale de Lausanne, Switzerland	
12:00	High Power Terahertz Induced Carrier Multiplication In Silicon....894	F1B-4
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	¹ The University of Sheffield, United Kingdom; ² Rohm Co. Ltd., Japan	
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	¹ Jet Propulsion Laboratory, United States; ² SUNY at Buffalo, United States	
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