

APROPOS 19

Advanced Properties and Processes in Optoelectronic Materials and Systems

1-4 October, 2024 - Conference

1 October, 2024 - Tutorial session & Masterclass

Day 1, October 1

Conference hall D401

8:30	9:00	Registration (FTMC lobby)
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TUTORIAL SESSION

9:00	10:30	Andreas Trabesinger (Reinschrift Science Communication, Zurich, Switzerland) Training courses: How to prepare a manuscript for highly-ranked journals – Part I
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10:30 – 10:50 Coffee break (D402)

10:50	12:20	Andreas Trabesinger: How to prepare a manuscript for highly-ranked journals – Part II
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12:20 – 13:30 Lunch break

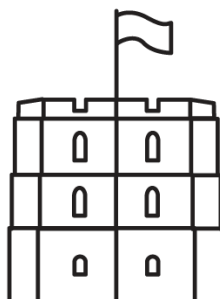
13:30	15:00	Elisabetta Sieni (University of Insubria, Varese, Italy): Photovoltaic generation: from the cell to the module
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15:00 – 15:20 Coffee break (D402)

15:20	16:05	Michael Shur, (Troy, NY, USA): THz plasmonics physics and applications (<i>online</i>)
16:05	16:50	Adrian Cernescu (AttoCube Systems, Haar, Germany): AFM and vibrational spectroscopy in the combination for neaSCOPE
16:50	17:35	Egidijus Anisimovas (Vilnius University): Floquet engineering: Using periodic driving to steer controllable quantum systems

18:00 – 19:30 RECEPTION (FTMC lobby)





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Day 2, October 2

Conference hall A101

8:30	9:00	Registration (FTMC lobby)
	9:00	CONFERENCE OPENING Director of FTMC Ramūnas Skaudžius Chair of APROPOS 19 Conference Gintaras Valušis

SECTION 1: Novel wireless communication systems

9:10	9:40	Iwao Hosako (National Inst. Inform.Com, Tokyo, Japan): Advances and Future Directions in Terahertz Wireless Communications. Invited
9:40	10:10	Guillaume Ducournau (CNRS and University of Lille, France): THz communications & photonics techniques for mm-wave/THz devices and system measurements. Invited



10:10 – 10:30 Coffee break (FTMC lobby)

SECTION 2: Special session “High frequency devices and semiconductor chips”

10:30	11:00	Xavier Rotenberg (IMEC, Leuven, Belgium). Invited
11:00	11:30	Safumi Suzuki (Tokyo Institute of Technology): Resonant-tunneling-diode terahertz oscillators with milliwatt power outputs. Invited
11:30	12:00	Chong Li (University of Glasgow, UK): Ultrafast and nonlinear behaviours in III-V compound semiconductor devices. Invited



12:20 – 13:30 Lunch break

SECTION 3: Novel terahertz materials and devices

13:15	13:45	Chiko Otani (RIKEN Center for Advanced Photonics, Sendai, Japan): Development of THz phase-randomizing absorber. Invited
13:45	14:15	Hiroshi Ito (University of Tokyo, Japan): Low-Noise Terahertz-Wave Detector: Fermi-Level Managed Barrier Diode. Invited
14:15	14:30	R. Kobayashi (University of Kyoto, Japan): Structural optimization and implementation of superconducting terahertz source based on the anisotropic dielectric model
14:30	14:45	L. Stakėla (FTMC, Lithuania): Plasmonic Eigenmodes of a Semiconductor Superlattice in Conditions of Bloch Gain
14:45	15:00	D. Čibiraitė-Lukenskienė (Fraunhofer ITWM, Kaiserslautern, Germany and FTMC, Lithuania): Enhancing Wood Recycling from Bulky Waste Using Multi-Sensor Fusion with Terahertz Imaging



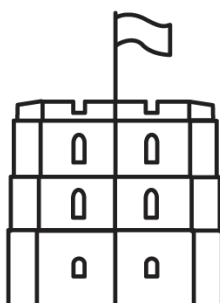
15:00 – 15:30 Coffee break (FTMC lobby)

SECTION 4: SPECIAL SESSION – United Lithuanian-Polish workshop “LUBLIN READINGS”

15:30	16:00	Martynas Jakulis (Vilnius University): The Constitution of 3 May 1791: Origins, Interpretations, and Legacy. Invited
16:00	16:30	Wojciech Knap (Institute of High Pressure Physics PAS, Warsaw, Poland): Terahertz plasmonics devices. Invited
16:30	17:00	Irmantas Kašalynas (FTMC, Lithuania): Hybrid THz plasmonics. Invited
17:00	17:15	M. Dub (Institute of High Pressure Physics PAS, Warsaw, Poland): Electrical Control of Terahertz Plasmonic Crystal Phases
17:15	17:30	R. Ivaškevičiūtė-Povilauskienė (FTMC, Lithuania): Coloured Digital Terahertz Holography

17:30 – 18:30 **Poster session** (FTMC lobby) / **Best 3 min oral presentation competition** (D401) / Refreshments will be provided at FTMC lobby

18:30 **AIDIJA chorus concert** (Conference hall A101)





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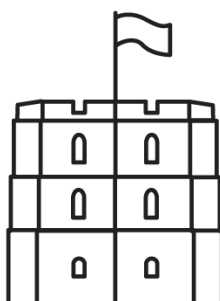
Day 2, October 2

Parallel section

Conference hall D401

SECTION 3: SPECIAL SESSION: dedicated to FLORIN project

16:00	16:30	Nikita Belko (University of Eastern Finland, Finland): Eco-friendly, facile preparation of carbon nitride/titanium dioxide nanocomposites for catalytic applications. Invited
16:30	16:45	M. Shuba (FTMC, Lithuania): Microscopic description of a film of the single-walled carbon nanotube in the optical range
16:45	17:00	B. Xu (University of Eastern Finland): Increasing production yield of sensing diamond nanoneedles
17:00	17:15	M. Quarshie (University of Eastern Finland): Diamond nanoneedles for biosensing
17:15	17:30	U. Bagdonaitė (VU GMC, Lithuania): Live-cell single-molecule localization microscopy-based studies of Cas9-DNA interaction dynamics
17:30	17:45	U. Roliūtė (FTMC, Lithuania): Biomolecule Interaction Studies Using Patterned Surfaces and Single-Molecule Fluorescence Microscopy





Day 3, October 3

Conference hall A101

8:30	9:00	Registration (FTMC lobby)
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SECTION 5: Novel optoelectronic devices

9:00	9:30	Andy Monkman (Durham university, UK): Optimising the hyperfluorescence photophysical pathways for the next generation of OLED displays. Invited
9:30	10:00	Vidmantas Gulbinas (FTMC, Lithuania): Thermally activated and coherent charge carrier separation in all-organic solar cells. Invited
10:00	10:30	Ray-Hua Horng (National Yang Ming Chiao Tung University, Hsinchu, Taiwan): Study of Micro-LEDs Arrays for the Light Source between High-Performance AI Chips and GPUs Applications. Invited



10:30 – 11:00 Coffee break (FTMC lobby)

11:00	11:30	Abdel El Fatimy (University Mohammed VI Polytechnic, Ben Guerir Marocco): Graphene quantum dots bolometers. Invited
11:30	11:45	El Hadj Abidi (University of Salamanca, Spain): Terahertz rectification up to 3.9 THz by using an Asymmetric Dual-Grating Gate Field-Effect Transistor
11:45	12:00	J. Jorudas (FTMC, Lithuania): THz bow-tie type diodes and bolometers based on non-uniform electron heating in AlGaIn/GaN HEMT channels
12:00	12:15	D. Pashnev (FTMC, Lithuania): Observation of 2D plasmon THz radiation in AlGaIn/GaN heterostructures using modulation spectroscopy
12:15	12:30	D. But (Institute of High Pressure Physics PAS): Non-contact characterization of HgCdTe films with terahertz time-domain spectroscopy



12:30 – 13:30 Lunch break

SECTION 6: THz technologies and applications

13:30	14:00	Heinz-Wilhelm Hübers (German Aerospace Center, Berlin, Germany): Atomic oxygen in the atmospheres of the terrestrial planets measured by THz spectroscopy. Invited
14:00	14:30	Adrian Cernescu (AttoCube Systems, Germany): IR-THz nano-imaging and nano-spectroscopy. Emerging tools for physical and bio(chemical) nanoanalysis. Invited

14:30	14:45	V. Janonis (FTMC, Lithuania): Near field imaging of plasmon phonon polaritons launched on n-GaN surface grating
14:45	15:00	M. Bialek (Institute of High Pressure Physics PAS): Hybridization of terahertz phonons and magnons in disparate and spatially-separated material specimens
15:00	15:15	D. Seliuta (FTMC, Lithuania): Fano resonances in displaced and mirror-symmetric arrays of split ring resonators at sub-terahertz frequency
15:15	15:30	D. Yavorskiy (Institute of High Pressure Physics PAS): Electrical tuning of terahertz magnon-polaritons using a liquid crystal cavity
15:30	15:45	K. Ikamas (Vilnius University): Electronic THz beam modulation with CMOS transistor switches

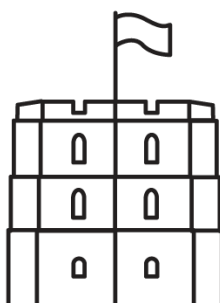


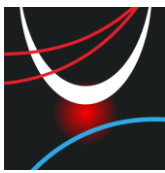
15:45 – 16:00 Coffee break (FTMC lobby)

16:00	16:15	M. Bauer (Fraunhofer ITWM, Kaiserslautern, Germany): Terahertz in Industry: Technology and Application
16:15	16:30	R. Norkus (FTMC, Lithuania): Investigation of thin bismuth and tellurium layers using THz pulse excitation spectroscopy
16:30	16:45	F. Wahaia (Physics Institute, Millennium Institute for Research in Optics, Chile): Effect of bone age and anatomy on the variability of the bovine bone by-product by Terahertz Time-Domain spectroscopy and Energy-Dispersive X-ray microanalysis
16:45	17:00	I. Grigelionis (FTMC, Lithuania): <i>Ukrainian and lithuanian heraldic symbols through terahertz emission spectroscopy</i>

17:30 – 19:30 **Excursion in Vilnius Old Town** (Bus departures from the FTMC entrance at **17:10**)

20:00 – 22:00 **Networking event with refreshments** (Arkangelo Conference & Art Centre (Maironio g. 11)





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SECTION 7: Semiconductors for optoelectronics and photonics

9:00	9:30	Saulius Marcinkevičius (KTH, Sweden): Interwell carrier transport in InGaN quantum well LEDs. Invited
9:30	10:00	Wladislaw Michailow (University of Cambridge, UK): Terahertz technology: novel photonic detectors, metamaterial modulators, and waveguide optics. Invited
10:00	10:15	A. Zelioli (FTMC, Lithuania): Design, growth and characterization of Vertical-External-Cavity Surface-Emitting Laser for NIR
10:15	10:30	D. Vizbaras (Vilnius University): Non-linear terahertz detection with graphene field-effect transistor terahertz detectors



10:30 – 10:45

Coffee break (FTMC lobby)

SECTION 8: Terahertz optics and imaging

10:45	11:15	Agnieszka Siemion (Warsaw University of Technology, Poland): Achievements, challenges, and prospects for THz optical systems. Invited
11:15	11:45	Sergejus Orlovas (FTMC, Lithuania): Structured light and laser ablated flat optics in nonparaxial terahertz imaging systems. Invited
11:45	12:00	L. Minkevičius (FTMC, Lithuania): Dual-Mode Homodyne Imaging with C-Shaped Metalenses
12:00	12:15	A. Saushin (University of Eastern Finland): Super-resolution optical fluctuation sensing
12:15	12:30	V. Abramova (FTMC, Lithuania): Problems of terahertz images quality enhancement
12:30	12:45	S. Driukas (FTMC, Lithuania): Polymer-based metalenses for THz beam engineering



12:45 – 13:30

Lunch break

Special Section dedicated to Quantum Technologies

13:30	14:00	Fedor Jelezko (Ulm University, Germany): Spin qubits in diamond. Invited
14:00	14:30	Radek Łapkiewicz (University of Warsaw, Poland): Quantum imaging with undetected photons. Invited
14:30	15:00	Gediminas Juzeliūnas (Vilnius University): Spins and cold atoms. Key-note
15:00	15:15	J. Janušonis (FTMC, Lithuania): Point Defects for Quantum Technologies
15:15	15:45	M. Maciaszek (Warsaw University, Poland): First principles modeling of quantum defects in hexagonal boron nitride. Key-note
15:45	16:00	L. Razinkovas (FTMC, Lithuania): Theoretical Modeling of Vibrationally Resolved Optical Lineshapes of Semiconductor Deep-Level Defects
16:00	16:15	M. Marcozzi (Vilnius University): Recent Advances in Quantum Machine Learning Applications

16:15 – 16:30 **Awards and closing remarks**

16:30 **Excursion to the laboratories and Clean Room Facilities**

