

The 25th International Conference on Advanced Laser Technologies

# ALT'17

September 10-15, Hanwha Resorts Haeundae Tivoli, Busan, Korea

September 10, 2017 (Sunday)		Room A	Room B	Room C	Room D	Room E		
		B1F	3F					
		Monterosso	Manarola	Vernazza B	Cornelia	Lobby		
15:00	18:00					Registration		
18:00	20:00	Welcome Reception (Vernazza, 3F)						
September 11, 2017 (Monday)		Room A	Room B	Room C	Room D	Room E		
		B1F	3F					
		Monterosso	Manarola	Vernazza B	Cornelia	Lobby		
9:00	9:45	Opening Ceremony				Registration Exhibition		
9:45	10:30	Plenary Session 1						
10:30	10:50	Coffee Break						
10:50	12:30	[MB-I] THz Source I	7	[MC-I] Ultrashort Pulsed Laser Processing	10		[MD-I] Laser-Matter Interaction I	2
12:30	13:45	Lunch						
13:45	15:20	[MB-II] THz Source II	7	[MC-II] Extreme Ultrashort Pulse Source	10		[MD-II] Laser-Matter Interaction II	2
15:20	15:35	Coffee Break						
15:35	17:10	[MB-III] Photoacoustic Imaging and Sensing	6	[MC-III] Biophotonics V	3		[MD-III] Advanced Display	11
17:10	17:25	Coffee Break						
17:25	18:45	[MB-IV] THz Spectroscopy	7	[MC-IV] Biophotonics VI	3		[MD-IV] Advanced lasers and photonic devices	12
September 12, 2017 (Tuesday)		Room A	Room B	Room C	Room D	Room E		
		B1F	3F					
		Monterosso	Manarola	Vernazza B	Cornelia	Lobby		
9:00	9:45	Plenary Session 2				Registration Exhibition		
9:45	10:30	Plenary Session 3						
10:30	10:50	Coffee Break						
10:50	12:30	[TB-I] Novel Laser Architecture	4	[TC-I] Biophotonics I	3		[TD-I] Laser-Matter Interaction III	2
12:30	13:45	Lunch						
13:45	15:20	[TB-II] Power Scaling Strategy	4	[TC-II] Biophotonics II	3		[TD-II] Laser-Matter Interaction IV	2
15:20	15:40	Coffee Break						
15:40	17:15	[TB-III] Visible & Mid-IR Lasers	4	[TC-III] Optical Sensors	1		[TD-III] Holographic Display	11
17:15	18:40	[TP1] Poster Session I						

September 13, 2017 (Wednesday)		Room A B1F Monterosso	Room B Manarola	Room C 3F Vernazza B	Room D Cornelia	Room E Lobby		
9:00	9:45	Plenary Session 4					Registration Exhibition	
9:45	10:10	Coffee Break						
10:10	11:50	[WB-I] Nonlinear optics and photonics I	8	[WC-I] Ultrafast Characterization and Femtosecond Fiber laser	10	[WD-I] Next generation optical networks		12
11:50	13:00	Lunch						
13:00	18:00	Excursion						
September 14, 2017 (Thursday)		Room A B1F Monterosso	Room B Manarola	Room C 3F Vernazza B	Room D Cornelia	Room E Lobby		
9:00	9:45	Plenary Session 5					Registration Exhibition	
9:45	10:10	Coffee Break						
10:10	11:45	[ThB-I] Nonlinear optics and photonics II	8	[ThC-I] Biophotonics III	3	[ThD-I] Laser Materials		4
11:45	13:05	Lunch						
13:05	14:40	[ThB-II] THz Application I	7	[ThC-II] Biophotonics IV	3	[ThD-II] Ultrafast Laser Technology		4
14:40	15:00	Coffee Break						
15:00	16:35	[ThB-III] THz Application II	7	[ThC-III] Laser-Matter Interaction V	2	[ThD-III] Micro-and nanophotonics I		9
16:35	18:00	[ThP1] Poster Session II						
18:00	21:00	Conference Dinner						
September 15, 2017 (Friday)		Room A B1F Monterosso	Room B Manarola	Room C 3F Vernazza B	Room D Cornelia	Room E Lobby		
9:00	10:40	[FB-I] THz Bio	7	[FC-I] Laser Diagnostics and Spectroscopy I	5	[FD-I] Micro-and nanophotonics II	9	
10:40	11:00	Coffee Break						
11:00	12:20			[FC-II] Laser Diagnostics and Spectroscopy II	5	[FD-II] Micro-and nanophotonics III	9	

	Section
1	Sensors
2	Laser-matter interaction
3	Biophotonics
4	Laser systems and materials
5	Laser diagnostics and spectroscopy
6	Photoacoustics
7	THz sources and applications
8	Nonlinear optics and photonics
9	Micro-and nanophotonics
10	Ultrashort laser technologies and applications
11	Imaging and displaying
12	Fiber optics and optical communications

September 11 (Monday) / 10:50-12:30

Room B Manarola

**[MB-I] THz Source I**

**MB-I-1 10:50-11:10**

**[Invited] Introduction into Nonlinear THz Photonics: Basis and their Potential Applications**

Alexey Balakin, Peter Solyankin, and Alexander Shkurinov  
*M. V. Lomonosov Moscow State Univ., Russia*

**MB-I-2 11:10-11:30**

**[Invited] Control of Terahertz Yield and Field Vector Orientation in a Two-Colour Femtosecond Filament**

O. G. Kosareva<sup>1</sup>, N. A. Panov<sup>1</sup>, V. A. Andreeva<sup>1</sup>, D. E. Shipilo<sup>1</sup>, M. N. Esaulkov<sup>1</sup>, P. M. Solyankin<sup>1</sup>, A. P. Shkurinov<sup>1</sup>, Y. Chen<sup>2</sup>, S. L. Chin<sup>3</sup>, V. A. Makarov<sup>1</sup>, and A. B. Savel'ev<sup>1</sup>  
<sup>1</sup>*Lomonosov Moscow State Univ., Russia*, <sup>2</sup>*Shanghai Jiao Tong Univ., China*, *Universite Laval, Quebec, Canada*

**MB-I-3 11:30-11:50**

**[Invited] Development and Application of Powerful and Stable THz Gyrotrons**

M. Glyavin  
*Inst. of Applied Physics RAS, Russia*

**MB-I-4 11:50-12:10**

**[Invited] Off-Axis THz Parametric Oscillator**

Yu-Chung Chiu and Yen-Chieh Huang  
*Nat'l Tsing Hua Univ., Taiwan*

**MB-I-5 12:10-12:30**

**[Invited] Magnetophotonics with Mie Resonances in Nanoantennas**

Barsukova M.G.<sup>1</sup>, Shorokhov A.S.<sup>1</sup>, Musorin A.I.<sup>1</sup>, Neshev D.N.<sup>2</sup>, Kivshar Y.S.<sup>2</sup>, and Fedyanin A.A.<sup>1</sup>  
<sup>1</sup>*Lomonosov Moscow State Univ., Russia*, <sup>2</sup>*The Australian Nat'l Univ., Australia*

**September 11 (Monday) / 10:50-12:30**

**Room C Vernazza B**

**[MC-I] Ultrashort Pulsed Laser Processing**

**MC-I-1 10:50-11:10**

**[Invited] A 2 kW Single-Mode Fiber Laser using Bidirectional-Pump Scheme**

Fan Zhang, Wenyong Zheng, Pengyang Shi, and Xinhai Zhang  
*Southern Univ. of Science and Tech., China*

**MC-I-2 11:10-11:30**

**[Invited] Tailored Femtosecond Bessel Beam for High Aspect-Ratio through Hole Drilling**

Koji Sugioka<sup>1</sup>, Fei He<sup>1,2</sup>, and Ya Cheng<sup>2</sup>  
<sup>1</sup>*RIKEN Center for Advanced Photonics, Japan*, <sup>2</sup>*Chinese Academy of Sciences, China*

**MC-I-3 11:30-11:50**

**[Invited] Periodic Nano-Texturing by Interference Femtosecond Laser Processing Technique**

Y. Nakata, M. Yoshida, K. Osawa, and N. Miyanaga  
*Osaka Univ., Japan*

**MC-I-4 11:50-12:10**

**[Invited] Processing of Materials with Shaped Femtosecond Laser Pulses**

W. Chu<sup>1</sup>, Y. Tan<sup>1</sup>, and Y. Cheng<sup>1,2</sup>  
<sup>1</sup>*Chinese Academy of Sciences, China*, <sup>2</sup>*East China Normal Univ., China*

**MC-I-5 12:10-12:30**

**[Invited] Multiscale Laser Sintering Tech. for Various Applications**

D. Kim  
*POSTECH, Korea*

September 11 (Monday) / 10:50-12:30

Room D Cornelia

[MD-I] Laser-Matter Interaction I

**MD-I-1 10:50-11:10**

**[Invited] The Multi-Functional High Power Laser Platform in NLHPLP**

Jianqiang Zhu, Jian Zhu, Xuechun Li, Baoqiang Zhu, Weixin Ma, Dean Liu, Cheng Liu, Xingqiang Lu, Wei Fan, Zhigang Liu, Dongfeng Zhao, Shenlei Zhou, Yanli Zhang, Li Wang, Mingying Sun, Bingyan Wang, Zhaoyang Jiao, Lei Ren, Guowen Zhang, Jie Miao, and Zunqi  
*Physics Shanghai Inst. of Optics and Fine Mechanics, China*

**MD-I-2 11:10-11:30**

**[Invited] High Intensity (>1022 W/cm<sup>2</sup>), High Contrast (<10<sup>-11</sup>), Repetitive (0.1 Hz) J-KAREN-P Laser Facility at QST**

H. Kiriya, M. Nishiuchi, A. S. Pirozhkov, Y. Fukuda, H. Sakaki, A. Sagisaka, N. P. Dover, K. Kondo, K. Nishitani, K. Ogura, M. Mori, Y. Miyasaka, M. Kando, and K. Kondo  
*Nat'l Inst.s for Quantum and Radiological Science and Tech., Japan*

**MD-I-3 11:30-11:50**

**[Invited] Efficient Coupling of Sub-PW Laser Pulse with Solid Target at PEARL Facility**

A. Soloviev<sup>1</sup>, K. Burdonov<sup>1</sup>, S. N. Chen<sup>1,2</sup>, A. Ereemeev<sup>1</sup>, S. Pikuz<sup>3</sup>, G.V. Pokrovskiy<sup>3</sup>, T. A. Pikuz<sup>3</sup>, G. Revet<sup>1,2</sup>, A. Sladkov<sup>1</sup>, V. Ginzburg<sup>1</sup>, E. Khazanov<sup>1</sup>, A. Kuzmin<sup>1</sup>, D. K. Batheja<sup>4</sup>, S. Mironov<sup>1</sup>, R. Osmanov<sup>1</sup>, I. Shaykin<sup>1</sup>, A. Shaykin<sup>1</sup>, I. Yakovlev<sup>1</sup>, M. Starodubt  
*<sup>1</sup>Inst. of Applied Physics of the Russian Academy of Sciences, Russia, <sup>2</sup>Université Paris-Saclay, France, <sup>33</sup>Joint Inst. for High Temperatures Russian Academy of Science (RAS), Russia, <sup>4</sup>Inst. of Physics of the Czech Academy of Sciences, Czech Rep*

**MD-I-4 11:50-12:10**

**[Invited] Particle Acceleration by the High Intensity (<1022 W/cm<sup>2</sup>), High Contrast (<10<sup>-11</sup>), Repetitive (0.1 Hz) J-KAREN- P Laser**

M. Nishiuchi<sup>1</sup>, H. Kiriya<sup>1</sup>, H. Sakaki<sup>1</sup>, N.P. Dover<sup>1</sup>, A. S. Pirozhkov<sup>1</sup>, Y. Fukuda<sup>1</sup>, K. Kondo<sup>1</sup>, T. Miyahara<sup>1,2</sup>, A. Sagisaka<sup>1</sup>, M. A. Alkhimova<sup>3</sup>, T. A. Pikuz<sup>3,4</sup>, A. Ya. Faenov<sup>4</sup>, K. Ogura<sup>1</sup>, T. Zh. Esirkepov<sup>1</sup>, Y. Watanabe<sup>2</sup>, J. Koga<sup>1</sup>, S. V. Bulanov<sup>1</sup>, M. Kando<sup>1</sup>, a  
*<sup>1</sup>Nat'l Inst.s for Quantum and Radiological Science and Tech. (QST), Japan, <sup>2</sup>Kyushu Univ., Japan, <sup>3</sup>Russian Academy of Sciences, Russia, <sup>4</sup>Osaka Univ., Japan*

**MD-I-5 12:10-12:30**

**[Invited] Laser Pulses Interaction with Solid and Liquid Materials: Applications to Biomedical, Mechanical and Chemical Top Technologies**

Ion N. Mihailescu and Carmen Ristoscu

*INFLPR, Romania*

September 11 (Monday) / 13:45-15:20

Room B Manarola

**[MB-II] THz Source II**

**MB-II-1 13:45-14:05**

**[Invited] On-Chip Picosecond Pulses in 2DEG and Graphene**

A. S. Mayorov<sup>1</sup>, J. B. Wu<sup>2</sup>, N. Hunter<sup>2</sup>, O. Sydoruk<sup>3</sup>, C. Russell<sup>2</sup>, C. D. Wood<sup>2</sup>, D. Mistry<sup>2</sup>, L. H. Li<sup>2</sup>, W. Muchenje<sup>2</sup>, M. C. Rosamond<sup>2</sup>, L. Chen<sup>2</sup>, E. H. Linfield<sup>2</sup>, A. G. Davies<sup>2</sup>, and J. E. Cunningham<sup>2</sup>

<sup>1</sup>Nat'l Univ. of Singapore, Singapore, <sup>2</sup>Univ. of Leeds, UK, <sup>3</sup>Imperial College London, UK

**MB-II-2 14:05-14:25**

**[Invited] Tunable Continuous Wave Terahertz Generation using Monolithic Integrated Dual-Mode DFB Laser**

Hyun-Soo Kim, Eui Su Lee, Donghun Lee, Kiwon Moon, Sang-Pil Han, Il-Min Lee, and Kyung Hyun Park  
*ETRI, Korea*

**MB-II-3 14:25-14:45**

**[Invited] Nano-Electrode Photonic Devices for the Generation and Detection of Pulse and Continuous-Wave THz Radiation**

Kiwon Moon, Il-Min Lee, Eui Su Lee, Dong Woo Park, Hyun Soo Kim, Jeong-Woo Park, Sang-Pil Han, Kyeong Sun Choi, and Kyung Hyun Park  
*ETRI, Korea*

**MB-II-4 14:45-15:05**

**[Invited] Resonant Tunneling Diodes for THz Applications**

Jaeyoung Kim<sup>1</sup>, Toshikazu Mukai<sup>1</sup>, Sebastian Diebold<sup>2</sup>, Masayuki Fujita<sup>2</sup>, and Tadao Nagatsuma<sup>2</sup>

<sup>1</sup>ROHM Co., Ltd., Japan, <sup>2</sup>Osaka Univ., Japan

**MB-II-5 15:05-15:25**

**[Invited] Evidence of Two-Photon Absorption Anisotropy in Zinc-Blende Crystals through Terahertz Optical Rectification**

F. E. Sanjuan, G. Gaborit, and J. -L. Coutaz  
*Univ. Savoie Mont-Blanc, France*



September 11 (Monday) / 13:45-15:20

Room C Vernazza B

**[MC-II] Extreme Ultrashort Pulse Source**

**MC-II-1 13:45-14:05**

**[Invited] Next Generation High Harmonic Sources**

E. J. Takahashi, N. Kanda, Y. Fu, B. Xue, and K. Midorikawa  
*RIKEN, Japan*

**MC-II-2 14:05-14:25**

**[Invited] Atmospheric Applications of Ultrashort-Pulse Lasers**

Pavel Polynkin  
*Univ. of Arizona, USA*

**MC-II-3 14:25-14:45**

**[Invited] High Order Harmonic Generation by Tunable Laser Mid-Infrared Pulsed in Solids: New Opportunities for Spectroscopy of Electron Band Structure**

A. B. Fedotov<sup>1,2</sup>, A. A. Lanin<sup>1,2</sup>, E. A. Stepanov<sup>1,2</sup>, and A. M. Zheltikov<sup>1,2,3</sup>  
<sup>1</sup>*M. V. Lomonosov Moscow State Univ., Russia*, <sup>2</sup>*Russian Quantum Center, Russia*, <sup>3</sup>*Texas A&M Univ., USA*

**MC-II-4 14:45-15:00**

**Anomalous Broadening and Shift of Emission Lines in Femtosecond Laser Induced Plasma Filament**

A. Ilyin<sup>1,2</sup>, S. Golik<sup>1,2</sup>, K. Shmirko<sup>1,2</sup>, A. Mayor<sup>1,2</sup>, and D. Proshenko<sup>2,3</sup>  
<sup>1</sup>*Inst. of Automation and Control Processes, Russia*, <sup>2</sup>*Far Eastern Federal Univ., Russia*, <sup>3</sup>*Maritime State Univ., Russia*

**MC-II-5 15:00-15:15**

**Novel Array Detectors for Overcoming the Dosimetry Challenges of Measuring Laser Accelerated Short Pulse Charged Particle Beams – Overview of the ELIDOSE Project**

R. A. Vasilache<sup>1</sup>, M. A. Popovici<sup>2</sup>, M. Straticiuc<sup>3</sup>, D. C. Dumitras<sup>4</sup>, C. E. Matei<sup>4</sup>, and M. Petrus<sup>4</sup>  
<sup>1</sup>*Canberra Packard Ltd., Romania*, <sup>2</sup>*Politechnica Univ. of Bucharest, Romania*, <sup>3</sup>*IFIN-HH, Romania*, <sup>4</sup>*INFLPR, Romania*

September 11 (Monday) / 13:45-15:20

Room D Cornelia

**[MD-II] Laser-Matter Interaction II**

**MD-II-1 13:45-14:05**

**[Invited] High Intensity x-ray Laser - Matter Interactions**

Byoung-ick Cho<sup>1,2</sup>

<sup>1</sup>GIST, Korea, <sup>2</sup>IBS, Korea

**MD-II-2 14:05-14:25**

**[Invited] Laser-Induced Damage Thresholds of Metals: Comparison of Air and Water Environments**

A. V. Bulgakov, S. V. Starinskiy, and Yu. G. Shukhov

*S.S Kutateladze Inst. of Thermophysics SB RAS, Russia*

**MD-II-3 14:25-14:45**

**[Invited] High Power THz Radiation from Laser-Plasma Interaction**

Min Sup Hur

*UNIST, Korea*

**MD-II-4 14:45-15:05**

**[Invited] Investigating Optical Properties of Metals and Alloys in Solid and Liquid State with High Temperature Ellipsometry**

M. Schmid, S. Zehnder, P. Cam, P. Schwaller, and B. Neuenschwander

*Bern Univ. of Applied Science, Switzerland*

**MD-II-5 14:45-15:05**

**The Role and Characteristics of Intra-Band Absorption in Ablation of Optical Crystals by Ultra-Short Laser Pulses: Dominating Mechanisms**

Sergey Klimentov<sup>1,2</sup>, Stéphane Guizard<sup>3</sup>, Nikita Fedorov<sup>4</sup>, Allan Bildé<sup>3</sup>, and Alexandros Mouskeftraras<sup>2</sup>

<sup>1</sup>General Physics Inst. of the Russian Academy of Sciences, Russia, <sup>2</sup>Nat'l Research Nuclear Univ. "MEPhI", Russia, <sup>3</sup>Laboratoire des Solides Irradiés, Ecole Polytechnique, France, <sup>4</sup>Université Bordeaux I, France

September 11 (Monday) / 15:35-17:10

Room B Manarola

**[MB-III] Photoacoustic Imaging and Sensing**

**MB-III-1 15:35-15:55**

**[Invited] Combined Optoacoustic and Near-Infrared Optical Tomography for Quantitative Blood Oxygenation Measurements**

L. Ulrich<sup>1</sup>, L. Ahnen<sup>2</sup>, K. G. Held<sup>1</sup>, M. Jaeger<sup>1</sup>, S. Sanchez Majos<sup>2</sup>, M. Wolf<sup>2</sup>, H.G. Akarcay<sup>1</sup>, and M. Frenz<sup>1</sup>

<sup>1</sup>Univ. of Bern, Switzerland, <sup>2</sup>Univ. Hospital Zurich, Switzerland

**MB-III-2 15:55-16:15**

**[Invited] Listening to Light and Seeing Through: In Vivo Multiscale Photoacoustic Imaging**

Chulhong Kim

POSTECH, Korea

**MB-III-3 16:15-16:35**

**[Invited] Principal Spectrum Decomposition in Photoacoustic Imaging**

Bangyan Wang and Cheng Ma

Tsinghua Univ.

**MB-III-4 16:35-16:55**

**[Invited] Molecular Photoacoustic Imaging**

Changho Lee<sup>1,2</sup>

<sup>1</sup>Chonnam Nat'l Univ. Medical School, Korea, <sup>2</sup>Hwasun Hospital, Korea

**September 11 (Monday) / 15:35-17:10**

**Room C Vernazza B**

**[MC-III] Biophotonics V**

**MC-III-1 15:35-15:55**

**[Invited] Optical Multiplexing of Off-Axis Digital Holograms and its Applications**

Natan T. Shaked  
*Tel Aviv Univ., Israel*

**MC-III-2 15:55-16:15**

**[Invited] Comprehensive Label-Free Intracoronary Optical Imaging**

H. Yoo  
*Hanyang Univ., Korea*

**MC-III-3 16:15-16:35**

**[Invited] Intraoperative Optical Coherence Tomography Probe with Augmented Reality for Surgical Applications**

Muhammad Faizan Shirazi, and Jeehyun Kim  
*Kyungpook Nat'l Univ., Korea*

**MC-III-4 16:35-16:50**

**[Invited] Subtractive and Additive Processing of Biocompatible Materials using Femtosecond Laser**

Mitsuhiro Terakawa, Akimichi Shibata, Manan Machida, and Yasutaka Nakajima  
*Keio Univ., Japan*

**September 11 (Monday) / 15:35-17:10**

**Room D Cornelia**

**[MD-III] Advanced Display**

**MD-III-1 15:35-15:55**

**[Invited] Highly Efficient Top Emission OLED Devices for Display Application**

Mi Jin Park and Jang Hyuk Kwon  
*Kyung Hee Univ., Korea*

**MD-III-2 15:55-16:15**

**[Invited] Recent Researches on Three-Dimensional Screen for Projection-Type Three-Dimensional Display**

Sung-Wook Min and Young Min Kim  
*Kyung Hee Univ., Korea*

**MD-III-3 16:15-16:35**

**[Invited] Multi-Modal Aerial Information Display for Next Generation Digital Signage**

H. Yamamoto, T. Okamoto, and R. Kujime  
*Utsunomiya Univ. and JST, ACCEL, Japan*

**MD-III-4 16:35-16:55**

**[Invited] Ultra Wide Vision for Immersive Live Broadcasting**

Jeongil Seo, Joo Myoung Seok, Yongju Cho, Hyun Cheol Kim, and Sangwoo Ahn  
*ETRI, Korea*

**MD-III-5 16:55-17:15**

**[Invited] Switchable Micro-Lens Array for 3D Displays and 3D Imaging**

M. -K. Park, K. -I. Joo, H. Park, S. -D. Lee, and H. -R. Kim  
*Kyungpook Nat'l Univ., Korea*

**September 11 (Monday) / 17:25-18:45**

**Room B Manarola**

**[MB-IV] THz Spectroscopy**

**MB-IV-1 17:25-17:45**

**[Invited] THz Near-Field Microscopy**

Haewook Han  
*POSTECH, Korea*

**MB-IV-2 17:45-18:05**

**[Invited] Graphene in Strong Electromagnetic Fields**

Yu. A. Sergeev, I. V. Oladyshkin, S. B. Bodrov, A. I. Korytin, M. D. Tokman, and A. N. Stepanov  
*Inst. of Applied Physics of the Russian Academy of Sciences, Russia*

**MB-IV-3 18:05-18:25**

**[Invited] Extreme Nonlinear Optics in the THz Regime**

Tsuneyuki Ozaki  
*INRS-EMT, Canada*

**MB-IV-4 18:25-18:45**

**[Invited] Enhanced Crystalization of Polymer by High-Power THz Radiation**

C. Otani<sup>1</sup>, H. Hoshina<sup>1</sup>, H. Suzuki<sup>1</sup>, M. Nagai<sup>2</sup>, K. Kawase<sup>3</sup>, A. Irizawa<sup>3</sup>, and G. Isoyama<sup>3</sup>  
*<sup>1</sup>RIKEN Center for Advanced Photonics, Japan, <sup>2</sup>Osaka Univ., Japan, <sup>3</sup>Osaka Univ., Japan*

September 11 (Monday) / 17:25-18:45

Room C Vernazza B

[MC-IV] Biophotonics VI

**MC-IV-1 17:25-17:45**

**[Invited] Optical Study of the Interaction of Fe<sub>2</sub>O<sub>3</sub> Nanoparticles with Human Erythrocytes and Their Effect on Blood Microrheology**

A. E. Lugovtsov<sup>1</sup>, E. A. Shirshin<sup>1</sup>, V. I. Kochubey<sup>2,3</sup>, V. V. Tuchin<sup>2,3,4</sup>, and A. V. Priezzhev<sup>1</sup>

<sup>1</sup>*M.V. Lomonosov Moscow State Univ., Russia*, <sup>2</sup>*Saratov Nat'l Research State Univ., Russia*,

<sup>3</sup>*Nat'l Research Tomsk State Univ., Russia*, <sup>4</sup>*Inst. of Precision Mechanics and Control RAS, Russia*

**MC-IV-2 17:45-18:05**

**[Invited] Time-Dependent Analysis and Noise Suppression of Surface Enhanced Raman Spectroscopy using Optical Code Modulation**

Wonkyoung Lee<sup>1,2</sup>, Bong Kyu Kim<sup>1</sup>, and Ki-Hun Jeong<sup>2</sup>

<sup>1</sup>*ETRI, Korea*, <sup>2</sup>*KAIST, Korea*

**MC-IV-3 18:05-18:20**

**Optical Clearing of Costal Cartilage on  $\lambda=532$  nm and 1.56  $\mu$ m**

Yu. Alexandrovskaya<sup>1,2</sup>, K. Sadovnikov<sup>3</sup>, and E. Sobol<sup>1,2</sup>

<sup>1</sup>*Inst. of Applied Physics of the Russian Academy of Sciences, Russia*, <sup>2</sup>*Inst. of Photon Technologies, Federal Scientific Research Centre "Crystallography and Photonics" of the Russian Academy of Sciences, Russia*, <sup>3</sup>*M.V. Lomonosov M Moscow State University, Russia*

**MC-IV-4 18:20-18:35**

**The Changes of Cerebral Hemodynamics during Dexmedetomidine Induced Sedation in a Rat Model**

Seonghyun Kim<sup>1</sup>, Jayyoung Bae<sup>1</sup>, Teo Jeon Shin<sup>2</sup>, and Jae Gwan Kim<sup>1</sup>

<sup>1</sup>*GIST, Korea*, <sup>2</sup>*Seoul Nat'l Univ., Korea*

**September 11 (Monday) / 17:25-18:45**

**Room D Cornelia**

**[MD-IV] Advanced lasers and photonic devices**

**MD-IV-1 17:25-17:45**

**[Invited] Radio-Over-Fiber for Future Mobile and Advanced Imaging**

Tetsuya Kawanishi<sup>1,2</sup>, Atsushi Kanno<sup>2</sup>, and Naokatsu Yamamoto<sup>2</sup>

*<sup>1</sup>Waseda Univ., Japan, <sup>2</sup>Nat'l Inst. of Information and Communications Tech., Japan*

**MD-IV-2 17:45-18:05**

**[Invited] Defective WTe<sub>2</sub> Microflakes for Femtosecond Fiber Laser Mode-Locking**

J. H. Lee<sup>1</sup>, J. Koo<sup>1</sup>, J. Lee<sup>1</sup>, Y. I. Jhon<sup>2</sup>, J. Park<sup>3</sup>, and Y. M. Jhon<sup>2</sup>

*<sup>1</sup>Univ. of Seoul, Korea, <sup>2</sup>KIST, Korea, <sup>3</sup>Korea Photonics Tech. Inst., Korea*

**MD-IV-3 18:05-18:25**

**[Invited] High-Speed Transmission using Directly Modulated Lasers**

Hoon Kim, S. H. Bae, M. Kim, and Y. Chung

*KAIST, Korea*

**MD-IV-4 18:25-18:45**

**[Invited] Pulsed Sodium Guide Star Laser based on Raman Fiber Amplifiers**

Yan Feng, Lei Zhang, and Xuezhong Yang

*Chinese Academy of Sciences, China*



September 12 (Tuesday) / 10:50-12:30

Room D Cornelia

[TB-I] Novel Laser Architecture

**TB-I-1 10:50-11:10**

**[Invited] Efficient 810-nm LED-Side-Pumped Nd:YAG Laser**

Kuan-Wei Su, Chun-Yu Cho, and Yung-Fu Chen  
*Nat'l Chiao Tung Univ., Taiwan*

**TB-I-2 11:10-11:30**

**[Invited] Room-Temperature-Bonding Technique for Developing New Laser and Wavelength-Conversion Devices**

Ichiro Shoji  
*Chuo Univ., Japan*

**TB-I-3 11:30-11:50**

**[Invited] Broad Expansion of Optical Frequency Combs by Self-Raman Scattering in Coupled-Cavity Self-Mode-Locked Monolithic Lasers**

Y. F. Chen<sup>1</sup>, M. T. Chang<sup>1</sup>, H. C. Liang<sup>2</sup>, and K. W. Su<sup>1</sup>  
<sup>1</sup>*Nat'l Chiao Tung Univ., Taiwan*, <sup>2</sup>*Nat'l Taiwan Ocean Univ., Taiwan*

**TB-I-4 11:50-12:10**

**[Invited] Tailoring Laser Beam Profiles from a Dual-Cavity Laser Configuration**

J. W. Kim, D. J. Kim, and S. H. Noh  
*Hanyang Univ., Korea*

**TB-I-5 12:10-12:30**

**[Invited] High Power Fiber Lasers and Beam Combining Tech.**

B. He, Y. Qi, Y. Yang, H. Shen, Z. Quan, X. Chen, K. Liu, and J. Zhou  
*Shanghai Inst. of Optics and Fine Mechanics, Chinese Academy of Sciences, China*

September 12 (Tuesday) / 10:50-12:30

Room C Vernazza B

[TC-I] Biophotonics I

**TC-I-1 10:50-11:10**

**[Invited] Optical Fiber Methods for Deep Brain Calcium Signal Measurements in Behaving Mice**

Zhongyang Qi<sup>1</sup>, Jingfeng Zhou<sup>2,3</sup>, Qiru Feng<sup>3</sup>, Rui Lin<sup>3</sup>, QingchunGuo<sup>1</sup>, Hui Gong<sup>1</sup>, Qingming Luo<sup>1</sup>, Shaoqun Zeng<sup>1</sup>, Minmin Luo<sup>3,4</sup>, and Ling Fu<sup>1</sup>  
<sup>1</sup>Huazhong Univ. of Science and Tech., China, <sup>2</sup>Peking Univ., China, <sup>3</sup>Nat'l Inst. of Biological Sciences, China, <sup>4</sup>Tsinghua Univ., China

**TC-I-2 11:10-11:30**

**[Invited] Monitoring of Anesthesia Depth by Near-Infrared Spectroscopy**

D. Choi, J. Bae, S. Kim, and J. G. Kim  
GIST, Korea

**TC-I-3 11:30-11:50**

**[Invited] Functional Near Infrared Spectroscopy as a Clinical Diagnostic Tool**

Beop-Min Kim  
Korea Univ., Korea

**TC-I-4 11:50-12:10**

**[Invited] Brain Activations Associated with Online Video Game Playing: A Functional Near Infrared Spectroscopy Study**

Yue Li<sup>1,2</sup>, Lei Zhang<sup>1</sup>, Ke-hong Long<sup>2</sup>, Hui Gong<sup>1</sup>, and Hao Lei<sup>1,2</sup>  
<sup>1</sup>Huazhong Univ. of Science and Tech., China, <sup>2</sup>Wuhan Inst. of Physics and Mathematics, Chinese Academy of Sciences, China

**TC-I-5 12:10-12:30**

**[Invited] Skull Optical Clearing for Accessing to Cerebral Hemodynamics**

Dan Zhu  
Huazhong Univ. of Science and Tech., China

September 12 (Tuesday) / 10:50-12:30

Room D Cornelia

[TD-I] Laser-Matter Interaction III

**TD-I-1 10:50-11:10**

**[Invited] Laser-Assisted Deposition of Colloidal Nanoparticles Forcreation Fractal Bimetallic Structures**

A. O. Kucherik<sup>1</sup>, D. N. Bukharov<sup>1</sup>, S. M. Arakelyan<sup>1</sup>, S. V. Kutrovskaia<sup>1,2</sup>, A. V. Osipov<sup>1</sup>, A. V. Istratov<sup>1</sup>, T. A. Vartanyan<sup>3</sup>, T. E. Itina<sup>4</sup>, and A. V. Kavokin<sup>2,5,6,7</sup>

<sup>1</sup>Stoletovs Vladimir State Univ., Russia, <sup>2</sup>Russian Quantum Center, Russia, <sup>3</sup>ITMO Univ., Russia, <sup>4</sup>Université de Lyon, France, <sup>5</sup>Univ. of Southampton, UK, <sup>6</sup>St. Petersburg State Univ., Russia, <sup>7</sup>CNR-SPIN, Italy

**TD-I-2 11:10-11:30**

**[Invited] Milligram-per-Second Femtosecond Laser Production of Se Nanoparticle Inks and Ink-Jet Printing of Anti-Bacterial and Sensing Nanophotonic 2D-Patterns**

Andrey Ionin<sup>1</sup>, Anastasia Ivanova<sup>1,2</sup>, Roman Khmel'nitskii<sup>1</sup>, Yury Klevkov<sup>1</sup>, Sergey Kudryashov<sup>1,2,3</sup>, Alexey Levchenko<sup>1</sup>, Nikolay Mel'nik<sup>1</sup>, Alena Nastulyavichus<sup>1</sup>, Andrey Rudenko<sup>1</sup>, Irina Saraeva<sup>1</sup>, Nikita Smirnov<sup>1</sup>, Dmitry Zayarny<sup>1</sup>, Sergey Gonchukov<sup>2</sup>, Eteri Tolordava<sup>4</sup>,  
<sup>1</sup>Lebedev Physical Inst., Russia, <sup>2</sup>Nat'l research nuclear Univ. MEPhI (Moscow Engineering Physics Inst., Russia, <sup>3</sup>ITMO Univ., Russia, <sup>4</sup>N.F. Gamaleya Federal Research Centre of Epidemiology and Microbiology, Russia, <sup>5</sup>M.V. Lomonosov Mosc

**TD-I-3 11:30-11:50**

**[Invited] Photolytic Formation of NV Centers in Diamond**

V. V. Kononenko, V. M. Gololobov, T. V. Kononenko, T. A. Semenov, I. I. Vlasov, A. A. Khomich, V. A. Shershulin, and V. I. Konov  
General Physics Inst. of RAS, Russia

**TD-I-4 11:50-12:10**

**[Invited] Pulsed Laser Nanofabrication of Advanced Nanophotonic Structures**

Yu.Kulchin<sup>1</sup>, O. Vitrik<sup>1,2</sup>, and A. Kuchmizhak<sup>1,2</sup>

<sup>1</sup>Far Eastern Branch of Russian Academy of Science (FEB RAS), Russia, <sup>2</sup>Far Eastern Federal Univ. (FEFU), Russia

**TD-I-5 12:10-12:30**

**[Invited] Periodically Poled MgO Doped LiNbO<sub>3</sub> and LiTaO<sub>3</sub> for Coherent Light Frequency Conversion**

V. Ya. Shur<sup>1,2</sup>, A. R. Akhmatkhanov<sup>1,2</sup>, I. S. Baturin<sup>1,2</sup>, D. S. Chezganov<sup>1,2</sup>, M. A. Chuvakova<sup>1</sup>, and A. A. Esin<sup>1</sup>

<sup>1</sup>*Ural Federal Univ., Russia*, <sup>2</sup>*Labfer Ltd, Russia*

September 12 (Tuesday) / 13:45-15:20

Room B Manarola

[TB-II] Power Scaling Strategy

**TB-II-1 13:45-14:05**

**[Invited] Disk Lasers with Multi-Beam Pumping**

I. A. Shcherbakov and V. B. Tsvetkov  
*A.M. Prokhorov General Physics Inst. RAS, Russia*

**TB-II-2 14:05-14:25**

**[Invited] Current Status of Kumgang Laser: Coherent 2 Beam Combination using Pre-Pulsed SBS-PCM at High Power Laser System**

Hong Jin Kong<sup>1</sup>, Sangwoo Park<sup>1</sup>, Sangwoo Park<sup>1</sup>, Seongwoo Cha<sup>1</sup>, Hwihyeong Lee<sup>1</sup>, Seong Woong Choi<sup>2</sup>, Jumsool Kim<sup>2</sup>, and Bong Ju lee<sup>3</sup>  
<sup>1</sup>KAIST, Korea, <sup>2</sup>Laser spectronix, Korea, <sup>3</sup>Handong Global Univ., Korea

**TB-II-3 14:25-14:45**

**[Invited] Picosecond Diode Pumped Lasers of High Peak and Average Power**

N. G. Mikheev, V. B. Morozov, A. N. Olenin, I. V. Tulin, D. I. Ustinov, and D. V. Yakovlev  
*M.V. Lomonosov Moscow State Univ., Russia*

**TB-II-4 14:45-15:05**

**[Invited] Tech. and Applications of Kilowatt Average Power DPSSLs**

T. Mocek  
*HiLASE Centre of Excellence, Inst. of Physics, Czech Republic*

**TB-II-5 15:05-15:20**

**Exploring Antiphase Dynamics of an Orthogonally-Polarized Dual-Wavelength Passively Q-Switched Nd:YLF Laser**

Hsing-Chih Liang and Shun-An Gu  
*Nat'l Taiwan Ocean Univ., Taiwan*

September 12 (Tuesday) / 13:45-15:20

Room C Vernazza B

**[TC-II] Biophotonics II**

**TC-II-1 13:45-14:05**

**[Invited] Creation and Improvement of Tissue Optical Windows for Laser Probing and Treatment using Immersion Optical Clearing**

Valery V. Tuchin

*Nat'l Research Tomsk State Univ., Russia*

**TC-II-2 14:05-14:25**

**[Invited] Detection of Circulating Tumor DNA with Closed-Loop PCR-based Surface Plasmonic Resonance Sensor**

W. Na, J. Kim, D. Jang, C. H. Lee, C. Seo, and S. Shin

*Korea Univ., Korea*

**TC-II-3 14:25-14:45**

**[Invited] Two-Photon Tomography of the Nail Fold: Novel Insights into the Relevance of Perivascular Tissue Parameters for Cardiovascular Disease Diagnosis**

E. Shirshin<sup>1</sup>, Y. Gurfinkel<sup>2</sup>, N. Omelyanenko<sup>3</sup>, D. Lysukhin<sup>1</sup>, B. Yakimov<sup>1</sup>, J. Lademann<sup>4</sup>, M. Darvin<sup>4</sup>, and A. Priezzhev<sup>1</sup>

*<sup>1</sup>Lomonosov Moscow State Univ., Russia, <sup>2</sup>Moscow Univ. Clinic, Russia, <sup>3</sup>Priorov Central Inst. of Traumatology and Orthopedics, Russia, <sup>4</sup>Center of Experimental and Applied Cutaneous Physiology, Charité–Universitätsmedizin, Germany*

**TC-II-4 14:45-15:05**

**[Invited] Laser Trapping and Manipulation of Live Cells**

A. V. Priezzhev<sup>1</sup>, Kisung Lee<sup>1,2</sup>, A. N. Semenov<sup>1</sup>, F. Yaya<sup>2</sup>, and C. Wagner<sup>2</sup>

*<sup>1</sup>M. V. Lomonosov Moscow State Univ., Russia, <sup>2</sup>Saarland Univ., Germany*

**TC-II-5 15:05-15:20**

**Laser Tweezers Combined with Microfluidics and Fluorescence Microscopy for Detecting Macromolecule Adsorption on Single Red Blood Cells**

F. Yaya<sup>1,2</sup>, K. Lee<sup>1</sup>, E. Shirshin<sup>3</sup>, A. V. Priezhev<sup>3</sup>, T. Podgorski<sup>2</sup>, and C. Wagner<sup>1</sup>

*<sup>1</sup>Univ. of Saarland, Germany, <sup>2</sup>Univ. of Grenoble Alpes, France, <sup>3</sup>Lomonosov Moscow State Univ., Russia*

September 12 (Tuesday) / 13:45-15:20

Room D Cornelia

**[TD-II] Laser-Matter Interaction IV**

**TD-II-1 13:45-14:05**

**[Invited] Laser-Assisted Periodic Nanostructure Formation in Dielectric Materials: Formation Mechanisms**

Tatiana E. Itina<sup>1,2</sup>, Hongfeng Ma<sup>1</sup>, Anton Rudenko<sup>1</sup>, Stephane Mottin<sup>1</sup>, Vadim. P. Veiko<sup>2</sup>, Maksim M. Sergeev<sup>2</sup>, and Roman A. Zakoldaev<sup>2</sup>  
<sup>1</sup>UMR CNRS 5516/Univ. of Lyon, Russia, <sup>2</sup>ITMO Univ., Russia

**TD-II-2 14:05-14:25**

**[Invited] Role of Laser-Induced Thermal Stresses in Material Modification: Comparative Analysis for Lasers of Different Pulse Duration**

N. M. Bulgakova<sup>1</sup>, M. V. Shugaev<sup>2</sup>, Y. P. Meshcheryakov<sup>3</sup>, and V. P. Zhukov<sup>4,5</sup>  
<sup>1</sup>HiLASE Centre, Czech Republic, <sup>2</sup>Univ. of Virginia, USA, <sup>3</sup>Design and Tech. Branch of Lavrentyev Inst. of Hydrodynamics SB RAS, Russia, <sup>4</sup>Inst. of Computational Technologies SB RAS, Russia, <sup>5</sup>Novosibirsk State Technical Univ., Russia

**TD-II-3 14:25-14:45**

**[Invited] Laser Ultrasonic Mediated Crystalline Phase Formation in a Thin Film**

J. Wuenschell and H. Helvajian  
*The Aerospace Corporation, USA*

**TD-II-4 14:45-15:05**

**[Invited] Rapid Electronic and Sub-ps Structural Transitions in Ultrafast Laser Irradiated Transition Metals**

H. Zhang<sup>1</sup>, C. Li<sup>1,2</sup>, E. Bévilion<sup>1</sup>, J. P. Colombier<sup>1</sup>, and R. Stoian<sup>1</sup>  
<sup>1</sup>Université Jean Monnet, France, <sup>2</sup>Xi'an Inst. of Optics and Precision Mechanics, China

**TD-II-5 15:05-15:20**

**Pulsed Laser Synthesis of Bioactive Thin Layers with Antimicrobial Properties**

Carmen Ristoscu<sup>1</sup>, Laura Floroian<sup>2</sup>, Natalia Mihailescu<sup>1</sup>, Anita Visan<sup>1</sup>, Ana Janković<sup>3</sup>, Mariana Carmen Chifiriuc<sup>4</sup>, and Ion N. Mihailescu<sup>1</sup>  
<sup>1</sup>Nat'l Inst. for Lasers, Plasma and Radiation Physics, Romania, <sup>2</sup>Transilvania Univ. of Brasov, Romania, <sup>3</sup>Univ. of Belgrade, Romania



September 12 (Tuesday) / 15:40-17:15

Room D Cornelia

[TB-III] Visible & Mid-IR Lasers

**TB-III-1 15:40-16:00**

**[Invited] Laser-Diode Pumped Pulsed Visible Praseodymium Lasers**

Haohai Yu  
*Shandong Univ., China*

**TB-III-2 16:00-16:20**

**[Invited] Monoclinic Double Tungstate Thin-Disk lasers at 2 microns**

X. Mateos<sup>1,2,3</sup>, P. Loiko<sup>4</sup>, S. Lamrini<sup>3</sup>, K. Scholle<sup>3</sup>, P. Fuhrberg<sup>3</sup>, S. Vatik<sup>5</sup>, I. Vedin<sup>5</sup>, M. Aguiló<sup>2</sup>, F. Díaz<sup>2</sup>, U. Griebner<sup>1</sup>, and V. Petrov<sup>1</sup>  
*<sup>1</sup>Max Born Inst. for Nonlinear Optics and Short Pulse Spectroscopy, Germany, <sup>2</sup>Universitat Rovira i Virgili (URV), Spain, <sup>3</sup>LISA laser products OHG, Germany, <sup>4</sup>ITMO Univ., Russia, <sup>5</sup>Inst. of Laser Physics, Siberian Branch of Russian Academy of Sciences, Russia*

**TB-III-3 16:20-16:40**

**[Invited] Power Scaling of In-Band Pumped Holmium Doped Solid-State Lasers at ~ 2 μm**

D. Y. Shen<sup>1,2</sup>, Y. G. Zhao<sup>1,2</sup>, W. C. Yao<sup>1</sup>, and Z. H. Shao<sup>1</sup>  
*<sup>1</sup>Fudan Univ., China, <sup>2</sup>Jiangsu Normal Univ., China*

September 12 (Tuesday) / 15:40-17:15

Room C Vernazza B

[TC-III] Optical Sensors

**TC-III-1 15:40-16:00**

**[Invited] Distributed Fiber-Optic Sensing with Ultra-High Spatial Resolution by using Linear Optical Sampling Technique**

Xinyu Fan, Shuai Wang, Qingwen Liu, and Zuyuan He  
*Shanghai Jiao Tong Univ., China*

**TC-III-2 16:00-16:20**

**[Invited] The Statistical Properties of Distributed Acoustic Sensing**

A. Eyal, H. Gabai, and I. Shpatz  
*The-Aviv Univ., Israel*

**TC-III-3 16:20-16:40**

**[Invited] Development and Evaluation of Resonator Fiber Optic Gyroscopes**

H. Ma, H. Li, Y. Lin, and Z. Jin  
*Zhejiang Univ., China*

**TC-III-4 16:40-17:00**

**[Invited] Fiber-Optic Guided Acoustic-Wave Brillouin Scattering Properties and Sensing Application**

Neisei Hayashi<sup>1</sup>, Yosuke Mizuno<sup>2</sup>, Kentaro Nakamura<sup>2</sup>, Sze Yun Set<sup>1</sup>, and Shinji Yamashita<sup>1</sup>  
<sup>1</sup>*The Univ. of Tokyo, Japn*, <sup>2</sup>*Inst. of Innovative Research, Japan*

**TC-III-5 17:00-17:15**

**[Oral] Non-Enzymatic Sensors based on in Situ Laser-Induced Synthesis of Copper and Copper-Gold Nano-Sized Microstructures**

I. I. Tumkin, M. S. Panov, E. M. Khairullina, and V. A. Kochemirovsky  
*Saint Petersburg State Univ., Russia*

**September 12 (Tuesday) / 15:40-17:15**

**Room D Cornelia**

**[TD-III] Holographic Display**

**TD-III-1 15:40-16:00**

**[Invited] Phase-Mode Holographic Three-Dimensional Display by Optimized Binary Phase Modulation**

O. Matoba, S. Harada, and T. Uemae  
*Kobe Univ., Japan*

**TD-III-2 16:00-16:20**

**[Invited] Recent Progress on Mesh-based Computer Generated Hologram**

Jae-Hyeung Park  
*Inha Univ., Korea*

**TD-III-3 16:20-16:40**

**[Invited] Viewing-zone Scanning Holographic Display Empolying MEMS-SLM**

Y. Takaki  
*Tokyo Univ. of Agriculture and Tech., Japan*

**TD-III-4 16:40-17:00**

**[Invited] Implementation of Spatially-Expanded 360 Degree Viewable Holographic Display**

Yongjun Lim, Keehoon Hong, Eun-Young Chang, Hayan Kim, Minsik Park, and Jinwoong Kim  
*ETRI, Korea*

**TD-III-5 17:00-17:20**

**[Invited] Polarization-Encoded Multi-Focal 3D Display**

Soon-gi Park  
*KIST, Korea*

September 12 (Tuesday) / 17:15-18:40

Room A Monterosso

[TP1] Poster Session I

**TP1-01 17:15-18:40**

**Diffraction Microgratings as a Novel Optical Biosensing Platform**

T. T. H. Nguyen<sup>2,4</sup>, T. V. Baikova<sup>1</sup>, P. N. Danilov<sup>2,3</sup>, S. A. Gonchukov<sup>1</sup>, V. M. Yermachenko<sup>1</sup>, A. A. Ionin<sup>2</sup>, R. A. Khmel'nitskii<sup>2</sup>, S. I. Kudryashov<sup>2,3</sup>, A. A. Rudenko<sup>2</sup>, I. N. Saraeva<sup>2,3</sup>, T. S. Svistunova<sup>5</sup>, and D. A. Zayarny<sup>2</sup>

<sup>1</sup>National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Russia, <sup>2</sup>Lebedev Physical Institute, Russia, <sup>3</sup>ITMO University, Russia, <sup>4</sup>Moscow Institute of Physics and Technology, Russia, <sup>5</sup>Infectious Clinical Hospital No 2, Russia

**TP1-02 17:15-18:40**

**Temperature Dependent Behavior of Zn<sub>0.7</sub>Co<sub>0.3</sub>O-based Memristors**

A. A. Lotin, O. A. Novodvorsky, L. S. Parshina, V. A. Mikhalevsky, O. D. Khramova, and E. A. Cherebilo  
*Federal Scientific Research Center "Crystallography and Photonics" RAS, Russia*

**TP1-03 17:15-18:40**

**Polarization Diversity Scheme in Phase-OTDR based on Coherent Detection**

Gukbeen Ryu<sup>1,2</sup>, Gyu-Tae Kim<sup>2</sup>, Kwang Yong Song<sup>3</sup>, Sang Bae Lee<sup>1</sup>, and Kwanil Lee<sup>1</sup>

<sup>1</sup>KIST, Korea, <sup>2</sup>Korea University, Korea, <sup>3</sup>Chung-Ang University, Korea

**TP1-04 17:15-18:40**

**Fiber Optic Pressure Sensor based on Sagnac Polarization Interferometer with Tapered Birefringent Fiber**

Sungwook Choi, Jihoon Kim, Seul-Lee Lee, Jun Hyeok Jeng, Sun Jae Jaeong, Min Seok Kim, Dokyeong Kim, and Yong Wook Lee  
*Pukyong National University, Korea*

**TP1-05 17:15-18:40**

**Temperature Sensitivity of Optical Fibers in Optical Frequency Domain Reflectometry**

Yong-seok Kwon<sup>1,2</sup>, Khurram Naeem<sup>1</sup>, Min Yong Jeon<sup>2</sup>, and Il-bum Kwon<sup>1</sup>

<sup>1</sup>KRISS, Korea, <sup>2</sup>Chungnam National University, Korea

**TP1-06 17:15-18:40**

**Temperature Sensitivity of Ge-Doped Core PCF Interrogated by Optical Frequency Domain Reflectometer**

Khurram Naeem<sup>1</sup>, Yong-seok Kim<sup>1,2</sup>, and Il-Bum Kwon<sup>1</sup>

<sup>1</sup>KRISS, Korea, <sup>2</sup>Chungnam National University, Korea

**TP1-07 17:15-18:40**

**Investigated on Weak Value Amplification for Sensitivity Improvement of Fiber Bragg Grating Sensors**

Kwang-Wook Yoo, Ju Il Hwang, and Young-Geun Han

*Hanyang University, Korea*

**TP1-08 17:15-18:40**

**Sensitivity Improvement of Relative Humidity Sensor with Fewmode Microfiber Knot Resonator by Alleviating Group Index Difference**

Duy Duong Anh Le and Young-Geun Han

*Hanyang University, Korea*

**TP1-09 17:15-18:40**

**Development of Current Sensor based on a Microfiber Loop Resonator**

Jong-Cheol Shin, Ju Il Hwang, Seungmin Lee, and Young-Geun Han

*Hanyang University, Korea*

**TP1-10 17:15-18:40**

**Laser Micromachining Processes in Formation of Blade Ring-Shaped Emitting Structures out of Glassy Carbon**

T. Sokolova<sup>1</sup>, E. Surmenko<sup>1</sup>, D. Bessonov<sup>1</sup>, I. Popov<sup>1</sup>, Yu. Chebotarevsky<sup>1</sup>, and V. Shesterkin<sup>2</sup>

<sup>1</sup>Saratov State Technical University, Russia, <sup>2</sup>JSC "SPE "Almaz", Russia

**TP1-11 17:15-18:40**

**The Production by PLD of Iron Nanoparticles used for the Growth of Carbon Nanotubes**

O. Novodvorsky<sup>1</sup>, E. Cherebylo<sup>1</sup>, F. Putilin<sup>2</sup>, A. Egorov<sup>2</sup>, S. Savilov<sup>2</sup>, O. Khramova<sup>1</sup>, V. Mikhalevskiy<sup>1</sup>, L. Parshina<sup>1</sup>, and A. Lotin<sup>1</sup>

<sup>1</sup>ILIT RAS – Branch of FSRC "Crystallography and Photonics" of RAS, Russia, <sup>2</sup>M.V. Lomonosov Moscow State University, Russia

**TP1-12 17:15-18:40**

**TiO<sub>2</sub> Thin Films for Memristors**

O. Novodvorsky<sup>1</sup>, L. Parshina<sup>1</sup>, A. Lotin<sup>1</sup>, V. Rylkov<sup>2</sup>, O. Khramova<sup>1</sup>, V. Mikhalevskiy<sup>1</sup>, E. Cherebylo<sup>1</sup>, and V. Panchenko

<sup>1</sup>ILIT RAS – Branch of FSRC "Crystallography and Photonics" of RAS, Russia, <sup>2</sup>National Research Centre «Kurchatov Institute», Russia

**TP1-13 17:15-18:40**

**The Memristors based on Vanadium Dioxide**

L. Parshina, O. Novodvorsky, A. Lotin, O. Khramova, V. Michalevsky, and E. Cherebilo

ILIT RAS, Russia

**TP1-14 17:15-18:40**

**Proton Beams from an Ion Layer Embedded Foil Target Irradiated by an Ultraintense Laser Pulse**

Ha-Na Kim<sup>1,2</sup>, Kitae Lee<sup>2</sup>, Kyung Nam Kim<sup>3</sup>, Woo-Je Ryu<sup>2,4</sup>, Shin-Yeong Lee<sup>2,5</sup>, Kee Hwan Yi<sup>2,6</sup>, Manoj Kumar<sup>2</sup>, SeongHee Park<sup>6</sup>, Min Yong Jeon<sup>1</sup>, and Young Uk Jeong<sup>2</sup>

<sup>1</sup>Chungnam National University, Korea, <sup>2</sup>KAERI, Korea, <sup>3</sup>KERI, Korea, <sup>4</sup>Hannam University, Korea, <sup>5</sup>University of Science and Technology, Korea,

<sup>6</sup>Korea University, Korea

**TP1-15 17:15-18:40**

**Tooth Whitening Effects by Blue Laser**

Ryun Kyung Kim<sup>1</sup>, Sung-Ho Lee<sup>2</sup>, Jong-Ho Lee<sup>2</sup>, Kee-Yeon Kum<sup>3</sup>, Hyoung Won Baac<sup>1</sup>, and Kyung Shik Lee<sup>1</sup>

<sup>1</sup>*Sungkyunkwan University, Korea*, <sup>2</sup>*Seoul National University, Korea*, <sup>3</sup>*Seoul National University Dental Hospital, Korea*

**TP1-16 17:15-18:40**

**Analysis of Laser induced Plasma Density with Hankel-Fourier method**

Woo-Je Ryu<sup>1,2</sup>, Ha-Na Kim<sup>1,4</sup>, Shin-Yeong Lee<sup>1,5</sup>, Kee-Hwan Yi<sup>1,3</sup>, Jae Heung Jo<sup>2</sup>, Young Uk Jeong<sup>1</sup>, Seong Hee Park<sup>3</sup>, and Kitae Lee<sup>1</sup>

<sup>1</sup>*KAERI, Korea*, <sup>2</sup>*Hannam University, Korea*, <sup>3</sup>*Korea University, Korea*, <sup>4</sup>*Chungnam National University, Korea*, <sup>5</sup>*University of Science and Technology, Korea*

**TP1-17 17:15-18:40**

**Development of Current Sensor based on a Microfiber Loop Resonator**

Duy Duong Anh Le, Seungmin Lee, Kwang-Wook Yoo, Ngoc Tuyen Tran, and Young-Geun Han

*Hanyang University, Korea*

**TP1-18 17:15-18:40**

**Multi-Level Information Writing in Nanoporous Glass by Single Sub-Microsecond Burst of Femtosecond Laser Pulses**

Fedotov S. S., Okhrimchuk A. G., Glebov I. S., Lipatiev A. S., Lotarev S. V., Stepko A. A., Piyanzina K. I., and Sigaev V. N.

*Mendeleev University of Chemical Technology of Russia, Russia*

**TP1-19 17:15-18:40**

**Efficient Optical-to-THz Conversion in Organic Crystals by Modifying the Space-Filling Characteristics**

B. J. Kang<sup>1</sup>, S. -J. Lee<sup>2</sup>, O. -P. Kwon<sup>2</sup>, and F. Rotermund<sup>1</sup>

<sup>1</sup>*KAIST, Korea*, <sup>2</sup>*Ajou Univ., Korea*

**TP1-20 17:15-18:40**

**Temperature Dependence of the Terahertz Radiation Generation in the Vanadium Dioxide Thin Films**

M. Esaulkov<sup>1</sup>, K. Lazareva<sup>2</sup>, P. Solyankin<sup>1,2</sup>, and A. Shkurinov<sup>1,2</sup>

<sup>1</sup>ILIT RAS - Branch of FSRC "Crystallography and Photonics" RAS, Russia, <sup>2</sup>M.V. Lomonosov Moscow State Univ., Russia

**TP1-21 17:15-18:40**

**Terahertz and X-Ray Emission during Interaction of High-Intense Ultrashort Laser Pulses with Gas Cluster Beam**

A.V. Balakin<sup>1</sup>, M.S. Dzhidzhoev<sup>1</sup>, V.M. Gordienko<sup>1</sup>, M.N. Esaulkov<sup>2</sup>, I.A. Zhvaniya<sup>1</sup>, N.A. Kuzechkin<sup>2</sup>, P.M. Solyankin<sup>1,2</sup>, and A.P. Shkurinov<sup>1,2</sup>

<sup>1</sup>M. V. Lomonosov Moscow State Univ., Russia, <sup>2</sup>Inst. on Laser and Information Technologies of the Russian Academy of Sciences — Branch of the Federal Scientific Research Centre «Crystallography and Photonics» of Russian Academy of Science, Russia

**TP1-22 17:15-18:40**

**Determination of Biologically Safe Energy Threshold for Terahertz Radiation**

O. Cherkasova<sup>1</sup>, A. Gapeyev<sup>2</sup>, M. Nazarov<sup>3</sup>, A. Angeluts<sup>4</sup>, M. Esaulkov<sup>5</sup>, P. Solyankin<sup>4,5</sup>, and A. Shkurinov<sup>4,5</sup>

<sup>1</sup>Inst. of Laser Physics of SB RAS, Russia, <sup>2</sup>Inst. of Cell Biophysics of RAS, Russia, <sup>3</sup>Kurchatov Inst. Nat'l Research Center, Russia, <sup>4</sup>Lomonosov Moscow State Univ., Russia, <sup>5</sup>Crystallography and Photonics Federal Research Center RAS, Russia

**TP1-23 17:15-18:40**

**Terahertz Nondestructive Evaluation System for Industrial Applications**

E. S. Lee, K. Moon, I. -M. Lee, H. -S. Kim, D. W. Park, J. -W. Park, D. H. Lee, S. -P. Han, and K. H. Park  
ETRI, Korea

**TP1-24 17:15-18:40**

**THz Square-Loop Metamaterial based on Tungsten-Doped Vanadium Dioxide Thin Films**

Jun-Hwan Shin<sup>1</sup>, Kyung Hyun Park<sup>1</sup>, and Han-Cheol Ryu<sup>2</sup>

<sup>1</sup>ETRI Korea, <sup>2</sup>Sahmyook Univ., Korea



**TP1-25 17:15-18:40**

**CIGS Thin-Film Solar Cell Patterning at Different Wavelengths**

P. Gečys, E. Markauskas and G. Račiukaitis  
*Center for Physical Sciences and Tech., Lithuania*

**TP1-26 17:15-18:40**

**Ytterbium Fiber-based High-Power Chirped Pulse Amplification**

Seolwon Park, Duchang Heo, Chur Kim, Jun Wan Kim, Byunghak Lee, Sergey Chizhov, Elena Sall, and Guang-Hoon Kim  
*KERI, Korea*

**TP1-27 17:15-18:40**

**Cavity Dumped Optical Parametric Oscillator for Near-Infrared Femtosecond Pulses**

Ji-Eon Park<sup>1</sup>, Tae-Young Jeong<sup>1</sup>, and Ki-Ju Yee  
*Chungnam Nat'l Univ., Korea*

**TP1-28 17:15-18:40**

**Cavity-Dumped Mode-locked Picosecond Alexandrite Single Pulse Laser**

Hee Dong Yang<sup>1,2</sup>, Byung Hyuck Moon<sup>1</sup>, Ju Han Lee<sup>2</sup>, and Young Min Jhon<sup>1</sup>  
*<sup>1</sup>KIST, Korea, <sup>2</sup>Univ. of Seoul, Korea*

**TP1-29 17:15-18:40**

**Passively Mode-Locked Laser Pulse Generation by Nonlinear Polarization Rotation in Alexandrite Rod**

Byunghyuck Moon<sup>1,2</sup>, Yohan Kim<sup>1,2</sup>, Byeong-kwon Ju<sup>2</sup>, and Young Min Jhon<sup>1</sup>  
*<sup>1</sup>KIST, Korea, <sup>2</sup>Korea Univ., Korea*

**TP1-30 17:15-18:40**

**Femtosecond Laser Rapid Prototyping of Glass Microfluidic Chips for Application of Optical Analysis**

Sung-il Kim<sup>1,2</sup>, Chiwan Koo<sup>2</sup>, Yeun-Ho Joung<sup>2</sup>, and Jiyeon Choi<sup>1</sup>

<sup>1</sup>Hanbat Nat'l Univ., Korea, <sup>2</sup>KIMM, Korea

**TP1-31 17:15-18:40**

**Output Characteristics of CW laser using Multi-Pass Pumping Yb:YAG Thin-Disk Module**

DH Jin, TJ Kang, YS Kim, DJ Shin, SH Kim, and J. Ku

*EO Technics, Korea*

**TP1-32 17:15-18:40**

**Wide and Flat Optical Spectrum in a Mode-Locked Laser Diode with Bragg Grating Reflector on an Active Waveguide Region**

Young Ahn Leem and Namje Kim

*ETRI, Korea*

**TP1-33 17:15-18:40**

**Laser Assisted Selective Copper Plating on Polymers**

Karolis Ratautas<sup>1</sup>, Mindaugas Gedvilas<sup>1</sup>, Ina Stankevičiene<sup>1</sup>, Aldona Jagminienė<sup>1</sup>, Eugenijus Norkus<sup>1</sup>, Nello Li Pira<sup>2</sup>, Stefano Sinopoli<sup>3</sup>, and Gediminas Račiukaitis<sup>1</sup>

<sup>1</sup>Center for Physical Sciences and Technology, Lithuania, <sup>2</sup>Centro Ricerche Fiat, Italy, <sup>3</sup>BioAge Srl, Italy

**TP1-34 17:15-18:40**

**Investigation of Pitch Variations in Cholesteric Liquid Crystal Cell using Wavelength-Swept Laser**

MyeongOck Ko<sup>1</sup>, Sung-Jo Kim<sup>2</sup>, Jong-Hyun Kim<sup>1</sup>, and Min Yong Jeon<sup>1</sup>

<sup>1</sup>Chungnam Nat'l Univ., Korea, <sup>2</sup>Institute for Basic Science, Korea

**TP1-35 17:15-18:40**

**Low-Cost Compact Tunable Wavelength Filters based on Polymeric Waveguide Bragg Grating**

Tae-Hyun Park, Eon-Tae Kim, Sung-Moon Kim, and Min-Cheol Oh  
*Pusan Nat'l Univ., Korea*

**TP1-36 17:15-18:40**

**Mode-Locked Yb-Doped Fiber Laser based on Birefringent Spectral Filter**

Hyun Moon Yang, Ji Su Kim, and Min Yong Jeon  
*Chungnam Nat'l Univ., Korea*

**TP1-37 17:15-18:40**

**Wavelength-Switchable Operation of Erbium-Doped Fiber Laser with Orthogonal Polarization**

Seul-Lee Lee, Jihoon Kim, Sungwook Choi, Jun Hyeok Jeong, Sun Jae Jeong, Min Seok Kim, Dokyeong Kim, and Yong Wook Lee  
*Pukyong Nat'l Univ., Korea*

**TP1-38 17:15-18:40**

**A Highly-Junction-Capacitance-Isolated 10-Gb/s CMOS Optoelectronics Receiver IC for Short Reach Applications**

Jae-Sung Kim<sup>1</sup>, Ki-Yong Kim<sup>1</sup>, Kangyeob Park<sup>2</sup>, and Won-Seok Oh<sup>2</sup>  
<sup>1</sup>*Seil Tech. Co., Ltd., Korea*, <sup>2</sup>*KETI, Korea*

**TP1-39 17:15-18:40**

**Continuously Tunable Microwave Photonic Filter with a Wavelength-Spacing Tunable Multiwavelength Fiber Laser**

Seungmin Lee, Ngoc Tuyen Tran, and Young-Geun Han  
*Hanyang Univ., Korea*

**TP1-40 17:15-18:40**

**100G Integrated Coherent Receiver Development and Performance Evaluation**

H. -D. Jung, C. -J. Yoon, Y. -T. Han, S. -Y. Lee, J. -S. Choe, Y. -H. Ko, J. -H. Kim, and Y. -S. Baek  
*ETRI, Korea*

September 13 (Wednesday) / 10:10-11:50

Room B Manarola

[WB-I] Nonlinear optics and photonics I

**WB-I-1 10:10-10:30**

**[Invited] Polarization Singularities Nucleation in the Self-Focusing of an Elliptically Polarized Laser Beam in Kerr Medium and Isotropic Phase of Nematic Liquid Crystal**

V. A. Makarov, K. S. Grigoriev, N. A. Panov, O. G. Kosareva, and G. M. Shishkov  
*M. V. Lomonosov Moscow State Univ., Russia*

**WB-I-2 10:30-10:50**

**[Invited] Efficient Second and Third Harmonic Generations in Magnetic Metamaterials**

Iman Sajedian, Inki Kim, and Junsuk Rho  
*POSTECH, Korea*

**WB-I-3 10:50-11:10**

**[Invited] Slowdown of Light in Free Space via Rayleigh Anomaly**

Kyoung-Youm Kim<sup>1</sup> and Alan X. Wang<sup>2</sup>  
<sup>1</sup>*Sejong Univ., Korea*, <sup>2</sup>*Oregon State Univ., USA*

**WB-I-4 11:10-11:25**

**Kerr Soliton Combs in Crystalline Microresonators with a Regular Multifrequency Diode Lasers**

N. G. Pavlov<sup>1,2</sup>, G. Lihachev<sup>2,3</sup>, S. Koptyaev<sup>4</sup>, A. S. Voloshin<sup>2</sup>, and M. L. Gorodetsky<sup>2,3</sup>  
<sup>1</sup>*Moscow Inst. of Physics and Tech., Russia*, <sup>2</sup>*Russian Quantum Center, Russia*, <sup>3</sup>*M. V. Lomonosov Moscow State Univ., Russia*, <sup>4</sup>*Samsung R&D Inst. Russia, Russia*

**WB-I-5 11:25-11:45**

**[Invited] Broadband Nonlinear Photonics in Graphene**

F. Rotermund  
*KAIST, Korea*

September 13 (Wednesday) / 10:10-11:50

Room C Vernazza B

**[WC-I] Ultrafast Characterization and Femtosecond Fiber laser**

**WC-I-1 10:10-10:30**

**[Invited] Self-Referenced Waveform Measurement of Ultrashort Mid-Infrared Pulses**

T. Fuji, H. Shirai, and Y. Nomura  
*Inst. for Molecular Science, Japan*

**WC-I-2 10:30-10:50**

**[Invited] Optical Tracing and Tailoring Phase of Acoustic Phonons**

H. Jeong<sup>1</sup>, A. J. Minnich<sup>2</sup>, C. J. Stanton<sup>3</sup>, and Y. D. Jho<sup>1</sup>  
<sup>1</sup>GIST, Korea, <sup>2</sup>California Inst. of Tech., USA, <sup>3</sup>Univ. of Florida, USA

**WC-I-3 10:50-11:10**

**[Invited] Low-Noise Mode-Locked Fiber Lasers and their High-Precision Applications**

Jungwon Kim  
*KAIST, Korea*

**WC-I-4 11:10-11:30**

**[Invited] High Power Femtosecond Fiber Laser and its Nonlinear Frequency Conversion**

Minglie Hu  
*Tianjin Univ., China*

**WC-I-5 11:30-11:50**

**[Invited] Low-Dimensional Material-based In-Line Saturable Absorbers for Ultrafast Fiber Laser Applications**

Nam Hun Park and Dong-Il Yeom  
*Ajou Univ., Korea*

September 13 (Wednesday) / 10:10-11:50

Room D Cornelia

[WD-I] Next generation optical networks

**WD-I-1 10:10-10:30**

**[Invited] A Multi-Wavelength 1/4-Shifted Distributed Feedback Laser Diode Array for WDM-based Datacenter Networks**

Su Hwan Oh, Oh Kee Kwon, Ki Soo Kim, Chul Wook Lee, Young Ahn Leem, and Eun Soo Nam  
*ETRI, Korea*

**WD-I-2 10:30-10:50**

**[Invited] Tunable External Cavity Laser using InP Gain-Chip and Polymer Waveguide Grating for Coherent Optical Communications**

Dong Churl Kim<sup>1</sup>, Young-Tak Han<sup>1</sup>, Dong-Hoon Lee<sup>1</sup>, Byung-Seok Choi<sup>1</sup>, Sang-Ho Park<sup>1</sup>, Jang-Uk Shin<sup>1</sup>, Won Seok Han<sup>1</sup>, Yong Hwan Kwon<sup>1</sup>, Jong-Hoi Kim<sup>1</sup>, Ho-Sung Cho<sup>2</sup>, and Yongsoon Baek<sup>1</sup>  
<sup>1</sup>*ETRI, Korea*, <sup>2</sup>*ELDIS, Inc., Korea*

**WD-I-3 10:50-11:10**

**[Invited] RoF Technologies for Mobile Fronthaul and Indoor DAS Applications**

Seung-Hyun Cho, Hwan Seok Chung, Minkyu Sung, Joonyoung Kim, Joon Ki Lee, and Jong Hyun Lee  
*ETRI, Korea*

**WD-I-4 11:10-11:30**

**[Invited] O-Band Optical Transmission Technologies for 100G Ethernet Passive Optical Networks**

H. H. Lee, K. H. Doo, K. O. Kim, S. G. Mun, S. H. Kim, J. Y. Oh, H. Park, D. Y. Kim, and H. S. Chung  
*ETRI, Korea*

**WD-I-5 11:30-11:45**

**Broadband Compact Polarization Splitters based on a Mode Extracting Polymer Waveguide**

Guanghao Huang, Tae-Hyun Park, and Min-Cheol Oh  
*Pusan Nat'l Univ., Korea*

**September 14 (Thursday) / 10:10-11:45**

**Room B Manarola**

**[ThB-I] Nonlinear optics and photonics II**

**ThB-I-1 10:10-10:30**

**[Invited] Time-Variant Metasurface as a Frequency Converting Platform**

Bumki Min  
*KAIST, Korea*

**ThB-I-2 10:30-10:50**

**[Invited] Ultrafast Photoexcited Carrier Dynamics and Photo Response of 3D Dirac Semimetallic Cd<sub>3</sub>As<sub>2</sub>**

Dong Sun  
*Peking Univ., China*

September 14 (Thursday) / 10:10-11:45

Room C Vernazza B

[ThC-I] Biophotonics III

**ThC-I-1 10:10-10:30**

**[Invited] Twenty Years of Doppler OCT and OCT Angiography: Past, Present, and Future**

Zhongping Chen  
*Univ. of California, USA*

**ThC-I-2 10:30-10:50**

**[Invited] Functional Fourier Domain Optical Coherence Tomography and its Applications**

Zihua Ding, Jianrong Qiu, Ziwei Shangguan, Shanshan Yan, Wen Bao, Pei Li, and Peng Li  
*Zhejiang Univ., China*

**ThC-I-3 10:50-11:10**

**[Invited] 3D Intraoral Scanning System for Structure/diagnosis in dentistry**

Joo Beom Eom, Anjin Park, Jaesung Ahn, Honglyel Jung, and Jong hyun Eom  
*KOPTI, Korea*

**ThC-I-4 11:10-11:30**

**[Invited] Motion-Free and True-Shape Three-Dimensional Retinal Imaging by Lissajous Optical Coherence Tomography**

Yoshiaki Yasuno  
*Univ. of Tsukuba, Japan*



September 14 (Thursday) / 10:10-11:45

Room D Cornelia

[ThD-I] Laser Materials

**ThD-I-1 10:10-10:30**

**[Invited] New Ba-Based Nonlinear Crystals for Frequency Conversion of Near-IR Lasers into the Mid-IR**

V. Petrov<sup>1</sup>, V. Badikov<sup>2</sup>, D. Badikov<sup>2</sup>, V. Laptev<sup>3</sup>, K. Mitin<sup>4</sup>, G. Shevyrdyaeva<sup>2</sup>, N. Kostyukova<sup>1,5,6</sup>, A. Boyko<sup>1,5,6</sup>, E. Boursier<sup>7,8</sup>, V. Panyutin<sup>1</sup>, N. Shchebetova<sup>4</sup>, A. Tyazhev<sup>1</sup>, G. Marchev<sup>1</sup>, A. Kwasniewski<sup>9</sup>, D. Kolker<sup>5</sup>, P. Segonds<sup>7,8</sup>, and B. Boulanger<sup>7,8</sup>

<sup>1</sup>- *Max-Born-Inst. for Nonlinear Optics and Ultrafast Spectroscopy, Germany*, <sup>2</sup>*Kuban State Univ., Russia*, <sup>3</sup>*Inst. of Spectroscopy, Russian Academy of Sciences, Russia*, <sup>4</sup>*Astrophysika Nat'l Laser Centre, Russia*, <sup>5</sup>*RNovosibirsk State Univ.,*

**ThD-I-2 10:30-10:50**

**[Invited] Laser-Nonlinear Oxide Media Doped with Tm<sup>3+</sup> Ions**

L. I. Mleva and M. E. Doroshenko

*A.M. Prokhorov General Physics Inst. Russian Academy of Sciences, Russia*

**ThD-I-3 10:50-11:10**

**[Invited] Disordered Perovskite Crystals for CW and Ultrafast Laser Sources**

Stefano Veronesi<sup>1</sup>, Quiangqiang Hu<sup>2</sup>, Zhitai Jia<sup>2</sup>, Jian Zhang<sup>2</sup>, and Xutang Tao<sup>2</sup>

<sup>1</sup>*NEST- Istituto Nanoscienze – CNR, Italy*, <sup>2</sup>*State Key Laboratory of Crystal Materials & Shandong Univ., China*

**ThD-I-4 11:10-11:30**

**[Invited] Transparent Nanophase Glass-Ceramics with Cobalt Ions: Efficient Saturable Absorbers for Erbium Lasers**

Pavel Loiko

*ITMO Univ., Russia*

September 14 (Thursday) / 13:05-14:40

Room B Manarola

[ThB-II] THz Application I

**ThB-II-1 13:05-13:25**

**[Invited] Efficient Generation and Modulation of THz Waves by using Nanostructures**

Chul Kang<sup>1</sup>, Hyung Keun Yoo<sup>2</sup>, Jung Woo Leem<sup>3</sup>, Youngwoon Yoon<sup>4</sup>, Jae Su Yu<sup>4</sup>, Kiejin Lee<sup>3</sup>, Myong Kyu Oh<sup>1</sup>, In-Wook Hwang<sup>1</sup>, Joong Wook Lee<sup>5</sup>, and Chul-Sik Kee<sup>1</sup>

<sup>1</sup>GIST, Korea, <sup>2</sup>Samsung Electronics, Korea, <sup>3</sup>Sogang Univ., Korea, <sup>4</sup>Kyung Hee Univ., Korea, <sup>5</sup>Chonnam Nat'l Univ., Korea

**ThB-II-2 13:25-13:45**

**[Invited] THz Metamaterials for Sensing and Communication Application**

Seongsin Margaret Kim  
*The Univ. of Alabama, USA*

**ThB-II-3 13:45-14:05**

**[Invited] Development of Microbial Sensors Using Terahertz Split-Ring Resonator Arrays**

Y. H. Ahn and S. J. Park  
*Ajou Univ., Korea*

**ThB-II-4 14:05-14:25**

**[Invited] Wireless Sub-Terahertz Orbital Angular Momentum Communications**

Jian Wang  
*Huazhong Univ. of Science and Tech., China*

September 14 (Thursday) / 13:05-14:40

Room C Vernazza B

[ThC-II] Biophotonics IV

**ThC-II-1 13:05-13:25**

**[Invited] Spectroscopic Study of NP Influence on in vitro Development of Preimplantation Mouse Embryos**

A. Karmenyan<sup>1</sup>, A. Krivokharchenko<sup>2</sup>, H. H. Chang<sup>3</sup>, E. Perevedentseva<sup>1,4</sup>, L.C. Liu<sup>1</sup>, M. Kormacheva<sup>1</sup>, Ashek-I-Ahmed<sup>1</sup>, and C. L. Cheng<sup>1</sup>  
<sup>1</sup>Nat'l Dong Hwa Univ., Taiwan, <sup>2</sup>N.N.Semenov Inst. of Chemical Physics, RAS, Russia, <sup>3</sup>Tzu Chi Univ., Taiwan, <sup>4</sup>P.N.Lebedev Physics Inst. of RAS, Russia

**ThC-II-2 13:25-13:45**

**[Invited] Optical-Spectroscopic Studies for Nanoparticles-Mediated Drug Delivery**

E. Perevedentseva<sup>1,2</sup>, Y. C. Lin<sup>1,3</sup>, A. Karmenyan<sup>1</sup>, Z. R. Lin<sup>1</sup>, C. H. Liu<sup>1</sup>, C. C. Chang<sup>1</sup>, C. Y. Song<sup>1</sup>, N. N. Melnik<sup>2</sup>, and C. L. Cheng<sup>1</sup>  
<sup>1</sup>Nat'l Dong Hwa Univ., Taiwan, <sup>2</sup>P.N.Lebedev Physics Inst. of Rus Acad Sci, Russia, <sup>3</sup>Inst. of Physics, Taiwan

**ThC-II-3 13:45-14:00**

**Microstructural Alterations in Cornea under Thermo-Mechanical Effect of 1.56 $\mu$ m Laser Radiation. Towards a New Refractive Tech.**

O. Baum<sup>1</sup>, A. Yuzhakov<sup>1,2</sup>, A. Omelchenko<sup>1,2</sup>, V. Zaitsev<sup>2</sup>, A. Bolshunov<sup>3</sup>, V. Siplivy<sup>3</sup>, and E. Sobol<sup>1,2</sup>  
<sup>1</sup>Inst. Photonic Technologies of Federal Scientific Research Centre "Crystallography and Photonics" of RAS, Russia, <sup>2</sup>Inst. of Applied Physics Russian Academy of Sciences, Russia, <sup>3</sup>Federal State Scientific Inst. "Research Inst. of Eye Diseases

**ThC-II-4 14:00-14:15**

**Optical Trapping and Diffuse Light Scattering Techniques for in vitro Assessing the Effect of Albumin and Fibrinogen Synergy on Red Cells Aggregation in Blood Plasma**

A. N. Semenov<sup>1</sup>, K. Lee<sup>1,2</sup>, H. Lee<sup>3</sup>, A. E. Lugovtsov<sup>1</sup>, F. Yaya<sup>2</sup>, C. Wagner<sup>2</sup>, S. Shin<sup>3</sup>, and A. V. Priezzhev<sup>1</sup>  
<sup>1</sup>M.V. Lomonosov Moscow State Univ., Russia, <sup>2</sup>Saarland Univ., Germany, <sup>3</sup>Korea Univ., Korea

**ThC-II-5 14:15-14:35**

**[Invited] Applications of Inverse Scattering Principles with Digital Holography**

Y. K. Park

*KAIST, Korea*

September 14 (Thursday) / 13:05-14:40

Room D Cornelia

[ThD-II] Ultrafast Laser Tech.

**ThD-II-1 13:05-13:25**

**[Invited] Wideband Ultrashort Pulse Fiber Lasers and Their Applications**

Norihiko Nishizawa, Jin Lei, and Masahito Yamanaka  
*Nagoya Univ., Japan*

**ThD-II-2 13:25-13:45**

**[Invited] Yb3+-Doped CaF2-LaF3 Ceramics for High Power Ultrashort Pulse Lasers**

Akira Shirakawa<sup>1</sup>, Shotaro Kitajima<sup>1</sup>, Kentaro Yamakado<sup>1</sup>, Ken-ichi Ueda<sup>1</sup>, and Hitoshi Ishizawa<sup>2</sup>  
*<sup>1</sup>Univ. of Electro-Communications, Japan, <sup>2</sup>NIKON Corporation, Japan*

**ThD-II-3 13:45-14:00**

**High-Power Ultrafast MOPA Laser System based on Yb:YAG Elements of Advanced Geometries**

I. Kuznetsov, I. Mukhin, E. Perevezentsev, M. Volkov, and O. Palashov  
*Inst. of Applied Physics of the Russian Academy of Science, Russia*

**ThD-II-4 14:00-14:15**

**Comparative Analysis of Evanescent Field Interaction with Carbon Nanotubes in the Q-Switched Yb:KYW Planar Waveguide Laser**

Jun Wan Kim<sup>1</sup>, Sun Young Choi<sup>2</sup>, Jieun Bae<sup>3</sup>, Xavier Mateos<sup>4</sup>, Francesc Díaz<sup>4</sup>, Uwe Griebner<sup>5</sup>, Valentin Petrov<sup>5</sup>, Guang-Hoon Kim<sup>1</sup>, and Fabian Rotermund<sup>3</sup>  
*<sup>1</sup>KERI, Korea, <sup>2</sup>Universität Hamburg, Germany, <sup>3</sup>KAIST, Korea, <sup>4</sup>Universitat Rovira i Virgili (URV), Spain, <sup>5</sup>Max Born Inst. for Nonlinear Optics and Short Pulse Spectroscopy, Germany*

**ThD-II-5 14:15-14:35**

**[Invited] Characterization of Thermal Effect in Quasi-Phase-Matched Nonlinear Crystal**

Sunao Kurimura<sup>1</sup> and Hwan Hong Lim<sup>2</sup>

*<sup>1</sup>Nat'l Inst. for Materials Science, Japan, <sup>2</sup>Inst. for Molecular Science, Japan*

September 14 (Thursday) / 15:00-16:35

Room B Manarola

[ThB-III] THz Application II

**ThB-III-1 15:00-15:20**

**[Invited] The Talbot Effect Revisited: Studies in the Terahertz Range**

B. Knyazev<sup>1,2</sup>, V. Cherkassky<sup>2</sup>, Yu. Choporova<sup>1,2</sup>, B. Goldenberg<sup>1</sup>, Kameshkov<sup>1,2</sup>, V. Pavelyev<sup>4,5</sup>

<sup>1</sup>Budker Inst. of Nuclear Physics SB RAS, Russia, <sup>2</sup>Novosibirsk State Univ., Russia, <sup>4</sup>- Samara Univ., Russia, <sup>5</sup>Image Processing Systems Inst. of the Russian Academy of Sciences, Russia

**ThB-III-2 15:20-15:40**

**[Invited] Sub-THz Vacuum Devices based on Grating and CW Imaging**

Jung-Il Kim, Geun-Ju Kim, Jeong-Hun Lee, Sang-Hoon Kim, Yong-Seok Lee, and In-Soo Kim  
KERI, Korea

**ThB-III-3 15:40-16:00**

**[Invited] Long Distance Propagation by THz Pulse**

T. -I. Jeon  
Korea Maritime and Ocean Univ., Korea

**ThB-III-4 16:00-16:20**

**[Invited] Accelerator based THz Sources and Its Applications in Japan**

H. Ohgaki  
Kyoto Univ., Japan

**ThB-III-5 16:20-16:40**

**[Invited] THz Parametric Source and its Applications**

Kodo Kawase and Kosuke Murate  
Nagoya Univ., Japan

September 14 (Thursday) / 15:00-16:35

Room C Vernazza B

[ThC-III] Laser-Matter Interaction V

**ThC-III-1 15:00-15:20**

**[Invited] Laser-Induced Porous Glass Densification – the Way for Integral Sensors Fabrication**

Veiko V. P.<sup>1</sup>, Zakoldaev R. A.<sup>1</sup>, Segeev M. M.<sup>1</sup>, Sivers A. N.<sup>1</sup>, Antropova T. V.<sup>2</sup>, and Itina T. E.<sup>1,3</sup>

<sup>1</sup>*ITMO Univ., Russia*, <sup>2</sup>*Inst. of Silicate Chemistry, Russian Academy of Sciences, Russia*, <sup>3</sup>*UMR CNRS 5516/UJM/Univ. of Lyon, Russia*

**ThC-III-2 15:20-15:40**

**Laser Created Functional Microstructures**

E. Stankevičius, M. Garliauskas, E. Daugnoraitė, and G. Račiukaitis

*Center for Physical Sciences and Tech., Lithuania*

**ThC-III-3 15:40-16:00**

**Fabrication of Mechanical Traps for Atomic Force Microscopy Investigations of Living Cells by Ultrashort Pulse Laser Ablation**

Inam Mirza<sup>1</sup>, Jan Pokorný<sup>1</sup>, Yoann Levy<sup>1</sup>, Radek Machulka<sup>2</sup>, Ondrej Haderka<sup>2</sup>, Nadezhda M. Bulgakova<sup>1</sup>, and Tomas Mocek<sup>1</sup>

<sup>1</sup>*Inst. of Physics CAS, Czech Republic*, <sup>2</sup>*Palacký Univ., Czech Republic*

**ThC-III-4 16:00-16:20**

**The Laser-Induced Synthesis of Linear Carbon Chains Stabilized by Noble Metal Particles**

A. V. Osipov, A. O. Kucherik, S. V. Kutrovskaya, and S. M. Arakelian

*Stoletovs Vladimir State Univ., Russia*

**ThC-III-5 16:20-16:40**

**Nanoscale Heat Transfer in Laser Interference Ablation by Ultrashort Pulses**

Mindaugas Gedvilas, Simonas Indrišiūnas, Bogdan Voisiat, Evaldas Stankevičius, and Gediminas Račiukaitis

*Center for Physical Sciences and Tech., Lithuania*



September 14 (Thursday) / 15:00-16:35

Room D Cornelia

[ThD-III] Micro-and nanophotonics I

**ThD-III-1 15:00-15:20**

**[Invited] Laser Manipulation of Single-Wall Carbon Nanotubes**

Satoru Shoji

*The Univ. of Electro-Communications JST, Japan*

**ThD-III-2 15:20-15:40**

**[Invited] Highly Transparent and Conductive Glass Electrodes using Nanoscale Conducting Channels**

T. H. Lee, B. R. Lee, K. R. Son, J. H. Park, and T. G. Kim

*Korea Univ., Korea*

**ThD-III-3 15:40-16:00**

**[Invited] Design of Graphene-Integrated Silicon Electro-Optic Modulators based on Isotropic and Anisotropic Graphene Models**

Jin-Soo Shin<sup>1</sup>, Kwang Hyo Chung<sup>2</sup>, Bong Kyu Kim<sup>2</sup>, and Jin Tae Kim<sup>2</sup>

<sup>1</sup>KAIST, Korea, <sup>2</sup>ETRI, Korea

**ThD-III-4 16:00-16:20**

**[Invited] Exciton-Polaritons in Nanostructured Semiconductors**

Chang-Hee Cho

*DGIST, Korea*

September 14 (Thursday) / 16:35-18:00

Room A Monterosso

[ThP1] Poster Session II

**ThP1-01 16:35-18:00**

**Laser Cataract Extraction. Physical Aspects and 20 Years of Clinical Experience**

Valentina G. Kopayeva<sup>1</sup>, Sergey Yu. Kopayev<sup>1</sup>, and A V Belikov<sup>2</sup>

<sup>1</sup>The S. Fyodorov Eye Microsurgery Federal State Institution, Russia, <sup>2</sup>Saint Petersburg National Research University of Information Technologies, Russia

**ThP1-02 16:35-18:00**

**Photodithazine - Amphiphilic Polymer Complexes in Antimicrobial Photodynamic Therapy of Model Wounds in Rats**

Anna B. Solovieva<sup>1</sup>, Tatiana G. Rudenko<sup>2</sup>, Anatoly B. Shehter<sup>2</sup>, Nadezda N. Aksenova<sup>1</sup>, Nicolai N. Glagolev<sup>1</sup>, Aleksandr L. Spokoiny<sup>3</sup>, and Serge F. Timashev<sup>1</sup>

<sup>1</sup>N.N. Semenov Institute of Chemical Physics RAS, Russia, <sup>2</sup>First Moscow State Medical University, Russia, <sup>3</sup>State Research and Clinical Center of Laser Medicine, Russia

**ThP1-03 16:35-18:00**

**Optical-Spectroscopic Investigation of Nanoparticles Interaction with Animal Skin In-Vitro**

N. Ali<sup>1</sup>, M. Kinnunen<sup>2</sup>, E. Perevedentseva<sup>3,4</sup>, A. Karmenyan<sup>3</sup>, A.-I.-Ahmed<sup>3</sup>, S. Vainio<sup>1</sup>, I. Meglinski<sup>2</sup>, and C.-L. Cheng<sup>3</sup>

<sup>1</sup>Biocenter Oulu, Finland, <sup>2</sup>University of Oulu, Finland, <sup>3</sup>National Dong Hwa University, Taiwan, <sup>4</sup>P.N. Lebedev Physics Institute of Rus Acad Sci, Russia

**ThP1-04 16:35-18:00**

**Photon Density Normalized Maximum Movement in Soft Biological Tissue Considering Turbid Media Deformation**

A. Yu. Potlov, S. V. Frolov, and S. G. Proskurin

Tambov State Technical University, Russia

**ThP1-05 16:35-18:00**

**NIR Fluorescence Imaging Methods to Evaluate Blood Flow State in the Skin Lesions**

P. V. Grachev<sup>1</sup>, Z. N. Abdulvapova<sup>2</sup>, V. I. Makarov<sup>1</sup>, G. R. Galstyan<sup>2</sup>, and V. B. Loschenov<sup>1</sup>

<sup>1</sup>*General Physics Institute of RAS, Russia*, <sup>2</sup>*Endocrinology Research Centre, Russia*

**ThP1-06 16:35-18:00**

**Experimental Modeling of Local Laser Hyperthermia using Thermosensitive Nanoparticles Absorbing in NIR**

Grachev P. V.<sup>1</sup>, Romanishkin I. D.<sup>1</sup>, Pominova D. V.<sup>1</sup>, Burmistrov I. A.<sup>1</sup>, Kaldvee K.<sup>2</sup>, Sildos I.<sup>2</sup>, Vanetsev A. S.<sup>1</sup>, Orlovskaya E. O.<sup>1</sup>, Orlovskii Yu. V.<sup>1</sup>, Loschenov V. B.<sup>1</sup>, and Ryabova A. V.<sup>1</sup>

<sup>1</sup>*Prokhorov General Physics Institute, Russian Academy of Sciences, Russia*, <sup>2</sup>*University of Tartu, Estonia*

**ThP1-07 16:35-18:00**

**Multifunctional Imaging with Polarization-Sensitive Optical Coherence Tomography for Monitoring Wound Healing**

Kwan Seob Park<sup>1</sup>, Woo June Choi<sup>2</sup>, Shaozhen Song<sup>2</sup>, Jingjiang Xu<sup>2</sup>, Ruikang J. Wang<sup>2</sup>, and Tae Joong Eom<sup>1</sup>

<sup>1</sup>*GIST, Korea*, <sup>2</sup>*University of Washington, USA*

**ThP1-08 16:35-18:00**

**Application of Laser Scanning Confocal Fluorescent Microscopy for Visualization of Erythropoietin Receptors in Mouse Local Cerebral Ischemia**

M. Glyavina<sup>1,2</sup>, P. Loginov<sup>2</sup>, V. Dudenkova<sup>1,2</sup>, M. Muraveva<sup>1</sup>, E. Klyuev<sup>2</sup>, N. Prodanets<sup>2</sup>, A. Dyagtereva<sup>2</sup>, and I. Mukhina<sup>2</sup>

<sup>1</sup>*Nizhny Novgorod State University, Russia*, <sup>2</sup>*Central Scientific Research Laboratory of the Nizhny Novgorod State Medical Academy, Russia*

**ThP1-09 16:35-18:00**

**On the Possibility of Developing a Quasi-CW High-Power High-Pressure Laser on 4p–4s Transition of ArI with Electron-Optical Pumping**

A. A. Ionin, I. V. Kholin, A. Yu. L'dov, L. V. Seleznev, N. N. Ustinovskii, and D. A. Zayarnyi

*Lebedev Physical Institute, Russia*

**ThP1-10 16:35-18:00**

**Quenching of 4s (3P<sub>2</sub>) Lower Laser Level of the Laser on 4p–4s Transition of ArI with Electron-Optical Pumping**

A. A. Ionin, I. V. Kholin, A. Yu. L'dov, N. N. Ustinovskii, and D. A. Zayarnyi  
*Lebedev Physical Institute, Russia*

**ThP1-11 16:35-18:00**

**Eco-Friendly Reduction of Graphene Oxide by Polyphenol Extracts**

Su Hyeon Go and Young-Kwan Kim  
*KIST, Korea*

**ThP1-12 16:35-18:00**

**Adaptive Interferometer based on Spectral Multiplexing of Dynamic Holograms in PRC**

R. V. Romashko<sup>1,2</sup> and M. A. Asalkhanova<sup>2</sup>

<sup>1</sup>*Far Eastern Federal University, Russia,* <sup>2</sup>*Laboratory of Precision Optical Measurement Techniques of Institute of Automation and Control Processes FEB RAS, Russia*

**ThP1-13 16:35-18:00**

**Calculation of the Wide-Band Laser Beams Amplification in the Yb:YAG Thin-Rod Active Elements**

I. I. Kuznetsov<sup>1</sup>, I. B. Mukhin<sup>1</sup>, O. V. Palashov<sup>1</sup>, O. L. Vadimova<sup>1</sup>, G. H. Kim<sup>2</sup>, B. Lee<sup>2</sup>, S. A. Chizhov<sup>2</sup>, and E. G. Sall<sup>2</sup>

<sup>1</sup>*Inst. of Applied Physics of the Russian Academy of Sciences, Russia,* <sup>2</sup>*KERI, Korea*

**ThP1-14 16:35-18:00**

**Raman Structural Study of Melt-Mixed Blends of Isotactic Polypropylene with Polyethylene of Various Density**

R. F. Mutalova<sup>1,2</sup>, K. A. Prokhorov<sup>2</sup>, G. Yu. Nikolaeva<sup>2</sup>, E. A. Sagitova<sup>2</sup>, P. P. Pashinin<sup>2</sup>, M. A. Guseva<sup>3</sup>, B. F. Shklyaruk<sup>2</sup>, and V. A. Gerasin<sup>2</sup>

<sup>1</sup>*Moscow Inst. of Physics and Tech. (State Univ.), Russia,* <sup>2</sup>*Russian Academy of Sciences, Russia*

**ThP1-15 16:35-18:00**

**Glass Compositions for 2.3  $\mu\text{m}$  Tm<sup>3+</sup> Bulk and Fiber Lasers**

B. I. Denker<sup>1</sup>, V.V. Dorofeev<sup>2</sup>, B. I. Galagan<sup>1</sup>, S.E. Motorin<sup>2</sup>, and S. E. Sverchkov<sup>1</sup>

<sup>1</sup>A. M. Prokhorov General Physics Inst. of RAS, Russia, <sup>2</sup>G. G. Devyatykh Inst. of Chemistry of High-Purity Substances of RAS, Russia

**ThP1-16 16:35-18:00**

**Multiplication of Pulse Energy towards kJ Level in Nd:Glass Laser for Pumping PEARL OPCPA Stages**

A. Kuzmin, O. Kulagin, A. Shaykin, I. Shaykin, and E. Khazanov

*Inst. of Applied Physics of the Russian Academy of Sciences, Russia*

**ThP1-17 16:35-18:00**

**Y2O3 Passivated Quantum cascade lasers with Double Channel Structure**

J. Kang<sup>1</sup>, B. Joo<sup>1,2</sup>, H. Yang<sup>1</sup>, J. Song<sup>1</sup>, and I. Han<sup>1</sup>

<sup>1</sup>KIST, Korea, <sup>2</sup>Univ. of Seoul, Korea

**ThP1-18 16:35-18:00**

**The Spectroscopic Study of a Tm:Ho:Yb<sub>3</sub>Al<sub>5</sub>O<sub>12</sub> Crystal**

Yu. D. Zavartsev, A. I. Zagumennyi, Yu. L. Kalachev, S. A. Kutovoi, V. A. Mikhailov, and I. A. Scherbakov

*A.M. Prokhorov General Physics Institute, RAS, Russia*

**ThP1-19 16:35-18:00**

**Optical Properties of Gd<sub>3</sub>Al<sub>2</sub>Ga<sub>3</sub>O<sub>12</sub>:Ce Crystals Co-Doped with Sc; Sc+Ca ; Mg**

O. Buzanov<sup>1</sup>, V. Kasimova<sup>2</sup>, N. Kozlova<sup>2</sup>, A. Kozlova<sup>2</sup>, D. Spassky<sup>2,3</sup>, and E. Zabelina<sup>2</sup>

<sup>1</sup>"Fomos-Materials" Ltd., Russia, <sup>2</sup>Nat'l Univ. of Science and Tech. "MISIS", Russia, <sup>3</sup>M. V. Lomonosov Moscow State Univ., Russia

**ThP1-20 16:35-18:00**

**Endoscopic Visualization of Tumors in Gynecology**

N. Kalyagina<sup>1,2</sup>, A. Borodkin<sup>1</sup>, and M. Loschenov<sup>1</sup>

<sup>1</sup>Russian Academy of Sciences, Russia, <sup>2</sup>Nat'l Research Nuclear Univ. MEPhI, Russia

**ThP1-21 16:35-18:00**

**Incorporate Assessment of Optical Coherence Tomography and Optical Diagnostic Techniques for the Enhanced Visualization of Industrial Resin Defects**

Ruchire Eranga Wijesinghe, Kibeom Park, Muhammad Faizan Shirazi, Mansik Jeon, and Jeehyun Kim  
*Kyungpook Nat'l Univ., Korea*

**ThP1-22 16:35-18:00**

**Anisotropic Behavior of Refractive Index in Black Phosphorus Obtained by Transmittance and Reflectance Measurement**

Seong-Yeon Lee, Jeong-Jae Park, Tae-Young Jeong, and Ki-Ju Yee  
*Chungnam Nat'l Univ., Korea*

**ThP1-23 16:35-18:00**

**Highly Polarization Dependent Coherent Phonon of Black Phosphorus Measured with a Femtosecond Pulse Laser**

J. J. Park<sup>1</sup>, T. Y. Jeong<sup>1</sup>, S. J. Kim<sup>1</sup>, and K. J. Yee  
*Chungnam Nat'l Univ., Korea*

**ThP1-24 16:35-18:00**

**Spectroscopy of Laser-Induced Breakdown Spectroscopy under the Action of Ultrasound**

A. V. Bulanov<sup>1,3</sup>, and I. G. Nagorny<sup>2,3</sup>  
<sup>1</sup>*V. I. Il'ichev Pacific Oceanological Inst., Russia,* <sup>2</sup>*Inst. for Automation and Control Processes, Russia,* <sup>3</sup>*Far Eastern Federal Univ., Russia*

**ThP1-25 16:35-18:00**

**Linear and Non-Linear Optical Diagnostics of Nano-Biosystems for Cancer Theranostic Applications**

V. Yu. Timoshenko<sup>1,2,3</sup>, A. Yu. Kharin<sup>2</sup>, A.F. Alykova<sup>2</sup>, T. Yu. Bazylenko<sup>1,2</sup>, V. Lysenko<sup>2,4</sup>, S. I. Derzhavin<sup>2,5</sup>, S. M. Klimentov<sup>2,5</sup>, Ya. Dombrovskaya<sup>2</sup>, I. N. Zavestovskaya<sup>2,3</sup>, and A. V. Kabashin<sup>2,6</sup>  
<sup>1</sup>*Lomonosov Moscow State Univ., Russia,* <sup>2</sup>*Nat'l Research Nuclear Univ. "MEPhI", Russia,* <sup>3</sup>*Lebedev Physical Inst., RAS, Russia,* <sup>4</sup>*Univ. of Lyon, France,* <sup>5</sup>*Prokhorov General Physics Institute of RAS, Russia,* <sup>6</sup>*Aix-Marseille University, France*

**ThP1-26 16:35-18:00**

**Growth and Properties of Gallium Selenide Nanoparticles**

A.M. Pashayev<sup>1</sup>, E.Yu. Salayev<sup>2</sup>, M. F. Huseyinoglu<sup>3</sup>, and K. R. Allakhverdiev<sup>1</sup>

<sup>1</sup>Nat'l Aviation Academy, Azerbaijan, <sup>2</sup>Azerbaijan Nat'l Academy of Sciences, Institute of Physics, Azerbaijan, <sup>3</sup>Girne American Univ., Cyprus

**ThP1-27 16:35-18:00**

**Interplay between Kerr and Raman Effects in Microcomb Generation**

A.V. Cherenkov<sup>1,2</sup>, N. M. Kondratiev<sup>2</sup>, V.E. Lobanov<sup>2</sup>, G. Lihachev<sup>1,2</sup> and M.L. Gorodetsky<sup>1,2</sup>

<sup>1</sup>M. V. Lomonosov Moscow State Univ., Russia, <sup>2</sup>Russian Quantum Center, Russia

**ThP1-28 16:35-18:00**

**Speckle Noise Reduction using the Multi-Channel Chirped Quasi-Phase Matching Device**

Seong-Jin Son<sup>1</sup>, Hsin-Jung Lee<sup>2</sup>, Lung-Han Peng<sup>2</sup>, Do-Kyeong Ko<sup>1</sup>, and Nan Ei Yu<sup>1</sup>

<sup>1</sup>GIST, Korea, <sup>2</sup>Nat'l Taiwan Univ., China

**ThP1-29 16:35-18:00**

**Optimization of Electrical Breakdown Process for Glass Electrodes in Blue Micro Light-Emitting Diodes**

K. R. Son, S. H. Oh, H. T. Kim, D. Y. Kang, B. R. Lee, and T. G. Kim

*Korea Univ., Korea*

**ThP1-30 16:35-18:00**

**GaN Based Light-Emitting Device using Resistive Switching Material**

H. T. Kim<sup>1</sup>, B. R. Lee<sup>1</sup>, J. H. Park<sup>1</sup>, T. H. Lee<sup>1</sup>, K. R. Son<sup>1</sup>, S. H. Oh<sup>1</sup>, and T. G. Kim<sup>1</sup>

*Korea Univ., Korea*

**ThP1-31 16:35-18:00**

**Improved Light Extraction Efficiency of GaN-Based Micro-Light Emitting Diode using Al<sub>2</sub>O<sub>3</sub>/TiO<sub>2</sub> DBR with Conductive Filaments**

S. H. Oh, H. T. Kim, B. R. Lee, K. R. Son, S. M. Oh, and T. G. Kim

*Korea Univ., Korea*

**ThP1-32 16:35-18:00**

**Enhancement of AlGaIn-based Deep-Ultraviolet Light-Emitting Diodes with Edge Graded Al Composition Electron Blocking Layer**

M. R. Kwon, B. R. Lee, T. H. Lee, T. H. Park, Y. W. Kim, C. Y. Kim, and T. G. Kim  
*Korea Univ., Korea*

**ThP1-33 16:35-18:00**

**Optical Measurement of Resonant Mechanical Oscillation of Micro Glass Tubes**

Kohei Matsumoto, Taiki Yamamoto, and Satoru Shoji  
*The Univ. of Electro-Communications JST, Japan*

**ThP1-34 16:35-18:00**

**Improved Performance of Low-Illuminance Organic Photovoltaics using Highly Transparent and Conductive Thin Indium Tin Oxide Films via Electrical Doping**

Y. W. Kim<sup>1</sup>, B. R. Lee<sup>1</sup>, T. H. Lee<sup>1</sup>, M. R. Kwon<sup>1</sup>, D. S. Jeon<sup>1</sup>, S. C. Shin<sup>2</sup>, J. W. Shim<sup>2</sup>, and T. G. Kim<sup>1</sup>  
<sup>1</sup>*Korea Univ., Korea*, <sup>2</sup>*Dongguk Univ., Korea*

**ThP1-35 16:35-18:00**

**Laser Interference Exposure Lithography for Fabricating Superhydrophilic Pillar Arrays Made of Polymer**

Ryusaku Hida and Satoru Shoji  
*The Univ. of Electro-Communications JST, Japan*

**ThP1-36 16:35-18:00**

**Improvement of Light Extraction Efficiency in AlN/Al Backside Reflector in AlGaIn-based Ultraviolet Light Emitting Diodes**

T. H. Park, T. H. Lee, and T. G. Kim  
*Korea Univ., Korea*



**ThP1-37 16:35-18:00**

**Ultra-Thin ITO Films with High Transmittance and Conductivity using Electrical Doping Methods: Its Application to both Organic and Inorganic Light-Emitting Devices**

T. H. Lee, B. R. Lee, K. R. Son, Y. W. Kim, J. H. Park, M. S. Chae, and T. G. Kim  
*Korea Univ., Korea*

**ThP1-38 16:35-18:00**

**High-Performance ZnO/Ag/ZnO Transparent Electrodes for Flexible Organic Photovoltaic Cells**

B. R. Lee, G. E. Park, Y. W. Kim, H. T. Kim, T. H. Lee, K. R. Son, S. H. Oh, M. R. Kwon, S. B. Hong, D. H. Choi, and T. G. Kim  
*Korea Univ., Korea*

**ThP1-39 16:35-18:00**

**A Study on the Active Terahertz Asymmetric Split Loop Resonator with an Outer Square Loop based on VO<sub>2</sub> Having a High-Q Factor**

Dae-Jun Park and Han-Cheol Ryu  
*Sahmyook Univ., Korea*

**ThP1-40 16:35-18:00**

**Nanoscale Mapping of Surface and Interfacial Strain in Tapered ZnO Nanorods by Two-Photon Confocal Laser Scanning Microscopy**

H. Y. Hwang<sup>1</sup>, R. Hossen<sup>1</sup>, H. J. Baek<sup>2</sup>, G. C. Yi<sup>2</sup>, and Y. D. Jho<sup>1</sup>  
<sup>1</sup>GIST, Korea, <sup>2</sup>Seoul Nat'l Univ., Korea

**ThP1-41 16:35-18:00**

**Phonon-Assisted Anti-Stokes Photoluminescence in GaN Nanopyramid Structure**

Raqibul Hossen<sup>1</sup>, Hyeong-Yong Hwang<sup>1</sup>, Seung-Hyuk Lim<sup>2</sup>, Hyun Gyu Song<sup>2</sup>, Kie YoungWoo<sup>2</sup>, Yong-Hoon Cho<sup>2</sup>, and Young-Dahl Jho<sup>1</sup>  
<sup>1</sup>GIST, Korea, <sup>2</sup>KAIST, Korea

September 15 (Friday) / 09:00-10:40

Room C Manarola

[FB-I] THz Bio

**FB-I-1 09:00-09:20**

**[Invited] Terahertz Molecular Fingerprint of Cancer DNA**

Joo-Hiuk Son and Hwayeong Cheon  
*Univ. of Seoul, Korea*

**FB-I-2 09:20-09:40**

**[Invited] CMOS Biosensor using Picosecond Dynamics of Water Molecule**

Y. Ogawa and T. Suzuki  
*Kyoto Univ., Japan*

**FB-I-3 09:40-10:00**

**[Invited] Biomedical Imaging Tech. using THz Wave**

Seung Jae Oh, Young Bin Ji, and Jin Such Suh  
*Yonsei Univ. College of Medicine, Korea*

**FB-I-4 10:00-10:20**

**[Invited] In-Vivo THz Sensing of Tear Film and Corneal Tissue**

A. Angeluts<sup>1</sup>, A. Balakin<sup>1</sup>, M. Mischenko<sup>1</sup>, I. Ozheredov<sup>1</sup>, M. Prokopchuk<sup>1</sup>, T. Saphonova<sup>2</sup>, P. Solyankin<sup>1</sup>, and A. Shkurinov<sup>1</sup>  
<sup>1</sup>*Moscow State Univ., Russia*, <sup>2</sup>*Research Inst. of Eye Diseases, Russia*

**FB-I-5 10:20-10:40**

**[Invited] THz Spectroscopy and Imaging of Blood**

Chi-Kuang Sun  
*Nat'l Taiwan Univ., Taiwan*

September 15 (Friday) / 09:00-10:40

Room C Vernazza B

**[FC-I] Laser Diagnostics and Spectroscopy I**

**FC-I-1 09:00-09:20**

**[Invited] Correlative Optical Imaging in the Far-Field and Near-Field Regimes: Architecture, Applications and Perspectives**

S. G. Stanciu, D. E. Tranca, R. Hristu, and G. A. Stanciu  
*Univ. Politehnica of Bucharest, Romania*

**FC-I-2 09:20-09:40**

**[Invited] VOCs Emitted from Seeds Germinated with Heavy Metals Measured by Optical Spectroscopy Technique**

C. Achim (Popa)<sup>1</sup> and D. C. Dumitras<sup>1,2</sup>  
<sup>1</sup>*Nat'l Inst. for Laser, Plasma and Radiation Physics, Romania,* <sup>2</sup>*Univ. "Politehnica" of Bucharest, Romania*

**FC-I-3 09:40-10:00**

**[Invited] Control of CdTe Quantum Dots Photostability**

A. S. Tsipotan<sup>1</sup>, A. S. Aleksandrovsky<sup>2</sup>, and V. V. Slabko<sup>1</sup>  
<sup>1</sup>*Siberian Federal Univ., Russia,* <sup>2</sup>*Russian Academy of Sciences, Russia*

**FC-I-4 10:00-10:20**

**[Invited] Non-Destructive Detection Capability of Laser Diagnostics based Optical Coherence Tomography for Agricultural Applications**

Mansik Jeon  
*Kyungpook Nat'l Univ., Korea*

**FC-I-5 10:20-10:40**

**[Invited] Designing Microcavity Laser Diodes by using Transformation Optics**

Muhan Choi<sup>1</sup>, Yushin Kim<sup>2</sup>, Jung-Wan Ryu<sup>3</sup>, Inbo Kim<sup>1</sup>, and Bumki Min<sup>2</sup>  
<sup>1</sup>*Kyungpook Nat'l Univ., Korea,* <sup>2</sup>*KAIST, Korea,* <sup>3</sup>*Inst. for Basic Science, Korea*

**September 15 (Friday) / 09:00-10:40**

**Room D Cornelia**

**[FD-I] Micro-and nanophotonics II**

**FD-I-1 09:00-09:20**

**[Invited] First Observation of the Number-Density-Dependent Growth of Plasmonic Nanobubbles**

Takashi Nakajima  
*Kyoto Univ., Japan*

**FD-I-2 09:20-09:40**

**[Invited] Holographic Manipulation of Femtosecond Laser Pulses for Advanced Material Processing**

S. Hasegawa and Y. Hayasaki  
*Utsunomiya Univ., Japan*

**FD-I-3 09:40-10:00**

**[Invited] Mid-Infrared Active Plasmonics in Graphene**

M. S. Jang  
*KAIST, Korea*

**FD-I-4 10:00-10:20**

**[Invited] Simple Field Enhancement Formulation for Gold Bipyramids for Application in Two-Photon Luminescence and Scattering**

James W. M. Chon and Stuart J. Flanders  
*Swinburne Univ. of Tech., Australia*

**FD-I-5 10:20-10:40**

**[Invited] Plasmonics and Metamaterials for Imaging and Hologram Applications**

Choon-Gi Choi<sup>1,2</sup>  
<sup>1</sup>*ETRI, Korea*, <sup>2</sup>*Korea Univ., Korea*

September 15 (Friday) / 11:00-12:30

Room C Vernazza B

**[FC-II] Laser Diagnostics and Spectroscopy II**

**FC-II-1 11:00-11:20**

**[Invited] Laser-Induced Wavelength-Controlled Self-Assembly of Colloidal Quasiresonant Nanoparticles: Chance to Overcome the Diffraction Limit**

V. V. Slabko<sup>1</sup>, A. S. Tsipotan<sup>1</sup>, and A. S. Aleksandrovsky<sup>2</sup>

<sup>1</sup>*Siberian Federal Univ., Russia*, <sup>2</sup>*Russian Academy of Sciences, Russia*

**FC-II-2 11:20-11:40**

**[Invited] Photoacoustic Spectroscopy Technologies for Non-invasive Detection of Glucose in Human Body**

C. G. Ahn, J. Y. Sim, C. Huh, K. H. Chung, E. J. Jeong, and B. K. Kim

*ETRI, Korea*

**FC-II-3 12:00-12:15**

**Effect of Photon Lifetime in Silicon Nanowire Ensembles on Efficiency of Raman Scattering and Third-Harmonic Generation**

L. A. Golovan<sup>1</sup>, S. V. Zobotnov<sup>1,2,3</sup>, N. B. Tkachenko<sup>1</sup>, D. E. Presnov<sup>1</sup>, L. A. Osminkina<sup>1</sup>, and A. I. Efimova<sup>1</sup>

<sup>1</sup>*M. V. Lomonosov Moscow State Univ., Russia* <sup>2</sup>*Nat'l Research Center 'Kurchatov Inst.', Russia* <sup>3</sup>*FNBIC, Moscow Inst. of Physics and Tech., Russia*

**FC-II-4 12:15-12:30**

**Nanoscale Chemical Mapping: Photo-Induced Force Microscopy and Photothermal-Induced Resonance Microscopy**

J. Jahng, H. Kwon, and E. S. Lee

*KRISS, Korea*

**September 15 (Friday) / 11:00-12:30**

**Room D Cornelia**

**[FD-II] Micro-and nanophotonics III**

**FD-II-1 11:00-11:20**

**[Invited] High Resolution Imaging with Electron Beam Assisted (EXA) Microscopy for Bio Tech.**

Yoshimasa Kawata, Masahiro Fukuta, and Wataru Inami  
*Shizuoka Univ., Japan*

**FD-II-2 11:20-11:40**

**[Invited] Terahertz Nanophotonics and its Sensing Applications**

H. -R. Park<sup>1</sup> and D. S. Kim<sup>2</sup>  
*<sup>1</sup>Chungbuk Nat'l Univ., Korea, <sup>2</sup>Seoul Nat'l Univ., Korea*

**FD-II-3 11:40-12:00**

**[Invited] Terahertz Vortex Generation and its Applications**

Katsuhiko Miyamoto<sup>1,2</sup>, Fabian Rotermund<sup>1</sup>, and Takashige Omatsu<sup>1,2</sup>  
*<sup>1</sup>Chiba Univ., Japan, <sup>2</sup>KAIST, Korea*

**FD-II-4 12:00-12:20**

**[Invited] Resonant Tip Enhanced Raman Scattering Imaging of Defects in 2 Dimensional WS<sub>2</sub> Monolayer**

Chanwoo Lee<sup>1</sup>, Seung Mi Lee<sup>2</sup>, and Mun Seok Jeong<sup>1</sup>  
*<sup>1</sup>Sungkyunkwan Univ., Korea, <sup>2</sup>KRISS, Korea*