PROGRAM

of the VIII conference LTLA-2025

LASER TECHNOLOGIES. LASERS AND THEIR APPLICATION

June 26-27, 2025.

OPENING CEREMONY

Thursday

Time: 10:00 AM – Eastern European Summer Time (UTC+3)

09:50-10:00

Registration of speakers, organizational issues

PLACE

Conference-hall of "ALKOR" Hotel, Truskavets,

"Hybrid Meeting" using the MS Teams platform - Links to the meeting:

https://teams.microsoft.com/meet/332949408400?p=g6huHFQKRHvDbj7Cs9

10:00-10:15

Forum opening, words of greeting

professor V. Bodak *Rector - Drohobych Ivan Franko State Pedagogical University, Ukraine*

professor V. Taranenko *conference Chairman - Institute of Physics of the NASU, Ukraine*

professor I. Stefaniuk *conference Chairman - University of Rzeszów, Poland*

Time: 10:20 AM – Eastern European Summer Time (UTC+3)

PLENARY SESSION

Topic I: "Physical and mathematical fundamentals of laser systems"

Track 1

(10:20AM – 12:55PM)

Time	*Sub#*	*Authors*	*Title*
10:20–10:45	I-L1	V. Kadan[1], I.Pavlov[1,2], A. Dmytruk[1] *[1] Institute of Physics of NAS of Ukraine, Kyiv, Ukraine* *[2] Department of Physics, Middle East Technical University, Ankara, Turkey*	**Refraction modulation Z-scan for nonlinear refractive index measurement**
10:45–11:10	I-L2	B.V. Padlyak[1], I.I. Kindrat[2], R. Lisiecki[3] *[1] O.G. Vlokh Institute of Physical Optics of the Ivan Franko National University of Lviv, Department of Optical Materials, Ukraine* *[2] University of Zielona Góra, Institute of Physics, Division of Spectroscopy of Functional Materials, Poland* *[3] Institute of Low Temperature and Structure Research of the Polish Academy of Sciences, Group for Spectroscopy of Laser Materials, Wrocław, Poland*	**Spectroscopic and luminescent properties of the Nd-doped and Ag-Nd co-doped lithium tetraborate glasses**
11:10–11:35	I-L3	I. Stefaniuk, P. Potera, B. Cieniek *Institute of Materials Engineering, Faculty of Exact and Technical Sciences, University of Rzeszow, Poland*	**Relaxation processes in selected oxide crystals used as active elements of lasers**
11:35–12:05	**Pause, coffee-break.**		

12:05–12:30	I-L4	O. Melnichuk[1], N. Korsunska[2], L. Melnichuk[1], L. Khomenkova[2] *[1] Mykola Gogol State University of Nizhyn, Ukraine.* *[2] V. Lashkaryov Institute of Semiconductor Physics of National Academy of Sciences of Ukraine, Kyiv, Ukraine.*	**Wave polaritons in structures doped ZnO film – 6H-SiC substrate**
12:30–12:55	I-L5	O. Mys, M. Kostyrko, R. Vlokh *O.G. Vlokh Institute of Physical Optics of the Ivan Franko National University of Lviv, Ukraine.*	**Magnetic Field-Induced Enhancement of Acousto-Optic Diffraction Efficiency in β-BaB_2O_4 Crystals**
Time: 12:55 PM – Eastern European Summer Time (UTC+3) **ORAL SESSION** **Topic I: "Physical and mathematical fundamentals of laser systems"** **Topic II: "Development of lasers and laser systems"** **Track 1**			
(12:55PM – 2:25PM)			
12:55–1:10	I-OI	O. Komarov, A.M. Dobrovolskiy *Institute of Physics National academy of Sciences of Ukraine, Kyiv, Ukraine*	**Prospects and Problems of Creating New Lasers Based on Heavy Metal Vapors**
1:10–1:25	I-O2	R. Leshko[1], O. Leshko[1], I Bilynskyi[2], P. Khomyn[1] *[1] Department of Physics and Information Systems, Drohobych Ivan Franko State Pedagogical University, Ukraine* *[2] Department of Physics, Kryvyi Rih State Pedagogical University, Ukraine*	**Optical Properties of Spherical Non-Concentric Core-Shell Quantum Dots**
1:25–1:40	I-O3	I.I. Kindrat[1], A. Drzewiecki[1], B.V. Padlyak[2] *[1] University of Zielona Góra, Institute of Physics, Poland* *[2] O.G. Vlokh Institute of Physical Optics of the Ivan Franko National University of Lviv, Ukraine*	**Spectroscopy of the lithium tetraborate glasses doped with Tb and co-doped with Tb and Ag**
1:40–1:55	II-OI	A. Derzhypolskyi, L. Derzhypolska, Y. Sharlovych, A. Negriyko, S. Khodakovskyi *Institute of Physics of the NAS of Ukraine, Kyiv, Ukraine*	**Estimate of critical parameters for retroreflex detection of optical systems in daylight conditions.**
1:55–2:10	II-O2	L. Kosyanchuk[1], V. Bezrodnyi[2], N. Babkina[1], N. Kozak[1], T. Bezrodna[2], O. Antonenko[1] *[1] Institute of Macromolecular Chemistry NAS of Ukraine, Kyiv, Ukraine* *[2] Institute of Physics NAS of Ukraine, Kyiv, Ukraine*	**Polyurethane matrices for the solid-state elements in dye lasers**
2:10–2:25	II-O3	M. Dubinin, A. Degtyarev, O. Gurin, V. Maslov, V. Ryabykh *Department of Quantum Radiophysics, V. N. Karazin Kharkiv National University, Kharkiv, Ukraine*	**Control of Terahertz Laser Beam Structure Using Spiral Phase Plates**
BREAK TIME (2:25PM– 3:15PM)			
Time: 3:15PM – Eastern European Summer Time (UTC+3) **ORAL SESSION** **Topic III: "Laser processing of materials "** **Track 1**			
(3:15PM – 4:30PM)			
3:15–3:30	III-OI	D. Adamenko, I. Skab, and R. Vlokh *O.G. Vlokh Institute of Physical Optics Ivan Franko National University of Lviv, Ukraine*	**Properties of the multi-cascade optical systems with bending-stressed glass elements**

3:30–3:45	III-O2	Yu.V. Revenko[1], Ye. Butakova[2], A. Negriyko[1,2] *[1] Institute of Physics National academy of Sciences of Ukraine, Kyiv, Ukraine* *[2] National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kyiv, Ukraine*	**Mechanical Strength Degradation of Materials under Nanosecond High-Peak-Power Laser Pulses**
3:45–4:00	III-O3	E. Svitlichnyi *Institute of Electron Physics of NAS of Ukraine, Uzhhorod, Ukraine*	**Copper vapor laser with modefied kinetics and its application**
4:00–4:15	III-O4	N. Sembratovych, Yu. Nykyruy *Metal physics department, Ivan Franko National University of Lviv, Ukraine*	**Laser patterning of Co-based amorphous thin films**
4:15–4:30	III-O5	D.A. Lesyk[1,2,4], I. Charit[3], B.M. Mordyuk[4], K.S. Raja[3], S. Martinez[2], O.O. Pedash[5], A. Lamikiz[2] *[1] Laser Systems and Advanced Technologies Department, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Ukraine* *[2] Aeronautics Advanced Manufacturing Center, University of the Basque Country (UPV/EHU), Zamudio, Spain* *[3] Nuclear Engineering and Industrial Management Department, University of Idaho, USA* *[4] Physical Principles for Surface Engineering Department, G.V. Kurdyumov Institute for Metal Physics of the NAS of Ukraine, Ukraine* *[5] MOTOR SICH JSC, Zaporizhzhia, Ukraine*	**Combining mechanical surface treatment and heat treatment post-processing for improved corrosion and oxidation resistance of laser 3D-manufactured Ni-based superalloy**
4:30–5:00	**Pause, coffee-break.**		

Time: 5:00 PM – Eastern European Summer Time (UTC+3)

PLENARY SESSION

Topic IV: "Laser deposition"

Track 1

(5:00PM – 6:15PM)

5:00–5:25	IV-L1	P. Potera[1], B. Cieniek[1], I.S. Virt[2] *[1] Institute of Materials Engineering, Faculty of Exact and Technical Sciences, University of Rzeszow, Poland* *[2] Institute of Physics, Mathematics, Economy and Innovation Technologies, Drohobych Ivan Franko State Pedagogical University, Ukraine*	**Structural and optical properties of ZnNiO thin films doped with carbon and gold nanoparticles**
5:25–5:50	IV-L2	I. Stolyarchuk, O. Kuzyk, A. Stolyarchuk, V.Popovych, O. Dan'kiv, A.Popovych, O. Bachynskyi *Department of Physics and Information Systems, Drogobych Ivan Franko State Pedagogical University, Ukraine*	**Magneto-optical studies of low-dimensional stuctures of CdMnTe prepared by pulsed laser deposition**
5:50–6:15	IV-L3	I.S. Virt *Department of Physics and Information Systems, Drogobych Ivan Franko State Pedagogical University, Ukraine*	**Pulsed laser techniques for application nanocarbon materials**
5:15 –6:15	**POSTER SESSION:** **Topics: I, II, III, IV, V, VI, VII** **Discussions** **(5:15PM – 6:154PM)**		

Friday

Time: 10:00 AM – Eastern European Summer Time (UTC+3)

9:50-10:00

Registration of speakers, organizational issues

PLENARY SESSION

Topic V: "Laser technical and technology applications":

Topic VI: "Lasers in nanotechnologies":

Track 1

		(10:00AM – 11:40AM)	
10:00–10:25	**V-L1**	L. Muravsky, O. Sharabura, O. Kuts *Karpenko Physico-Mechanical Institute of the NAS of Ukraine, Lviv, Ukraine*	**Identification of circular internal defects in composite structures using laser speckle patterns**
10:25–10:50	**VI-L1**	L. Fedorenko[1], O. Tsymbaluik[2], V.Yuhkymchuk[1], O. Pylypova[2], A. Evtukh[1], E. Soloviev[1], P. Onufrijevs[3], O. Chunikhin[2] *[1] V.Lashkaryov Institute of Semiconductor Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine;* *[2] Educational and Scientific Institute of High Technologies Taras Shevchenko National University of Kyiv, Ukraine;* *[3] Institute of Physics and Materials Science, Faculty of Natural Sciences and Technology, Riga Technical University, Riga, Latvia*	**Nano-fragmentation of al particles by laser in colloidal solution**
10:50–11:15	**VI-L2**	N. Kokodii[1], V. Maslov[1], A. Natarova[2], D. Natarov[3] *[1] V.N. Karazin Kharkiv National University, Ukraine;* *[2] Ivan Kozhedub Kharkiv National Air Force University , Ukraine;* *[3] O.Ya. Usikov Institute for Radiophysics and Electronics, Ukraine.*	**Transfer of laser energy to thin cylindrical targets**
11:15–11:40	**VI-L3**	Y. Shopa[1], D. Jakubczyk[2], G. Derkachov[2], M. Kolwas[2], I. Kamińska[2], T. Wojciechowski[2] *[1] Cardinal Stefan Wyszynski University in Warsaw, Poland* *[2] Institute of Physics, Polish Academy of Sciences, Warsaw, Poland*	**Up-conversion luminescence of nanoparticles under laser excitation in slowly evaporating microdroplets**
11:40–12:10	**Pause, coffee-break.**		

Time: 12:10AM – Eastern European Summer Time (UTC+3)

ORAL SESSION

Topic V: "Laser technical and technology applications":

Topic VI: "Lasers in nanotechnologies":

Topic VII: "Biomedical laser applications":

Track 1

		(12:10PM – 1:55PM)	
12:10–12:25	**V-O1**	Yu. Serozhkin[1], L.Borkovska[1], V.Kyslyi[1], V. Morozhenko[1], E. Soloviev[1], V. Nastych[2] *[1] V. Lashkaryov Institute of Semiconductor Physics, NAS of Ukraine, Kyiv, Ukraine.* *[2] State-owned Enterprise for Special Instrument-Building "ARSENAL", Kyiv, Ukraine.*	**Vibration characteristics of mines and buried objects under external acoustic action**
12:25–12:40	**V-O2**	E. Širmulis, S. Ašmontas, A. Čerškus, J. Gradauskas, A. Grigucevičienė, R. Giraitis, K. Leinartas, A. Lučun, M. Mujahid, K. Petrauskas, A. Selskis, A. Sužiedėlis, A. Šilėnas *Center for Physical Sciences and Technology, Vilnius, Lithuania*	**Photoelectric behavior of perovskite solar cells excited with nanosecond laser pulse**

12:40–12:55	VI-O1	M. Shevchuk[1], S. Malynych[1,2], T. Demkiv[1], R. Gamernyk[1] *[1] Department of Physics, Ivan Franko National University of Lviv, Ukraine* *[2] Hetman Petro Sahaidachnyi National Army Academy, Lviv, Ukraine*	**Z-Scan-Based Automated Analysis of Nonlinear Optical Properties in Advanced Materials**
12:55–1:10	VI-O2	K. Muntean, M. Dubinin, V. Maslov *V.N. Karazin Kharkiv National University, Ukraine*	**Determination of the waist location for the Gaussian beam**
1:10–1:25	VI-O3	O. Kuzyk, O. Dan'kiv, I. Stolyarchuk, V. Kuhivchak *Drohobych Ivan Franko State Pedagogical University, Ukraine.*	**Formation of surface superlattice in semiconductors under the influence of pulse laser irradiation**
1:25–1:40	VI-O4	A. Tuzhykov[1], T. Kavetskyy[1,2,3], O. Šauša[3,4], V. Soloviev[1,5], A. Kiv[1,6] *[1] South-Ukrainian K.D. Ushynsky National Pedagogical University, Odesa, Ukraine* *[2] Drohobych Ivan Franko State Pedagogical University, Ukraine* *[3] Institute of Physics, Slovak Academy of Sciences, Bratislava, Slovakia* *[4] Department of Nuclear Chemistry, FNS, Comenius University, Bratislava, Slovakia* *[5] Kryvyi Rih State Pedagogical University, Kryvyi Rih, Ukraine* *[6] Department of Materials Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel*	**AI-methods for defects engineering in graphene quantum dots**
1:40–1:55	VII-O1	A.E. Loskutov, V.M. Irodenko, O.B. Pryima, M.V. Bosak *Truskavets municipal hospital, Truskavets, Ukraine*	**Application of holmium laser in lithotripsy of urinary stones**
1:55–2:00	**CLOSING**		

RULES FOR PARTICIPATION

"**L**" – Lecture;
"**O**" – Oral;
"**P**" – Poster.

Official Language: **English**
Duration of **Plenary Lecture** presentation: **25 min**
Duration of **Oral** presentation: **15 min**
POSTER- prepare in *docx (*doc)

POSTER SESSION

5:15PM – 6:15PM
June 26, 2025
POSTER SESSION: Topics: I, II, III, IV, V, VI, VII

June 26, 2025 Tuesday **5:15–6:15PM**	II-P1	A.M. Negriyko[1], T.V. Bezrodna[1], V.I. Bezrodnyi[1], I.V. Matsnev[1], L.F. Kosyanchuk[2], O.I. Antonenko[2] *[1] Institute of Physics NAS of Ukraine, Kyiv, Ukraine* *[2] Institute of Macromolecular Chemistry NAS of Ukraine, Kyiv, Ukraine*	**Laser passive Q-switches based on the dye-doped polyurethane for high-energy neodymium lasers**
	II-P2	J. Kisała[1], A. Barylyak[2], P. Krzemiński[1], R. Wojnarowska-Nowak[1], B. Cieniek[1], Y. Bobitski[1] *[1] Institute of Materials Engineering, Faculty of Exact and Technical Sciences, University of Rzeszow, Poland* *[2] Department of Therapeutic Dentistry, Danylo Halytsky Lviv National Medical University, Ukraine*	**Laser surface modification of titanium - a way to improve its biological properties**
	III-P1	P.S. Shkumbatyuk *Department of Physics and Information Systems, Drogobych Ivan Franko State Pedagogical University, Ukraine*	**Use of the thermal effect of continuous CO_2 - laser radiation as an additional technological method for researching semiconductor materials**

	III-P2	N. Barchuk[1], M. Chekailo[2], I.S. Virt[1] *[1] Department of Physics and Information Systems, Drogobych Ivan Franko State Pedagogical University, Ukraine* *[2] Departament of Physics Lviv Polytechnic National University, Ukraine*	**Effect of Irradiation on the Morphological and Optical Properties of Zinc Oxide Thin Films**
	IV-P1	I. Padalka, I. Virt *Department of Physics and Information Systems, Drogobych Ivan Franko State Pedagogical University, Ukraine*	**Obtaining ZnO-Si Heterostructures on Silicon Substrates**
	V-P1	O. Banzak, H. Banzak *State University of Intellectual Technologies and Communications, Odessa, Ukraine*	**Selection of material for semiconductor sensors for dosimetry**
	V-P2	Ł. Dubiel[1], W. Maziarz[2], B. Cieniek[3], I. Stefaniuk[3] *[1] Department of Physics and Medical Engineering, Faculty of Mathematics and Applied Physics, Rzeszow University of Technology, Poland* *[2] Institute of Metallurgy and Material Science Polish Academy of Science, Krakow, Poland* *[3] Institute of Materials Engineering, College of Natural Sciences, University of Rzeszow, Poland*	**EMR study of NiMnGa-based powders for additive manufacturing applications**
	V-P3	P. Pisiak, B. Cieniek, I. Stefaniuk *Institute of Materials Engineering, Faculty of Exact and Technical Sciences, University of Rzeszow, Poland*	**Application of EPR spectroscopy in the assessment of structural changes in powder paints under the influence of laser radiation**
	V-P4	W. Żyłka[1], M. Żyłka[2], P. Skała[3], B. Cieniek[1], I. Stefaniuk[1] *[1] Institute of Materials Engineering, Faculty of Exact and Technical Sciences, University of Rzeszow, Poland* *[2] Faculty of Mechanical Engineering and Aeronautics, Department of Aerospace Engineering, Rzeszów University of Technology, Poland* *[3] Institute of Physics, Faculty of Exact and Technical Sciences, University of Rzeszow, Poland*	**Microscopic and Spectroscopic Analysis of Laser Light Effects in Paint Layers**
	VI-P1	O.V. Kuzmenko, O.M. Butok *BAO IP NAS of Ukraine, IIRP NAS of Ukraine, Kyiv, Ukraine*	**Phase retrieval for arbitrary complex-valued objects using unipolar amplitude binary masks**