

SPIE-The International Society for Optical Engineering

CONFERENCE PROGRAM

Optical Holography and its Applications

24 - 26 May 2004, Kiev, Ukraine

*Палац мистецтв „Український дім”, Хрещатик 2
Прес-центр „Український час”*

Conference Chair: Vladimir Markov, *MetroLaser Inc. USA*
Co-Chairs: James Trolinger, *MetroLaser Inc. USA*
Sergey Kostyukevych, *Institute of Semiconductor Physics, NASU, Kiev, Ukraine*

The Conference is organized by the **Ukrainian Chapter of SPIE** and **Local Section of OSA**, Institute of Semiconductor Physics, Institute of Applied Optics and Institute of Physics of the National Academy of Sciences of Ukraine (Kiev) under the auspices of The Ministry of Education and Science and The National Academy of Science of Ukraine. The conference is hosted by SPIE/UKRAINE Chapter.

General Sponsor of Conference - Specialized Enterprise "Holography" Ltd., Kiev.

The present conference is the sixth meeting on this topic organized in Kiev. Previous meetings were held in Kiev in 1989 (The International UNESCO Seminar “Three-Dimensional Holography: Science, Culture, Education) and 1997, 1999, 2000 and 2003 (International conference Optical Holography and its Applications). Proceedings of the meetings were published in SPIE Proceedings volumes 1238 and 3486 and the Journal of Semiconductor Physics, Quantum Electronics and Optoelectronics.

Optical holography is emerging from research laboratories to find effective applications in a wide range of human activity, including engineering, cultural, and medical applications. This conference will focus on recent advances and practical applications of holography, especially in the areas of holographic NDT, real-time holography and non-linear recording materials.

Topics of Particular Interest

- **Fundamental Properties of 3-D Holography: Theory and Experiments**
- **Holographic Recording Materials**
- **Holographic NDT: Methods, Systems, Applications, Cultural Artifact Restoration**
- **Non-linear and Coherent Effects in Holography (Multi-beam Interaction, Beam Coupling and Combining, Coherent Scattering)**
- **Holographic Data Storage**
- **Optical Security Elements**

International Advisory and Program Committee:

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Dr. Dave Waldman, Aprilis Inc., USA
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GENERAL INFORMATION

Location: The Conference will be held in Kiev, the capital of Ukraine, which is an important center of scientific research and higher education. The many museums, art galleries and theaters are testimony to Kiev's flourishing cultural life. These combined with many historical buildings, churches, and beautiful scenery make Kiev an exciting place to visit.

Language: The official language of the Conference is English.

Registration and Accommodation: The registration fees for participants and accompanying persons (US \$ 250 and US \$ 50, respectively) can be paid at the time of registration. The fee includes: participation in all scientific sessions at the conference, all printed materials of the Conference (including the conference proceedings), lunches during the Conference, session coffee-breaks, and the main excursion program. Transport from the Kiev airport "Borispol" or the Kiev Central railway station will be provided.

Expenses for Hotel accommodations and travel to Kiev are not included, but assistance in locating and obtaining accommodations will be provided.

Facilities: Session rooms will be equipped with a slide and overhead projectors. Fax, E-mail and Copy machines will be available. A participant can receive messages at: Fax: +380 (44) 2655430; E-mail: info@spie.org.ua.

Visas: In general, both a valid passport and Ukrainian visa are required for entry into Ukraine; however, citizens of some countries having a special agreement with Ukraine do not need visas. A visa may be obtained at Ukrainian Embassy or Consulate.

Social Programs: Excursions and sightseeing to historical and cultural sites of Kiev are planned. The Organizing Committee can also assist with arrangements for individual scientific or tourist programs around Ukraine. If help is needed, please inform the organizing committee about your travel plans in advance.

For further information please contact:

Sergey Kostyukevich, Executive Director of SPIE/UKRAINE, Phone: +380 (44) 265-62-05, Fax: +380 (44) 265-54-30, E-mail: sekret@spie.org.ua WEB: www.spie.org.ua ; Mailing address: SPIE/UKRAINE 41, prospect Nauki, off. 219, Kiev, 03028, UKRAINE	Dr. Vladimir B. Markov, Director of Applied Optics Group MetroLaser Inc., 2572 White Road Irvine, CA 92614-0688, USA Phone: (949) 553-0688, Fax. (949) 553-0495, E-mail: vmarkov@metrolaserinc.com http://www.metrolaserinc.com	Dr. James D. Trolinger Director of Research MetroLaser Inc., 2572 White Road Irvine, CA 92614-0688, USA Phone: (949) 553-0688, Fax. (949) 553-0495, E-mail: jtrolinger@metrolaserinc.com http://www.metrolaserinc.com
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May 24, 2004

Section I: Non-destructive inspection, Chair Prof. Marat Soskin

1.	Digital Holography in particle and flow diagnostics	Dr. James D.Trolinger, MetroLaser, Inc., USA	<u>9:00 – 9:30</u>
2.	Visualization of Turbulent Flame Temperature Using Holographic Interferometer	Junta Doi, Seishiro Sato Chiba Institute of Technology, Department of Computer Science, Chiba, Japan	<u>9:30 – 9:50</u>
3.	Investigation of Composite Materials Characteristics by Holographic Interferometry	Rusnáková Soňa, Juraj Slabeycius, Lubomír Konrád, Alexander Dubček University of Trenčín, Slovak Republic,	<u>9:50 – 10:10</u>
4.	New Stokes-Fourier holograms in science and applications	M. Soskin, V. Denisenko, R. Egorov, V. Slyusar, and V. Vasil'ev, Institute of Physics NAS of Ukraine, Kiev, Ukraine	<u>10:10 – 10:40</u>
5.	Recent enhancements in digital holography and digital holographic interferometry	Dr. Malgorzata Kujawinska Institute of Micromechanics and Photonics, Warsaw Technical University, Poland	<u>10:40 – 11:10</u>
	<u>Break</u>		<u>11:10 – 11:30</u>
	Chair: Dr. Vladimir Markov.		
6.	Different applications of digital holography	Dr. Werner Juptner, BIAS, Bremen, Germany	<u>11:30 – 12:00</u>
7.	Digital and optical speckle correlation techniques for study of constructional material fracture phenomena	L.I. Muravsky, O.P. Maksymenko, O.M. Sakharuk, Karpenko Physico-Mechanical Institute of the NASU, L'viv, Ukraine	<u>12:00 – 12:20</u>
8.	Determination of a rigid body translation of a strained constructional material by using the optical speckle correlation technique	L.I. Muravsky, N.V. Fitio, Karpenko Physico-Mechanical Institute of the NASU, L'viv, Ukraine	<u>12:20 – 12:40</u>
9.	Digital holography method for diffractive elements producing	Ruslan Lymarenko ^a , Vladimir Sporik ^b ^a International Centre "Institute of Applied Optics" National Academy of Science of Ukraine, ^b Specialised Enterprise "Holography" Ltd.	<u>12:40 – 13:00</u>
	<u>Lunch</u>		<u>13:00 – 14:30</u>
	Chair: Dr. Werner Juptner		
10.	D.L.Capacitance-emission spectroscopy of determining the electrochemical behavior of anodized aluminum in aqueous solutions	K. Habib Materials Science Lab, Department of Advanced systems, Kuwait	<u>14:30 – 14:50</u>
11.	Laser system for fatigue damage precursor detection	Jim Earthman*, V. Markov, B. Buckner, J.Angeles* University California Irvine, CA, USA	<u>14:50 – 15:20</u>
12.	Mobile holographic system with fiber probes for active equipment testing	Alexander A. Abramov, Alexander V. Gnatovskiy Lubomir Y. Robur, Evgen P. Udalov, Leonid K. Yarovoi Kiev State University, Ukraine	<u>15:20 – 15:40</u>
	<u>Section summary</u>		<u>15:40 – 16:00</u>
	<u>Break</u>		

Section II: Holographic data storage, Chair: Rudolf L. van Renesse			
13.	Luminescent multilayer holographic recording	Evgen Beliak; Dr Andriy Kryuchyn Institute for Information Recording of the National Academy of Sciences of Ukraine (NASU), Kiev, Ukraine	<u>16:00 – 16:20</u>
14.	Extreme data density stored in plane and volume holographic media	S.B.Gurevich, B.S.Gurevich, N.K.Jamankyzov, K.M.Jumaliev, and A.Peckus, A.F.Ioffe Physical-Technical Institute, St.Petersburg, Russia	<u>16:20 – 16:40</u>
15.	Photoinduced plasticity in holographic recording media based on AS-S(SE) chalcogenide glasses	<u>M. L. Trunov</u> , V.S. Bilanich, Yu.Yu. Gaza Uzhgorod National University, Ukr.	<u>16:40 – 17:00</u>
<u>Section summary</u>			<u>17:00 – 17:20</u>
<u>Conference Banquet</u>			
<u>May 25, 2004</u>			
Section II: Display holography and optical security, Chair: Dr. James Trolinger			
16.	Comparison of commercially available dot- and image matrix origination systems	Rudolf L. van Renesse VanRenesse Consulting, The Hague, Netherlands	<u>9:00 – 9:40</u>
17.	The optoelectronic device for the reading of magneto-optical layers from holograms	Sergey B. Odinokov, Alexey S. Kuznetsov, Soldatchenkov V. S., Gubarev A. Bauman Moscow State Technical University (BMSTU), Research institute “Goznak”, Russia	<u>9:40 – 10:00</u>
18.	The modified methods for the recording of hologram with the encoded hidden image and the processing of reconstructed image	Dmitry S. Lushnikov, Ivan K. Tsiganov, Sergey E. Dubynin, Sergey B. Odinokov, Alexander I. Nikolaev Bauman Moscow State Technical University (BMSTU), Research institute “Goznak”, Russia	<u>10:00 – 10:20</u>
19.	Specifications of holography art works using pulse laser	Satoko Nishikawa, Ikuo Nakamura, Anna Maria Nicholson, Koki Sato Shonan Institute of Technology, Center For The Holographic Arts, Nishikaigan Tsujido Fujisawa, Japan	<u>10:20 – 10:40</u>
20.	Optimization of chalcogenide glass based reflecting optical mark characteristics	S.O. Kostyukevych, L.I. Muravsky, T.I. Voronyak, P.E. Shepeliavij	<u>10:40 – 11:00</u>
<u>Break</u>			<u>11:00 – 11:20</u>
21.	The Limitations And Capabilities Of Matrix Holograms	Dr. Kenneth A. Haines USA	<u>11:20 – 11:50</u>
22.	Recording Big Aperture Transmission-type Holographic Screens	V. I. Bobrinev, Jung-Young. Son, Sanghoon Shin and Yongjin Choi C.A Son Hanyang University, Seoul, Korea	<u>11:50 – 12:10</u>
23.	Portable holographic camera GREEF and its capabilities	M. Shevtsov, A. Korneev, V. Pokrovskiy, D. Stupnikov	<u>12:10 – 12:30</u>
24.	Holoscopy, wave photographs and lensless photography: Changing visions of holography	Professor Sean F. Johnston University of Glasgow, Dumfries, UK	<u>12:30 – 13:00</u> <u>Invited paper</u>
<u>Lunch</u>			<u>13:00 – 14:30</u>
25.	HoloPov - a previsualization program for holographers	Kaveh Bazargan, <i>Holographer</i> London, UK	<u>14:30 -15:00</u>

26.	Multilevel computer-synthesized DOE in Combined security devices	V. Girnyk, S. Kostyukevich, Ukraine	<u>15:00 – 15:20</u>
27.	Optical security elements based on nanoparticles features	Boris D. Pavlik Institute of Applied Optics, Kiev Ukraine	<u>15:20 – 15:40</u>
28.	Coupling accuracy of referent and reconstruction beams at recording rainbow holograms in chalcogenide resist.	Alexander D. Galpern; Alexander A. Paramonov, HoloGrate, JSC, Sankt Petersburg, Russia	<u>16:00 – 16:20</u>
29.	Multidimensional Imaging and Volume Holography	Marina Alexandra Lyshevski, Rochester Institute of Technology, Rochester, Microsystems and Nanotechnologies, Webster, NY, USA	<u>16:20 – 16:40</u>
30.	Diffractive Optical Elements For Optical Holography And Its Applications	<u>O.Yu. Semchuk</u> , R.V. Bila, M. Willander and M. Karlsteen, Institute of Surface Chemistry NASU, Kyiv, Ukraine, Chalmers University of Technology and Goteborg University, Goteborg Sweden	<u>16:40 – 17:00</u>
<u>Section summary</u>			<u>17:00 – 17:20</u>
May 26, 2004			
Section III: Coherent and non-linear effects			
31.	Theoretical and experimental investigation of optical vortex beams with integer and fractional topological charge	V. A. Pas'ko, A. A. Ivanovskyy, M. V. Vasnetsov, M. S. Soskin Institute of Physics and Physical & Engineering & Scientific Center, NASU, Kiev, Ukraine	<u>9:00 – 9:30</u>
32.	Peculiarities of self-conjugation of singular beams by a nonlinearly recorded hologram	Peter V. Polyanskii, Christina V. Felde, Chernivtsi National University, Chernivtsi, Ukraine	<u>9:30 – 9:50</u>
33.	Three-dimensional “dimensions” of laser speckles and volume holography	Vladimir Markov, Anatoliy Khizhnyak, MetroLaser, Inc. USA	<u>9:50 – 10:10</u>
34.	Fresnel's Complex Integral Universal Approximation	S. Anokhov, Institute of Applied Optics, Kiev, Ukraine	<u>10:10 -10:30</u>
35.	Theory and Practice of Nanotechnology-Based MOEMS for Holography and Adaptive Optics	Sergey Lyshevski, Rochester Institute of Technology, Rochester, New York, USA	<u>10:30 – 11:00</u> <u>Invited paper</u>
<u>Break</u>			<u>11:00 – 11:20</u>
36.	Dichromated Systems for Holographic Recording	R.A. Lessard1, M. Bolte, B. Robert, E. Laurencon, D. Dewasmes, S. Couvignou and Y. David Center for Optics, Photonics and Lasers, Laval University, Québec City, Québec, Canada, Laboratoire de Photochimie Moléculaire et Macromoléculaire, Université Blaise Pascal, France	<u>11:20 – 11:50</u> <u>Invited</u>
37.	Correlation Characteristics of Autowave Light Scattering	Vasyl V. Lemeshko and Vyacheslav V. Obukhovsky Taras Shevchenko Kiev National University, Kiev, Ukraine	<u>11:50 – 12:10</u>
38.	The influence of the transverse photovoltaic current on the photoinduced light scattering processes in photo-ferroelectrics	Anna N. Morozovska, Vyacheslav V. Obukhovsky, Taras Shevchenko Kiev National University, Kiev, Ukraine Institute of Semiconductor Physics, NASU, Kyiv, Ukraine.	<u>12:10 – 12:30</u>

39.	Effect of optical activity on soliton-like interaction of coherent light beams in a biased sillenite crystal	Vasiliy V. Shepelevich, Golub Alexander, R. Kowarschik, A.Kiessling, V.Matusevich, Mozyr State Pedagogical University, Mozyr, Belarus Friedrich-Schiller-Universität Jena Germany	12:30 – 12:50
Posters			
Poster session will take place on 24 May (14:30–17:00) and 25 May (10:00-14:00).			
40.	Photoinduced Dichroism In Hybrid Sol-Gel Films Containing Disperse Red 1	Raffaella Raschella, Iari-Gabriel Marino, Pier Paolo Lottici, Danilo Bersani, Andrea Lorenzi, Angelo Montenero Università di Parma, Italy	
41.	Estimation of the atmosphere wave-front distortions from Hartmanngramm	Oksana I. Barchuk, Andrey V. Kovalenko, Vytaliy N. Kurashov Taras Shevchenko Kyiv National University, Ukraine	
42.	Overt and Covert Imaging in Security Holograms	V. Girnyk, Optonics, Kiev, Ukraine	
43.	Holographic technique for manufacturing diffraction grating on the base of A3B5 semiconductors.	N.L.Dmitruk, I.Z.Indutnyy, O.I.Mayeva, S.V. Mamykin, V.I.Minko, M.V.Sosnova, O.Lytvyn, Institute of Semiconductor Physics, Kiev, Ukraine	
44.	Holographic wavefront sensor for surface deformation measurements.	Dmytro V. Podanchuk, Myhailo M. Kotov, Volodymyr P. Dan'ko, Taras Shevchenko Kyiv National University, Ukraine	
45.	Holographic Predictor for Stochastic Processes	Alexander V.Pavlov, S.I.Vavilov State Optical Institute, 12, Birgevaya line, St.Petersburg, 199034, Russia, and State University for Information Technologies, Mechanics, and Optics, 14, Sablinskaya str., St.Petersburg, Russia	
46.	Optically Addressed Spatial Light Modulator with AsxSe1-x Photoconductor as Nonlinear Recording Medium for Holography Adapted to He-Ne Laser and Possessing High Diffraction Efficiency	L. P. Amosova, A. N. Chaika, N. I. Pletneva, All-Russian Research Center S. I. Vavilov State Optical Institute, 12, Birgevaya line, St. Petersburg, 199034 Russia	
47.	Photopolymeric composition for holography	V.N. Mikhailov, O.V. Bandyuk, Research Center "S.I. Vavilov State Optical Institute", Saint-Petersburg, Russia,199034, Birjevaya 12	
48.	Manufacturing master-copy of optical security elements by using non-organic resist	S.A. Kostyukevych, P.E.Shepeliavyyi, V.I.Minko, V.A.Karpenko, Institute of Semiconductor Physics, Kiev, Ukraine, I.V.Tverdokhle, Holography, Kiev, Ukraine	
49.	Application of holographic elements for a protection of securities and accounting documents	Anatoliy Vasylyovych Shevchuk, Ppoligraph Combinat "UKRAINE", Kiev, Ukraine	
50.	Study of waveguide surface deformations by electronic speckle pattern interferometry technique	T.I. Voroniak, G.I. Gas'kevych, L.I. Muravsky, (L'viv, Ukraine) P. Cheben (Canada)	
51.	Methods and technologies of forming plane and volumetric latent images.	L.V.Tanin ¹ , P.V.Moiseenko ¹ , S.A Ryzhechkin ¹ , V.V.Manikalo ¹ , N.S. Kazak ² , V.D.Altshuler ³ , S.V.Shangin ³ , A.V.Pavlov ³ , S.V.Kisluhin ⁴ , O.K.Nikolajchik ⁵ , N.E.Makarevich ⁵ , H.P.Korochkin ⁶ , A.J.Gorelenko ⁶ , V.A.Shevtsov ⁷ , A.L.Korolenko ⁸ , G.J.Kochetkov ⁸ (¹ Joint Stock Company " Holography industry ", line Kalinina, 12, 220012 Minsk, Republic of Belarus, ² State scientific institute " Institute of physics of name B.I. Stepanova NAN	

		Belarus ", av. Skoryny, 68,220072 Minsk, Republic of Belarus, ³ Foreign Company "ATV-LIT", Oktyabrskaya str., 19, 220030 Minsk, Republic of Belarus, ⁴ Department of the State signs of Ministry of Finance RB, Sverdlova str., 32a, 220030 Minsk, Republic of Belarus, ⁵ Minsk printed factory "Goznak", Volodarskogo str., 3, 220030 Minsk, Republic of Belarus, ⁶ Scientific and technical Unitary Enterprise "Kriptoteh", Sverdlova str., 32a, 220030 Minsk, Republic of Belarus, ⁷ Trading Privet Unitary Enterprise "Tehnohimtrejd", Ignatenko str., 7, 220035 Minsk, Republic of Belarus, ⁸ Ltd "Light Magic", Nekrasova str., 11/34, 220040 Minsk, Republic of Belarus)
52.	HOLOGRAPHIC POLARIZATION GRATING RECORDING IN DIASTEREOMERIC LIQUID CRYSTALLINE COPOLYMETHACRYLATES	Ruslan A. Lymarenko ¹ , Oksana P. Budnyk ¹ , Mikhail V. Kozlovsky ² ¹ International Centre "Institute of Applied Optics" Kyiv, Ukraine, ² Institute of Macromolecular Chemistry, Darmstadt University of Technology, Darmstadt, Germany
53.	A real time digital shearography for detection of micro-defects in Si-wafer	Dr. Ganesha Udupa Precision Engineering & Nanotechnology Centre Nanoscience and Nanotechnology Corridor, Singapore
54.	New Polymer-Dye Composites As Materials For Holographic Recording	O.Budnyk ^(a) , R.Lymarenko ^(a) , A.Savchuk ^(a) , A.Verbitsky ^(b) , <u>Ya.Vertsimakha</u> ^(b) , A.Ishchenko ^(c) , S.Studzinskii ^(d) ^a International Centre "Institute of Applied Optics" ^b Institute of Physics, ^c Institute of Organic Chemistry, ^d Kyiv Taras Shevchenko National University, Macromolecular Chemistry Department, Kyiv, Ukraine
55.	Second harmonic generation from evaporated film of the centrosymmetric squaraine dye	V. Ksianzou ¹ , K.P. Grytsenko ^{2*} , O.P.Dimitriev ² , S. Schrader ¹ ¹ Department of Condensed Matter Physics, Institute of Physics, University of Potsdam, Am Neuen Palais 10, Potsdam, Germany ² Institute of Semiconductor Physics, , Ukraine
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57.	+ 10 Poster will be announce after 15 May	