E-MRS – IUMRS – ICEM 2000

SYMPOSIUM J

Optoelectronics IV: Photorefractive Materials: Physical Phenomena and Applications

May 30 – June 2, 2000

Symposium Organizers:

Gérald Roosen, Laboratoire Charles Fabry de l'Institut d'Optique
Orsay, France

Loïc Mager, Groupe d'Optique Nonlinéaire de l'IPCMS
Strasbourg France

Symposium Support:

Conseil Régional Alsace, France

Papers will be published in Optical Materials

E-MRS 2000 SPRING MEETING

SYMPOSIUM J

Tuesday May 30, 2000 **Morning**
Mardi 30 mai 2000 Matin

9:00 **Symposium Opening Talk**
G. Roosen

Session I - Material characterization

J-I.1 9:10 **Invited** COMBINED EPR/OPTICAL INVESTIGATION OF LIGHT-INDUCED CHARGE TRANSFERS IN PHOTOREFRACTIVE MATERIALS, **O.F. Schirmer**, Fachbereich Physik, Universitaet Osnabrueck, 49069 Osnabrueck, Germany

J-I.2 9:40 **Invited** NONLINEAR CHARGE TRANSFER PROCESSES IN SEMICONDUCTORS, **D.D. Nolte**, Purdue University, Department of Physics, West Lafayette, IN 47907-1396, USA

J-I.3 10:10 CORRELATION BETWEEN THE OPTICAL AND MAGNETIC PROPERTIES OF DEFECTS IN PHOTOREFRACTIVE CdTe:Ge, F. Ramaz, B. Farid, B. Briat, Laboratoire d'Optique Physique, ESPCI, 10 rue Vauquelin, 75231 Paris, France; P. Fochuk, O. Panchuk, Institute of Inorganic Chemistry, Chernivtsi University, 2 vul. Kotsiubinskoho, 274012 Chernivtsi, Ukraine; T. Arnoux, Jean-Claude Launay, 3AR/CNRS Aerospatiale, BP 11, 33165 St. Médard en Jalles, France

J-I.4 10:30 WAVELENGTH DEPENDENCE OF PHOTOREFRACTIVE PROPERTIES IN STRONGLY BATIO3, C.Y. Huang, R.R. Yueh, H.M. Wang and J.Y. Chang, Institute of Optical Sciences, National Central University, Jung-Li, Taiwan

10:50 **BREAK**

J-I.5 11:10 LIGHT-INDUCED CHARGE TRANSFER PROCESSES IN $BaTiO_3$:Fe,Na, C. Veber, O.F. Schirmer, H. Hesse, Fachbereich Physik, Universitaet Osnabrueck, 49069 Osnabrueck, Germany

J-I.6 11:30 CARACTERIZATION OF RHODIUM AND IRON DOPED $Ba_{0.77}Ca_{0.23}TiO_3$ CRYSTALS AT 850 NM, S. Bernhardt[(1)], H. Veenhuis[(2)], P. Delaye[(1)], G. Roosen[(1)], [(1)]Laboratoire C. Fabry de l'Institut d'Optique, 91403 Orsay, France and [(2)]Fachbereich Physik, Universität Osnabrück, 49069 Osnabruck, Germany

J-I.7 11:50 DEVELOPMENT OF THERMALLY FIXED HOLOGRAMS IN PHOTOREFRACTIVE LITHIUM-NIOBATE CRYSTALS WITHOUT LIGHT, K. Buse, I. Nee, M. Müller and E. Krätzig, University of Osnabrück, Physics Department, 49069 Osnabrück, Germany

J-I.8 12:10 DEFECT STRUCTURE OF OPTICAL-DAMAGE RESISTANT $LiNbO_3$ CRYSTALS AND ITS RELATION TO PHOTOREFRACTIVE AND PHOTOVOLTAIC PROPERTIES, B. Maximov, S. Sulyanov, T. Volk, Institute of Crystallography of the Russian Academy of Science, Moscow, Russia, H. Boysen, Institute fuer Kristallographie and Mineralogie, Universitaet Muenchen, Germany, N. Rubinina, Moscow State University, Russia

12:30 **LUNCH**

Tuesday May 30, 2000 **Afternoon**
Mardi 30 mai 2000 Après-midi

Session II - New materials and effects

J-II.1 14:00 **Invited** TWO-PHOTON EXCITATION FOR OPTICAL DATA STORAGE IN A PHOTOREFRACTIVE POLYMER, **Min Gu** and D. Day, Centre for Micro-Photonics, School of Biophysical Sciences and Electrical Engineering, Swinburne University of Technology, PO Box 218, Hawthorn, Vic 3122, Australia

J-II.2 14:30 FIELD GRADIENT FORCE INDUCED GRATINGS IN SEMICONDUCTOR GLASSES, A. Saliminia, T.V. Galstian, A. Villeneuve, Center for Optics, Photonics and Laser, Physics Department, Laval University, Pav. A.-Vachon, Cité Universitaire, Québec, Canada G1K 7P4

J-II.3 14:50 LARGE SECOND-ORDER OPTICAL NONLINEARITY IN Ge-DOPED SILICA GLAS, S. Matsumoto, T. Fujiwara and A.J Ikushima, Toyota Technological Institute, Tempaku, Nagoya 468-8511, Japan

J-II.4 15:10 HIGHLY-MAGNESIUM-DOPED LITHIUM NIOBATE CRYSTALS AS UV PHOTOREFRACTIVE STORAGE MATERIAL, Jingjun Xu, Guangyin Zhang, Feifei Li, Xinzheng Zhang, Qian Sun, Simin Liu, Feng Song, Photonics Research Center, College of Physical Science, Nankai University, Tianjin 300071, P.R. China, Yongfa Kong, Xiaojun Chen, Haijun Qiao, Jianghong Yao, Zhao Lijuan, Department of Physics, College of Physical Science, Nankai University, Tianjin 300071, P.R. China

J-II.5 15:30 WIDE BAND GAP MATERIALS DOPED WITH TRIVALENT RARE EARTH IONS AS OPTICAL MATERIALS FOR 157nm PHOTOLITHOGRAPHY, E. Sarantopoulou and A.C. Cefalas, National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute, 48 Vassileos Constantinou Avenue, Athens 11635, Greece

15:50 **BREAK**

16:10-18:30 **POSTER SESSION I** J/P1 - J/P30

J/P1 withdraw

J/P2 VANDADIUM-DOPED CDZNTE CRYSTALS: STATE OF THE ART, A. Zerrai, A. Daami, G. Brémond, LPM (UMRS CNRS 5511), INSA, 20 av. A. Einstein, 69621 Villeurbanne, France, R. Triboulet, Y. Marfaing, CNRS Bellvue, 1 place Aristide Briand, 92195 Meudon, France, M. Hage-Ali, J.M. Koebel, Phase-CNRS, 23 rue du Loess, 67037 Strasbourg, France, H.R. Selber, J. Kreissl, H.-J. Schulz, Fritz-Haber-Institut der Max-Planck-Gesellschaft, Faradayweg 4-6, 14195 Berlin, Germany, G. Martel, UMR 6614 CORIA, Rouen, France, B. Lambert, LPS, INSA, Rennes, France

J/P3 SELF-PUMPED AND MUTUALLY PUMPED PHASE CONJUGATION USING PENTAGON-SHAPED $BaTiO_3$ CRYSTAL, Chi Ching Chang[(1)],Tzu Chiang Chen[(2)], Hon Fai Yau[(2)], Pei Xian Ye[(3)]; [(1)]Applied Physics, Chung Cheng Institute of Technology, Tashi, Taoyuan 33509, Taiwan, ROC; [(2)]Institute of Optical Science, National Central University, Chungli, Taoyuan 32054, Taiwan, ROC; [(3)]Institute of Physics, Chinese Academy of Science, P. O. Box 603, Beijing 1000080, China

J/P4 PHOTOREFRACTIVE MICROEMULSION, L. Vicari, Istituto Nazionale per la Fisica della Materia, Universita' di Napoli "Federico II", Department Scienze Fisiche, p. le Tecchio 80, 80125 Napoli, Italy

J/P5 FUNCTIONALIZED TRIARYLAMINES AND COMPOSITES WITH LOW GLASS TRANSITION TEMPERATURE FOR PHOTOREFRACTIVE APPLICATIONS, J. Ostrauskaite[(1)], J. Vidas Grazulevicius[(1)], M. Thelakkat[(2)], U. Hoffmann[(3)], S. Zilker[(3)] and D. Haarer[(3)], [(1)]Department of Organic Technology, Kaunas University of Technology, 3028 Kaunas, Lithuania, [(2)]Makromolekulare Chemie I and BIMF, University of Bayreuth, 95440 Bayreuth, Germany, [(3)]Experimentalphysik IV, University of Bayreuth, 95440 Bayreuth, Germany

J/P6 SELF-FOCUSING OF CONTINUOUS LASER BEAM IN $LiNbO_3$ IN THE PRESENCE OF AN EXTERNALLY APPLIED ELECTRIC FIELD, C.Hesse[(1,2)], N.Fressengeas[(1)], D.Wolfersberger[(1)] and G.Kugel[(2)], [(1)]Equipe de Recherche en Photonique et Opto-Electronique de Supélec, [(2)]Laboratoire Matériaux pour l'Optique - Propriétés Spécifiques, Centre Lorrain d'Optique et d'Electronique des Solides, Université de Metz, France

J/P7 TEMPERATURE DEPENDENCE OF THE TRAP DENSITY IN A SERIES OF REDUCED $BaTiO_3$:RH, J. Y. Chang, J. M. Wang, C. Y. Huang, M. L. Hu, and C. C. Sun, Institute of Optical Sciences, National Central University, Chung-Li, Taiwan, ROC

J/P8 ELECTRICALLY CONTROLLED VOLUME $LiNbO_3$ HOLOGRAMS FOR WAVELENGTH DEMULTIPLEXING SYSTEMS, V.M.Petrov, C.Denz, A.V.Shamray, M.P.Petrov, T.Tschudi, Darmstadt Univeristy of Technology, Institute of Applied Physics, Hochschulstrasse 6, 64293 Darmstadt, Germany

J/P9 ENCRYPTED DATA STORAGE IN A PHASE-CODED VOLUME HOLOGRAPHIC MEMORY, C. Denz, K.-O. Mueller, F. Visinka, G. Berger, T. Tschudi, Institute of Applied Physics, Darmstadt University of Technology, 64289 Darmstadt, Germany

J/P10 INVESTIGATIONS OF RECORDING AND RETRIEVAL PROCESSES OF THE ELECTRICALLY CONTROLLED VOLUME HOLOGRAMS IN $LiNbO_3$, V.M.Petrov, C.Denz, A.V.Shamray, M.P.Petrov, T.Tschudi, Darmstadt Univeristy of Technology, Institute of Applied Physics, Hochschulstrasse 6, 64293 Darmstadt, Germany

J/P11 DYNAMIC ELECTROOPTIC EFFECT INDUCED BY SPACE CHARGE WAVES IN SILLENITES, M.P. Petrov, A.P. Paugurt, V.V. Bryksin, Physical Technical Institute of the Russian Academy of Sciences, St. Petersburg, 194021, Russia, S. Wevering, E. Kruezig, Fachbereich Physik, Universität Osnabrück, 49069 Osnabrück, Germany

J/P12 FARADAY ROTATION IN PHOTOREFRACTIVE InP:Fe, A. Siahmakoun and M. Syed, Department of Physics and applied Optics, Rose-Hulman Institute of Technology, CM 178, Terre Haute, IN 47803, USA

J/P13 Sn- AND Ge:Sn-DOPED SILICA GLASS BY SOL-GEL METHOD - SYNTHESIS AND DEFECTS CHARACTERISATION, N.Chiodini, F.Morazzoni, A.Paleari, R.Scotti, G.Spinolo, INFM-Dipartimento di Scienza dei Materiali, University of Milano-Bicocca, via Cozzi 53, 20125 Milano, Italy

J/P14 2-WAY 2 DIMENSIONAL PATTERN TRANSFERRING UPON REQUESTING WITH $BaTiO_3$ CRYSTAL, Tzu-Chiang Chen[(1)], Hong-Chang Kung[(1)], Hsiao-Yi Lee[(2)], Hon-Fai Yau[(1)], Institute of Optical Sciences, National Central University, Chung-Li, 320 Taiwan, [(2)]Department of Radiological Technology, Yunpei Institute of Medical Technology, Hsin-Chu, 300 Taiwan

J/P15 INITIAL CONDITIONS STRONGLY AFFECT TRANSIENT PARAMETRIC SCATTERING IN $BaTiO_3$, P. Jullien, F. Besanson, P. Mathey, Université de Bourgogne, Dijon, France and S. Odoulov, Institute of Physics, National Academy of Sciences, Kiev, Ukraine

J/P16 VACUUM ARC DEPOSITION OF PHOTOREFRACTIVE COATINGS ON SUBSTRATES HAVING COMPLICATED FORM, A. Sanchez Bolinches[(1,2)], B.B. Straumal[(2,3)], N.F. Vershinin[(3)], C. Ferrer Giménez[(1)], M. Friesel[(4)], F. Rustichelli[(5)]; [(1)]Departamento de Ingenieria Mecanica y de Materiales, Universidad Politecnica de Valencia, Camino de Vera, s/n, Apt. Correos 22012, 46022 Valencia, Spain; [(2)]Punto Technologico S.L., Pza Masamagrell, 1-6, Paterna, 46980 Valencia, Spain, [(3)]I. V. T. Ltd. (Institute for Vacuum Technology), P.O. Box 47, 109180 Moscow, Russia; [(4)]SIMS Laboratory, Chalmers University of Tecnology, Fysikgraend 3, 41296 Gothenburg, Sweden; [(5)]Istituto di Scienze Fisiche, Universita degli Studi di Ancona, Via P. Ranieri, 65, 60131 Ancona, Italy

J/P17 OPTICAL CHARACTERIZATION OF SILLENITE CRYSTALS USING POLARIZATION SELF-MODULATION EFFECT, E. Raita, O.V. Kobozev, A.A. Kamshilin, and V.V. Prokofiev, Department of Physics, University of Joensuu, P.O. Box 111, 80101, Joensuu, Finland

J/P18 DARK DEVELOPING OF PHOTOREFRACTIVE PROTON-EXCHANGED LITHIUM NIOBATE WAVEGUIDES, A. Mendez, A. Garcoa-Caba-Es, M. Carrascosa, J. M. Cabrera, Departamento de Fisica de Materiales, Universidad Autonoma de Madrid, 28049 Madrid, Spain

J/P19 NONLINEAR MIXING OF SPATIAL FREQUENCIES IN PHOTOREFRACTIVE THERMAL FIXING OF HOLOGRAMS IN $LiNbO_3$, J. Limeres, E. M. de Miguel-Sanz, A. Suchocki, L. Arizmendi, M. Carrascosa, Departamento de Fisica de Materiales, C-IV, Facultad de Ciencias, Universidad Autonoma de Madrid, 28049-Madrid, Spain

J/P20 REFLECTION HOLOGRAMS IN SILLENITE CRYSTALS FOR DOUBLE-EXPOSURE INTERFEROMETRY, M. Weber[(1)], E. Shamonina[(2)], K.H. Ringhofer[(2)], G. von Bally[(1)]; [(1)]Laboratory of Biophysics, University of Muenster, Robert-Koch-Str. 45, 48129 Muenster, Germany; [(2)]Department of Physics, University of Osnabrueck, Barbarastr. 7, 49069 Osnabrueck, Germany

J/P21 STUDIES OF LIGHT-INDUCED CHARGE TRANSFER IN $Sn_2P_2S_6$ BY COMBINED EPR/OPTICAL SPECTROSCOPY, A. Ruediger[(1)], O. Schirmer[(1)], S. Odoulov [(2)], A. Shumelyuk[(2)], A. Grabar[(3)]; [(1)]FB Physik, University of Osnabrueck, 49069 Osnabrueck, Germany; [(2)]Institute of Physics, Ukrainian National Academy of Sciences, 252 650 Kiev, Ukraine; [(3)]Institute of Solid State Physics and Chemistry, Uzhgorod State University, 294 000 Uzhgorod, Ukraine

J/P22 FABRICATION AND TESTING OF DMNPAA/PVK/ECZ/TNF PHOTOREFRACTIVE POLYMER THIN FILMS, A. Heidebrecht and A. Siahmakoun, Department of Physics and applied Optics, Rose-Hulman Institute of Technology, Terre Haute, IN 47803, USA

J/P23 DYNAMIC, LIGHT INDUCED WAVEGUIDES, Ph. Dittrich, G. Montemezzani, and P. Günter, Nonlinear Optics Laboratory, Institute of Quantum Electronics, Swiss Federal Institute of Technology, ETH Hönggerberg, 8093 Zürich, Switzerland

J/P24 PHOTOINDUCED RAMAN ACTIVITY IN PURE LITHIUM NIOBATE, R. Mouras, S.M. Kostritskii, P. Bourson, M. D. Fontana, Laboratoire Matériaux Optiques a Propriétés Spécifiques, (MOPS), C.L.O.E.S, Université de Metz et Supelec, 2 rue E. Belin, 57070 Metz, France

J/P25 ENERGY EXCHANGE OPTIMIZATION IN A (110)-CUT BTO CRYSTAL BY CHOICE OF INTERACTING WAVES POLARIZATION, A.E. Zagorskiy, S.F. Nichiporko, V.V. Shepelevich, N.N. Egorov, Mozyr State Pedagogical Institute, 247760 Mozyr, Belarus, Yi Hu, K.H. Ringhofer, E. Shamonina Dept. of Physics, University, 49069 Osnabruk, Germany

J/P26 POLARIZATION AND ORIENTATION DEPENDENCE OF DIFFRACTION EFFICIENCY AND GAIN IN CUBIC (111)-CUT PHOTOREFRACTIVE PIEZOCRYSTALS, V.V. Shepelevich, S.F. Nichiporko, A.E. Zagorskiy, N.N. Egorov, Mozyr State Pedagogical Institute, 247760 Mozyr, Belarus, Yi Hu, K.H. Ringhofer, E. Shamonina Dept. of Physics, University, 49069 Osnabruk, Germany, V.Ya. Gayvoronsky, Institute of Physics, National Academy of Sciences, 252650 Kiev, Ukraine

J/P27 A SYSTEMATIC APPROACH TO DIFFUSION RECORDING IN PHOTOREFRACTIVE SILLENITE CRYSTALS, Yi Hu[(1)], E. Shamonina[(1)], V.P.Kamenov[(1)], K. H. Ringhofer[(1)], V.Ya.Gayvoronsky[(2)], V.V. Shepelevich[(3)]; [(1)]Department of Physics, University of Osnabrueck, 49069 Osnabrueck, Germany; [(2)]Institute of Physics, National Academy of Sciences, 252650 Kiev, Ukraine; **Mozyr State Pedagogical Institute, 247760 Mozyr, Belarus

J/P28 PHOTOINDUCED BIREFRINGENCE IN LITHIUM NIOBATE CRYSTALS DUE TO HIGH LIGHT INTENSITY IRRADIATION, K. Chah, M. Mostefa, M. Aillerie, M.D. Fontana and P. Bourson, Laboratoire Matériaux Optiques a Propriétés Spécifiques (M.O.P.S.) Centre Lorrain d'Optique et Electronique des Solides (C.L.O.E.S.), Université de Metz & Supélec, 2 rue Ed. Belin, 57070 Metz, France

J/P29 NONLINEAR OPTICAL ACTIVITY AND 1D SOLITON-LIKE PROPAGATION IN BSO CRYSTALS, F. Mariani[(1)], A. Funto[(1)], M. Bertolotti[(1)], V. Vlad[(2)], V. Babin[(2)] and E. Fazio[(1)], [(1)]Dipartimento di Energetica, Universita "La Sapienza" and INFM, Roma, Italy, [(2)]Institute of Atomic Physics NILPP Bucharest, Romania

J/P30 HIGH RATE OPTICAL CORRELATION AT VISIBLE WAVELENGTH, R. Ryf, G. Montemezzani, P. Günter, Nonlinear Optics Laboratory, Institute of Quantum Electronics, Swiss Federal Institute of Technology, ETH Hönggerberg, 8093 Zürich, Switzerland, K. Kitamura, Y. Furukawa, National Institute for Research in Inorganic Materials, 1-1 Namiki, Tsukuba, 305-0044, Japan, A. A. Grabar, Institute of Solid State Physics and Chemistry, Uzhgorod State University, 294 000 Uzhgorod, Ukraine

Session III - Applications of photorefractive effect

J-III.1 13:40 **Invited** INTRACAVITY LASER BEAM SHAPING, **A. Desfarges-Berthelemot**, V. Kermene, C. Colombeau, C. Froehly, M. Vampouille, IRCOM, Faculté des Sciences, 123 rue A. Thomas, 87060 Limoges Cedex, France

J-III.2 14:10 MODELIZATION OF A PHOTOREFRACTIVE FABRY-PEROT INTERFEROMETER FOR SELF-ADAPTED LASER MODE FILTERING, L. Meilhac, N. Dubreuil, G. Pauliat, G. Roosen, Laboratoire Charles Fabry de L'institut d'Optique, Centre Universitaire, Bât. 503, BP 147, 91403 Orsay Cedex, France

J-III.3 14:30 POLARIZATION SELF-MODULATION IN PHOTOREFRACTIVE CRYSTALS; A NEW APPROACH FOR ADAPTIVE DETECTION OF ULTRASONIC SURFACE DISPLACEMENT, A.A. Kamshilin, K. Paivasaari, University of Joensuu, Department of Physics, P.O.Box 111, 80101 Joensuu, Finland

J-III.4 14:50 IMPLEMENTATION AND COMPARATIVE EVOLUTION OFVARIOUS ARCHITECTURES OF ULTRASONIC PHOTOREFRACTIVE SENSORS, S. deRossi, Ph. Delaye, G. Roosen, Laboratoire Charles Fabry de l'Institut d'Optique,UMR 8501 du CNRS, BP 147, 91403 Orsay Cedex, France and J.C. Launay, Institut de Chimie de la Matière Condensée de Bordeaux, UPR 9048 du CNRS, avenue du Docteur A. Schweitzer, 33608 Pessac Cedex, France

J-III.5 15:10 COMPACT HOLOGRAPHIC CAMERA BASED ON PHOTOREFRACTIVE CRYSTALS AND APPLICATIONS IN INTERFEROMETRY, M.P. Georges, V.S. Scauflaire, Ph.C. Lemaire, Centre Spatial de Liège, Université de Liège, Avenue du Pré-Aily, Parc Scientifique du Sart-Tilman, 4031 Angleur (Liège), Belgium

15:30 **BREAK**

J-III.6 15:50 WAVELENGTH SELECTIVE PHOTONIC SWITCHING IN PARAELECTRIC POTASSIUM LITHIUM TANTALATE NIOBATE, A.J. Agranat, Department of Applied Physics, The Hebrew University of Jerusalem, Jerusalem 91904, Israel

J-III.7 16:10 LOCALIZED HOLOGRAPHIC MEMORY, Ch. Moser, D. Psaltis, California Institute of Technology, Department of Electrical Engineering, Pasadena CA, USA

J-III.8 16:30 HOLOGRAM WRITING IN Bi_2TeO_5 SINGLE CRYSTALS, I. Foldvari[(1)], C. Denz[(2)], J. Petter[(2)], F. Visinka[(2)], A. Péter[(1)], [(1)]Research Institute for Solid State Physics and Optics, HAS, Konkoly-Thege u. 29-33, 1121 Budapest, Hungary, [(2)]Institute of Applied Physics, Darmstadt University of Technology, Hochsculstr. 6, 64289 Darmstadt, Germany

J-III.9 16:50 NONVOLATILE AND QUASI-NONVOLATILE HOLOGRAPHIC RECORDING IN NEAR-STOICHIOMETRIC LITHIUM NIOBATE DOUBLY DOPED WITH Tb AND Fe, Myeongkyu Lee, Shunji Takekawa, Yasunori Furukawa, and Kenji Kitamura, National Institute for Research in Inorganic Materials (NIRIM), 1-1 Namiki, Tsukuba, Ibaraki 305-0044, Japan, Hideki Hatano, Corporate Research and Development Laboratories, Pioneer, 6-1-1 Fujimi, Tsurugashima, Saitama 350-2288, Japan

16:50 – 17:10 **BREAK**

17:10 – 19:00 **POSTER SESSION II** J/P31 - J/P56

J/P31 PHOTOINDUCED LATTICE DISTORTION IN II-VI SEMICONDUCTORS DOPED WITH NICKEL – A NOVEL TYPE OF PHOTOINDUCED PHENOMENON, V. I. Sokolov, Institute of Metal Physics UB RAS, Ekaterinburg 620219, Russia and A.N. Kislov, V. G. Mazurenko, Ural State Technical University, Ekaterinburg 620002, Russia

J/P32 SPECIFIC PHOTOREFRACTIVE PROPERTIES OF SBN:Ce CRYSTALS CO-DOPED WITH La, L.I.Ivleva[(1)], N.V.Bogodaev[(1)], N.M. Polozkov[(1)], P.A.Lykov[(1)], V.V.Osiko[(1)], T.R.Volk[(2)]; [(1)]Center of Laser Materials and technologies, Institute of General Physics, Russian Academy of Sciences, [(2)]Institute of Crystallography, Russian Academy of Sciences

J/P33 OPTICAL PROPERTIES of $Bi_{12}SiO_{20}$ THIN FILMS, Sh.M.Efendiev, V.E.Bagiev, N.G.Darvishov, Azerbaijan Tecnical University, G.Javid prosp.25, 370073 Baku, Azerbaijan

J/P34 PHOTOPOLYMERS SENSITIZING DUE TO INJECTOR SUBSTRATES FROM DOPED CHALCOGENIDE VITREOUS SEMICONDUCTORS, V. Rotaru, S. Robu, L. Vlad, O. Korshack, E. Gritsco, State University of Moldova, 60 Mateevici st., Chisinau 2009, Moldova

J/P35 RELIEPHOGRAPHICAL STRUCTURES BASED ON DOPED CHALCOGENIDE SEMICONDUCTORS FOR OPTICAL DATA STORAGE IN WIDE SPECTRAL REGION INCLUDING X-RAY, V. Rotaru, O. Corshack, E. Gritsco, Photothermoplastic Optical Data Recording Laboratory State University of Moldova, 60 Mateevici st., Chisinau 2009, Moldova

J/P36 MAGNETOOPTICAL CHARACTERIZATION OF MAGNETIC PHOTOREFRACTIVE SEMICONDUCTORS, A.I. Savchuk, S.Yu. Paranchych, I.D. Stolyarchuk, S.V. Medynskiy, V.I. Fediv, M.D. Andriychuk, Ye.O. Kandyba, Dept.of Phys.Electronics, University of Chernivtsi, 274012, Chernivtsi, Ukraine, A. Perrone, Dept.of Physics, University of Lecce, National Institute of Matter Physics, 73100 Lecce, Italy and P.I. Nikitin, General Physics Institute, 117942, Moscow, Russia

J/P37 OPTICAL PROPERTIES of $NaBi(MoO_4)_2$ $NaBi(WO_4)_2$ SINGLE CRYSTALS, Sh.M. Efendiev, N.G. Darvishov, D.J. Naziev, A.A. Achmedov, The Azerbaijan Technical University, Prosp. G.Djavida 25, 370602 Baku, Azerbaijan

J/P38 IMPURITY CENTERS AND NATIVE DEFECTS IN SEMIINSULATING CdHgTe:V CRYSTALS, Yu.P. Gnatenko, I.O. Faryna, P.M. Bukivskij, Institute of Physics of NASU, Prospekt Nauky 46, 03650 Kyiv, Ukraine, R.V. Gamernyk, O.A. Grypa, Lviv State University, 79005, Lviv, Ukraine, and S.Yu.Paranchych, Chernivtsi State University, 274012 Chernivtsi, Ukraine

J/P39 CHARGE TRANSFER IN PHOTOREFRACTIVE CdTe:Ge AT DIFFERENT WAVELENGTHS, K. Shcherbin, S. Odoulov, Institute of Physics, Prospekt Nauki 46, 252 650 Kiev, Ukraine; F. Ramaz, B. Farid, B. Briat, Laboratoire d'Optique Physique, ESPCI, 10 rue Vauquelin, 75231 Paris, France; J. von Bardeleben, Groupe de Physique des Solides, Univ. Paris 6&7, 2 Place Jussieu, 75231 Paris Cedex 05, France; P. Delaye, G. Roosen, Laboratoire Charles Fabry de l'Institut d'Optique, Bat. 503, Centre Scientifique d'Orsay, BP 147, 91403, Orsay Cedex, France

J/P40 PHOTOREFRACTIVE RECORDING IN NEAR INFRARED WITH MODIFIED TIN HYPOTHIODIPHOSPHATE CRYSTALS, A. N. Shumelyuk, S. G. Odoulov, Institute of Physics, Prospekt Nauki 46, 03 650, Kiev, Ukraine

J/P41 DOUBLE PHASE CONJUGATE MIRROR IN CdTe:Ge, K. Shcherbin, S. Odoulov, Institute of Physics, Prospekt Nauki 46, 252650 Kiev, Ukraine; I. Rarenko, Z. Zakharuk, Chernivtsy State University, Kotsyubinskogo str. 2, 274012 Chernivtsy, Ukraine

J/P42 PROPERTIES OF HAFNIUM AND GALLIUM DOPED LITHIUM NIOBATE, V.Babajanyan, G.Demirkhanyan, E.Kokanyan, Institute for Physical Research, National Academy of Sciences, 374810 Ashtarak, Armenia

J/P43 DX CENTERS IN INDIUM DOPED $Cd_{0.9}Mn_{0.1}Te$, E. Placzek-Popko[(1)], J. Szatkowski[(1)], K. Sieranski[(1)], J. Fialkowski[(1)], J.M. Wrobel[(2)], P. Becla[(3)], [(1)]Institute of Physics, Wroclaw University of Technology, Wybrzeze Wyspianskiego 27, 50-370 Wroclaw, Poland; [(2)]Department of Physics, University of Missouri, Kansas City MO 64110, USA; [(3)]Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge MA 02139, USA

J/P44 PHOTOELECTRIC PROPERTIES OF CdTe:Sn SEMIINSULATING CRYSTALS, A.V. Savitsky, O.A. Parfenyuk, M.I. Ilaschuk, K.S. Ulyanitsky, A.I. Savchuk, P.M. Gorley, Physical Electronics chair, Chernivtsi State University, 2 Kotsyubynsky str., 274012, Chernivtsi, Ukraine

J/P45 SUPPLEMENTARY OPTICAL PHASE TRANSITIONS IN PHOTOREFRACTIVE COHERENT OSCILLATOR, A.Shumelyuk, O.Shinkarenko, S. Odoulov, Institute of Physics, National Academy of Sciences, Kiev, Ukraine and P. Jullien, P. Mathey, Université de Bourgogne, Dijon, France

J/P46 RECORD, READOUT AND FREQUENT SELECTIVITY OF HOLOGRAMS IN PHOTOPOLYMER MEDIUM, E. S. Kovalenko, S. N. Sharangovich, V. V. Sysuev, Tomsk University of Control Systems and Radio Electronics, Department of Microwave and Quantum Electronics, 40 Lenin Avenue, 634050 Tomsk, Russia

J/P47 PHOTOREFRACTIVE EFFECT IN NEMATIC LIQUID CRYSTALS, S. S. Slussarenko, Institute of Physics of National Acaemy of Sciences of Ukraine, Kiev, Ukraine

J/P48 PHOTOREFRACTIVE AC RESPONSE BEYOND THE LOW-CONTRAST APPROXIMATION, G.F. Calvo[(1)], B. Sturman[(2)], F. Agullo-Lopez[(1)] and M. Carrascosa[(1)], [(1)]Departamento de Fisica de Materiales, Universidad Autonoma de Madrid, 28049 Madrid, Spain; [(2)]Institute of Automation and Electrometry, Universitetsky Prospect 1, 630090 Novosibirsk, Russia

J/P49 ESR INVESTIGATION OF DEFECTS CREATED AT THE INCORPORATION TRANSITION METAL IONS INTO $KNbO_3$, P.Murza, V.Nadolinny, V.Shlegel, Institute of Inorganic Chemistry, SB RAS, Lavrentyev Av. 3, 630090 Novosibirsk, Russia

J/P50 TRANSIENT CURRENTS IN PHOTOCHROMIC LITHIUM NIOBATE CRYSTALS, A.S.Bagdassarian, R.K.Hovsepyan, A.R.Poghosyan, Institute for Physical Research, Armenian National Academy of Sciences, Ashtarak-2, 378410, Armenia

J/P51 MECHANISMS OF ELECTRIC FIELD POLING IN LITHIUM TANTALATE CRYSTALS, A.R.Poghosyan, Institute for Physical Research, Ashtarak-2, 378410, Armenia and R.W.Eason, P.T.Brown, Optoelectronics Research Centre, University of Southampton, Southampton SO17 1BJ, UK

J/P52 EFFECTS OF RARE-EARTH IMPURITIES ON THE FERROELECTRIC AND PHOTOREFRACTIVE PROPERTIES OF STRONTIUM-BARIUM NIOBATE CRYSTALS, T.Volk, V.Salobutin, D.Isakov, Institute of Crystallography of the Russian Academy of Science, Moscow, Russia, L. Ivleva, N. Bogodaev, Institute of General Physics of the Russian Academy of Science, Moscow, Russia, Th. Woike, Institute fuer Kristallographie, Koeln Universitaet, Koeln, Germany, M.Woehlecke, Fachbereich Physik, Osnabrueck Universitaet, Osnabrueck, Germany

J/P53 EXCITONIC RESONANT PHOTOREFRACTIVE DEVICES AROUND 1.06 MICRO METER, T. Shimura, S. Iwamoto, H. Kageshima, S. Taketomi, M. Nishioka, T. Someya, Y. Arakawa, K. Fukutani, and K. Kuroda

J/P54 WAVELENGTH DEPENDENT MATERIAL PARAMETERS IN PHOTOREFRACTIVE $Bi_{12}TiO_{20}$ CRYSTAL, J. Frejlich, I. de Oliveira, M.C. Barbosa, Laboratorio de Optica- Ifgw-Unicamp, 13083-970 Campinas-Sp, Brazil, A.A. Freschi, Departamento de Fisica-Igce-Unesp-R . Claro-Sp, Brazil

J/P55 DIRECT ELECTRIC FIELD PERIODICAL POLING OF LITHIUM NIOBATE CRYSTALS DURING GROWTH PROCESS, R.K.Hovsepyan, A.R.Poghosyan, E.S.Vardanyan, I.A.Ghambaryan, E.V.Barseghyan, Institute for Physical Research, Armenian National Academy of Sciences, Ashtarak-2, 378410, Armenia

J/P56 INVESTIGATION OF THE OPTICAL AND ELECTRO-OPTICAL (EO) PROPERTIES OF HEXAGONAL BORON NITRIDE THIN FILMS DEPOSITED BY PECVD TECHNIQUE, A. El-Yadouni[(1)], P. Thevenin[(2)], A. Boudrioua[(1)], A. Bath[(2)] and J. C. Loulergue[(1)], [(1)]Laboratoire Matériaux Optiques à Propriétés Spécifiques, (MOPS), Centre Lorrain d'Optique et d'Electronique des Solides (CLOES), Université de Metz et Supélec, 2 rue E. Belin, 57070 Technopôle 2000 Metz cedex 3, France, [(2)]Laboratoire Interface et Composants Microélectronique (LICM), CLOES, Université de Metz et Supélec, 2 rue E. Belin, 57070 Metz cedex 3, France

Session IV - Photorefractive effect

J-IV.1 8:30 OPTICAL PROCESSING BY NON-BRAGG DIFFRACTION IN THE PHOTOREFRACTIVE MATERIALS, N.Kukhatrev, T.Kukhtareva, R.Jones, J.Jones, E.Ward, Physics Dept., Alabama A&M University, Normal AL 35762, USA, P.Banerjee, K.Matsusity, University of Alabama in Huntsville, Huntsville AL 35811, USA

J-IV.2 8:50 ENHANCEMENT OF PHOTOREFRACTIVE 2W-COUPLING NEAR THE THRESHOLD OF SUBHARMONIC GENERATION, V.E.Podivilov and B.I.Sturman, International Institute for Nonlinear Studies, Koptyug Ave. 1, 630090 Novosibirsk, Russia, H.C.Pedersen and P.M.Johansen, Riso National Laboratory, 4000 Roskilde, Denmark

J-IV.3 9:10 SPATIAL SUBHARMONICS GENERATION DURING, RECORDING OF SELF-PUMPED PHASE-CONJUGATE MIRRORS, E. Nippolainen, A. A. Kamshilin, V. V. Prokofiev, T. Jaaskelainen, University of Joensuu, Department of Physics, P.O.Box 111, FIN-80101 Joensuu, Finland

J-IV.4 9:30 EXPERIMENTAL STUDY AND THEORETICAL MODELING OF BIDIMENSIONAL BEAM FANNING, APPLICATION TO DPCM, C.Mailhan[(1,2)], M.Goetz[(3)], N.Fressengeas[(1)], and G.Kugel[(2)], [(1)]Equipe de Recherche en Photonique et Optoélectronique, Supélec, [(2)]Lab. Matériaux Optiques à Propriétés Spécifiques, Centre Lorrain d'Optique et d'Electronique des Solides, Université de Metz et Supélec, [(3)]Région Champagne Ardenne, France

J-IV.5 9:50 PHOTOREFRACTIVE PROPERTIES OF BULK PERIODICALLY POLED $LiNbO_3$:Fe, S. Odoulov, T. Anokhina and A. Shumelyuk, Institute of Physics, National Academy of Sciences, 03 650 Kiev, Ukraine, I.I. Naumova and T.O. Chaplina, Physics Department, Moscow State University, 119899 Moscow, Russia

10:10 **BREAK**

Session V - Optical confinement and photorefractive effect

J-V.1 10:30 TWO WAVE MIXING AT 854 NM IN $BaTiO_3$:Rh PLANAR WAVEGUIDE IMPLANTED WITH He^+, P. Mathey[(1)], A. Dazzi[(1)], P. Jullien[(1)], D. Rytz[(2)], P. Moretti[(3)]; [(1)]LPUB, CNRS/UMR 5027, Matériaux Photoréfractifs et Applications, 9 Av. A. Savary, B.P. 47870, 21078 Dijon Cedex, France; [(2)]FEE GmbH, Struthstrasse 2, Wackenmühle, 55743 Idar-Oberstein, Germany; [(3)]LPCML, CNRS/UMR 5620, Univ. Lyon 1, 43 bd du 11 Novembre 1918, 69622 Villeurbanne, France

J-V.2 10:50 IMPLANTED WAVEGUIDES IN BORATE CRYSTALS (LTB, BBO, LBO) FOR FREQUENCY CONVERSION, C.Bakhouya[(1)], A.Boudrioua[(1)], P.Moretti[(2)], J.C.Loulergue[(1)] and K. Polgar[(3)]; [(1)]Laboratoire Matériaux Optiques a Propriétés Spécifiques (MOPS), Centre Lorrain d'Optique et d'Electronique des Solides (CLOES), Université de Metz et Supélec, 2 rue E. Belin, 57070 Technopôle 2000 Metz cedex 3, France, [(2)]Laboratoire de physico-chimie des matériaux luminiscents, UMR CNRS n°5620 Université Claude Bernard, Lyon I, France, [(3)]Research Institute for Solid State Physics and Optics of Hungrian Academy of Sciences, Budapest, Hungary

J-V.3 11:10 OPTIMIZATION OF PHOTOREFRACTIVE $LiNbO_3$ WAVEGUIDES FABRICATED BY COMBINED TECHNIQUES OF ION EXCHANGE AND IMPLANTATION, S.M. Kostritskii, S.S. Nikolaev, O.G. Sevostyanov, Physics Dept, Kemerovo State University, Krasnaya str.6, Kemerovo, 650043 Russia, P. Moretti, Laboratoire de Physico-Chimie des Matériaux Luminescents, Universite Claude Bernard Lyon I, 69622 Villeurbanne, France

J-V.4 11:30 ADAPTIVE WAVEGUIDES USING PHOTOREFRACTIVE SCREENING SOLITONS, J. Petter, C. Weilnau, C. Denz, Institute of Applied Physics, Darmstadt University of Technology, 64289 Darmstadt, Germany

J-V.5 11:50 EXPERIMENTAL OBSERVATION OF EFFICIENT 2D SELFOCUSING AND QUASI-STEADY-STATE SOLITON-LIKE PROPAGATION IN BSO CRYSTALS, A. Funto[(1)], F. Mariani[(1)], M. Bertolotti[(1)], V. Vlad[(2)], V. Babin[(2)], and E. Fazio[(1)], [(1)]Dipartimento di Energetica, Universita "La Sapienza" and INFM, Roma, Italy, [(2)]Institute of Atomic Physics NILPP Bucharest, Romania

J-V.6 12:10 NUMERICAL SIMULATION OF THE PROPAGATION OF A SINGLE LASER PULSE IN A PHOTOREFRACTIVE MEDIUM, D. Wolfersberger[(1)], N.Fressengeas[(1)], J.Maufoy[(1)], G.Kugel[(2)], [(1)]Equipe de Recherche en Photonique et Optoélectronique (ERPO), Supélec, [(2)]Laboratoire MOPS-CLOES, Université de Metz et Supélec, 2 rue Edouard Belin, 57 070 Metz Cedex, France

12:30 **LUNCH**

Thursday June 1, 2000 **Afternoon**
Jeudi 1er juin 2000 Après-midi

Session VI - Organic materials

J-VI.1 14:00 **Invited** PHOTOREFRACTIVE ORGANIC MATERIALS: PHOTOELECTRIC VERSUS HOLOGRAPHIC DYNAMICS, **S.J. Zilker**, Physikalisches Institut und Bayreuther Institut für Makromolekülforschung, University of Bayreuth, 95440 Bayreuth, Germany

J-VI.1 14:30 **Invited** PROGRESS ON LIQUID CRYSTAL PHOTOREGRACTIVITY-TOWARDS SUPRA-OPTICAL-NONLINEARITY, **I.C. Khoo**

J-VI.3 15:00 ORGANIC PHOTOREFRACTIVE MATERIALS WITH SUB-MILLISECOND RESPONSE AND LARGE DYNAMIC RANGE, K. Meerholz[(1)], E. Mecher[(1)], R. Bittner[(1)], F. Gallego[(1)], and H.H. Hörhold[(2)], [(1)]Physical Chemistry Department, University of München, Butenandtstr. 5-13, Building E, 81377 Munich, Germany, [(2)]Institute of Organic and Macromolecular Chemistry, University of Jena, Humboldtstr. 10, 07743 Jena, Germany

J-VI.4 15:20 RHEOLOGIC INTERPRETATION OF ELECTRO-OPTIC PROPERTIES OF LOW-TG DOPED PHOTOREFRACTIVE POLYMERS, L. Mager[(1)], J.-C. Ribierre[(1)], A. Fort[(1)], S. Méry[(2)], J.-F. Nicoud[(2)], [(1)]Groupe d'Optique Non Linéaire et d'Optoélectronique, [(2)]Groupe des Matériaux Organiques, Institut de Physique et de chimie de Strasbourg, UMR 75040, 23 rue du Loess 67037 Strasbourg Cedex, France

15:40 **BREAK**

J-VI.5 16:00 ANALYSIS OF GRATINGS INDUCED IN AZO-DYE DOPED LIQUID CRYSTALS. L. Frey[(1)], J-M. Jonathan[(1)], M. Kaczmarek[(2)], G. Roosen[(1)], [(1)]Lab. Charles Fabry de l'Institut d'Optique, Centre Scientifique, Orsay, France, [(2)]Department of Physics, University of Exeter, UK

J-VI.6 16:20 NOVEL LIQUID CRYSTALLINE PHOTOREFRACTIVE MATERIALS, A. Golemme, R. Termine, B.C. De Simone, Dipartimento di Chimica, Università della Calabria, 87036 Rende, Italy

J-VI.7 16:40 DYNAMICAL STUDIES OF TWO-BEAM COUPLING ON THE HOLOGRAPHIC GRATINGS BASED ON LIQUID CRYSTAL-POLYMER COMPOSITE FILMS, A. Y.-G. Fuh, C.-C. Liao, C.-J. Lee, K.-J. Shyu, Department of physics, National Cheng Kung University, Tainan, Taiwan 701 and K.-Y. Lo, Department of Electronics Engineering, Kung Shan Institute of Technology, Tainan Taiwan 701

J-VI.7 17:00 ROTATIONAL DIFFUSION MODEL OF ORIENTATIONAL ENHANCEMENT IN AC-FIELD BIASED PHOTOREFRACTIVE POLYMERS, T.G. Pedersen, Inst. of Physics, Aalborg University, Pontoppidanstraede 103, 9220 Aalborg East, Denmark, P.M. Johansen and H.C. Pedersen, Optics and Fluid Dynamics Dept., Rise national Laboratory, 4000 Roskilde, Denmark

17:00-17:10 **Concluding remarks**
L. Mager

END OF SYMPOSIUM J