

CONTENTS

OPENING SESSION

Laser research at the Institute of Physics AS CR K. Jungwirth (Czech Republic)	3
Advances in industrial high power lasers H. Schlüter (USA)	3
Once upon a time... a heartily glance over the 30-year history of excimer lasers M. Makarov (France)	4

SESSION 1

Laser Physics and Technology. Novel Approaches I

High power laser systems: new concept A. N. Starodub, S. I. Fedotov, M. V. Osipov (Russia)	7
Four factors description of the beam quality of high power laser X. Du (China)	7
Nearly flat-top shaped laser beams: standard parameters reliability study P. Di Lazzaro, S. Bollanti, D. Murra, E. Tefouet Kana, G. Felici (Italy)	7
The homogeneous irradiation of laser targets with a dynamic plasma phase plate applying S. G. Garanin, V. N. Derkach, R. A. Shnygin (Russia)	8
Mode locked Nd:YAG laser with passive negative feedback using multiple quantum well saturable absorber V. Kubicek, A. Dombrovský (Czech Republic), J.-C. Diels, A. Stintz (USA)	8
Radiation of optically coupled lasers A. F. Glova, A. Yu. Lysikov (Russia)	9

SESSION 2

Gas Lasers, CO / CO₂ Lasers

CO laser: advances in theory and experiment A. P. Napartovich (Russia)	13
High peak power, high energy & fast response time planar waveguide carbon dioxide laser F. Villarreal (United Kingdom), L. E. Ramirez (Mexico), J. J. Wendland, H. J. Baker, D. R. Hall (United Kingdom)	13
Rotating spark gap switched discharge TEA CO ₂ laser with average power up to 12 kW Ch. Wan, Y. Yu, Y. Lv, R. Tan, S. Liu, J. Zhou, J. Wu, D. Wang, Y. Wang, Ch. Zhao, Ch. Ding, G. Zheng (China)	14
A compact longitudinal and transverse injection mode-locked TEA CO ₂ laser A. Silakhorri, A. Behjat, F. Soltanmoradi, M. R. Sadr, M. Montazerolghaem (Iran)	14
Stabilization of CO ₂ laser short pulse oscillation by tickle pulse for dot processing D. Tokita, N. Sakurada, Y. Ishii, Y. Kubota, K. Watanabe (Japan)	15
A new method of small signal gain measurement in CW CO ₂ laser F. Soltanmoradi, A. Behjat, M. Aram, S. Ghafori (Iran)	15

SESSION 3

Solid State Lasers I

High average power Q-switched planar waveguide solid state lasers H. J. Baker, J. Xu, S. Fei, A. Russell, D. R. Hall (United Kingdom)	19
High-power Yb:YAG rod laser D. G. Harris, Ch. E. Turner, Jr., F. Patel, K. Widen (USA)	19
Compact, high-power ceramic slab laser A. Lapucci, M. Ciofini (Italy)	20
Optical gain of unstrained graded GaAs/Al _x Ga _{1-x} quantum well laser E. L. Albuquerque, E. C. Ferreira, J. A. P. da Costa, P. W. Mauriz, V. N. Freire (Brazil)	20
High radiance diode-pumped solid-state laser technology development in the United States S. G. Post (USA)	21
A compact Nd:YAG DPSSL using diamond-cooled technology H. P. Chou, Y.-L. Wang, V. Hasson, D. W. Trainor (USA)	22
Diode-pumped solid-state disk laser J. Vetrovec, A. Koumvakalis, R. Shah, T. Endo, K. Masters, W. Wooster, K. Widen, S. Lassovsky (USA)	22

SESSION 4*Laser Physics and Technology, Novel Approaches II*

Diffraction filtered resonator for copper vapor lasers	27
S. K. Dixit (India)	27
Induced thermal distortion effects in active unstable optical resonators with non-uniform gain	27
M. H. Mahdief, M. Shirnabi, A. Sharafi (Iran)	27
Generalized self-filtering unstable resonator of KrF laser with array of pinholes as filtering apertures	28
P. Bhatnagar, R. Khare, U. Nundy (India)	28
Measurement of spatial-frequency and amplitude characteristics of device for laser beam quality characterization	28
A. N. Starodub, V. P. Kirillov, A. V. Kutsenko, Yu. A. Mikhailov, G. V. Sklizkov, O. A. Sudakov, K. A. Zhurovich (Russia)	28
SBS-suppression in variably strained fibers for fiber-amplifiers and fiber-lasers with a high spectral power density	28
R. Engelbrecht, J. Hagen, M. Schmidt (Germany)	29
Laser pulse transmission and damage threshold of silica fibers with antireflective coating	30
St. Meister, A. Wosniok, Th. Riesbeck, Ch. Scharfenorth, H. J. Eichler (Germany)	30
High repetition-rate modulation for high power lasers	30
V. V. Apollonov, A. B. Egorov, V. V. Kikko, V. I. Kislov, A. G. Suzdaltsev (Russia)	30

SESSION 5*Ultra-High Power Lasers*

Petawatt lasers: present and future	33
Ch. B. Edwards (United Kingdom)	33
OPCPA – the next generation of ultra-high power lasers?	33
J. L. Collier, I. N. Ross (United Kingdom), L. Cardoso (Portugal), O. Chekhlov, M. Notley, C. Hernandez-Gomez, C. N. Danson, D. Neely, P. Matousek, S. Hancock, P. Bates (United Kingdom)	33
Development of 100TW CPA laser system	34
X. Yuan, X. Wei, X. Huang, H. Peng, X. Zhang, X. Wang, Y. Guo, K. Zhou, D. Lin, L. Liu (China)	34
Diode-pumped Yb:S-FAP CPA laser system for laser-Compton X-ray generation	34
S. Ito, T. Nakajyo, T. Yanagida, F. Sakai, K. Maeda, K. Torizuka (Japan)	34
Solid-state-gas-laser SOFIA as a pump for the optical parametric chirped pulse amplification	35
H. Turčičová, J. Dostál, G. Kocourková, J. Knytl, J. Skála, M. Pfeifer, M. Divoký, M. Smrž, O. Novák, P. Böhm, A. Dombrovský (Czech Republic), W. Belardi (United Kingdom), P. Straka (Czech Republic)	35

SESSION 6*Chemical Lasers, COIL*

Challenges for the chemical oxygen iodine laser	39
G. D. Hager (USA)	39
Oxygen – iodine laser in Russian Federal Nuclear Center – VNIIEF	40
B. A. Vyskubenko, A. A. Adamenkov, V. V. Bakshin, V. V. Buzovarya, L. A. Vdovkin, Yu. N. Deryugin, V. I. Efremov, S. P. Ilyin, V. V. Kalinovsky, Yu. V. Kolobyanin, V. V. Konovalov, E. A. Kudryashov, V. B. Moiseev, V. D. Nikolaev (Russia)	40
A study on supersonic chemical oxygen-iodine laser with a high-performance mixing nozzle	40
T. Masuda, M. Endo, T. Osaka, S. Takeda, T. Uchiyama (Japan)	40
Near diffraction limited high power COIL emission	41
J. Handke, F. Duschek, K. M. Grünewald, T. Hall, W. O. Schall (Germany)	41
Development of rational design procedure of pressure recovery system of HPCL	41
S. Kim, J. Jin, S. Kwon (Republic of Korea)	41
Two-stage ejector based pressure recovery system for small scale SCOIL	42
G. Singh, R. K. Tyagi, Mainuddin, R. Rajesh, A. L. Dawar, P. M. V. Subbarao (India)	42
Recent studies of Ben-Gurion University high efficiency supersonic chemical oxygen-iodine laser	42
S. Rosenwaks, V. Rybalkin, A. Katz, B. D. Barmashenko (Israel)	42
Theoretical exploration of gas lasers using time dependent 3-D Navier-Stokes simulation	43
T. J. Madden (USA)	43

SESSION 7*Gas Lasers, Metal Vapor / Other Gas Lasers*

New power scaling laws for copper vapour lasers and recent advances	47
R. P. Mildren, M. J. Withford, G. D. Marshall, D. W. Coutts, J. A. Piper (Australia)	47

Properties of laser deposited Bi₂Te₃ thin films with various thicknesses	188
<i>M. Pavelka, R. Zeipl, M. Jelínek, V. Studnička, J. Walachová (Czech Republic)</i>	
Computational methods applied to austenitic stainless steel laser welding optimization	188
<i>F. Caiazzo, F. Curcio, G. Daurelio, F. Memola Capisce Minutolo, B. Spiezzo (Italy)</i>	
Simulation of multiple injections flow in free stream of keyhole cavity during laser welding	189
<i>L. Achab, E. H. Amara, N. Nebani, F. Hamadi (Algeria)</i>	
Laser ablation of A^{IV}B^{VI}C^V compounds	189
<i>M. P. Chouchman, A. K. Shuaibov, L. L. Shimon, A. I. Dashchenko, I. E. Kacher (Ukraine)</i>	
Study of Cu ions acceleration via UV laser ablation	190
<i>F. Belloni, D. Doria, A. Lorusso, V. Nassisi, L. Torrisi (Italy)</i>	
Pulsed HF laser ablation of dentin	190
<i>E. Papagiakourou, D. N. Papadopoulos, M. Makropoulou, M. G. Khabbaz, A. A. Serafetinides (Greece)</i>	
Photo-etching of organic polymers using a laser plasma XUV source based on a gas puff target irradiated with the PALS facility	190
<i>H. Fiedorowicz, A. Bartnik (Poland), M. Bittner, L. Juha, J. Krásá, P. Kubát (Czech Republic), J. Mikolajczyk, R. Rakowski (Poland)</i>	
Dynamics of the XeCl excimer laser ablation of PMMA polymer	191
<i>T. Efthimiopoulos, H. Kiagias, S. Christoulakis (Greece)</i>	
Basic features of deep hole drilling in metals by ultrashort laser pulses: molecular dynamics simulation study	192
<i>N. N. Nedialkov, S. E. Imamova, P. A. Atanasov (Bulgaria), P. Berger, F. Dausinger (Germany)</i>	
Application of the high power continuous-wave CO₂ laser with self-filtering resonator to cutting of metal plates	192
<i>A. P. Golyshev, A. N. Malov, A. M. Orishich, V. B. Shulyat'ev, V. A. Pechurin, V. F. Filev (Russia)</i>	
Modelling of CO₂ laser welding of a magnesium alloy	194
<i>K. Abderrazak (Tunisia), G. Le Palec, P. Bournot, M. Autric (France)</i>	
Study of laser damage assessment in some important alloys	194
<i>N. R. Das, D. Mukherji, R. Kumar, M. Hussain (India)</i>	
Determination of the solidification isotherm in deep penetration laser welding	195
<i>F. Hamadi, E. H. Amara, L. Achab, N. Nebani (Algeria)</i>	
The XeCl laser flux effect on YBCO targets, the resulting films and nanoparticles	195
<i>C. Andreouli, T. Efthimiopoulos, Ch. Panagopoulos, C. Stournaras (Greece)</i>	
Study of laser-induced cavitation bubble in liquid nitrogen	196
<i>K. Maeno, K. Toyoda, T. Takahashi, E. Hisano (Japan)</i>	
Ionization dynamics of transparent aerosol particle by supershort laser radiation	196
<i>Yu. E. Geints, A. A. Zemlyanov (Russia)</i>	
Observation of particles with energy over 100 keV in z-pinch devices	197
<i>P. Kubeš, J. Kravárik, D. Klír, P. Barvíř (Czech Republic)</i>	
Tunable CO₂ laser measurements of composition and concentrations in multicomponent wake behind supersonic civil aircraft	197
<i>S. P. Ilyin, A. A. Adamenkov, E. S. Asmolov, Yu. N. Bulkin, B. A. Vyskubenko, M. Yu. Deryugin, Yu. V. Kolobyanin, E. A. Kudryashov, D. A. Rusyanov, A. V. Shustov (Russia)</i>	
Industrial applications of pulsed quantum cascade laser analyzers for trace-gas monitoring	198
<i>G. Wysocki, A. A. Kosterev, S. So, F. K. Tittel (USA)</i>	
Selective mode optimization of lidar system lasing source	198
<i>Yu. N. Frolov, S. D. Vellikanov, S. N. Sin'kov, A. V. Nadezhkin (Russia)</i>	
Raman lidars for monitoring atmospheric pollution	199
<i>V. M. Klimkin, M. M. Makogon, G. G. Matvienko, Yu. N. Ponomarev, V. I. Serdyukov (Russia)</i>	
Study of DF laser energy redistribution between emission bands in transition from non-selective to selective lasing mode	199
<i>S. D. Vellikanov, A. N. Nadezhkin, S. N. Sin'kov, Yu. N. Frolov, E. D. Yakovlev (Russia)</i>	
Experimental and theoretical investigation of striation formation in oxygen laser cutting	200
<i>A. N. Malov, N. A. Malov, G. V. Yermolaev (Russia)</i>	
Predicting gas decomposition in an industrialised pulsed CO₂ laser	200
<i>A. Forbes, L. R. Botha (South Africa)</i>	
AUTOR INDEX	203

Influence of H₂ and HBr-additives on Cu and CuBr vapor lasers performance G. S. Evtushenko, D. V. Shlyanov, O. V. Zhdaneev, V. B. Sukhanov (Russia)	47
Development and research of a high-power strontium-vapor laser for tissue ablation A. N. Soldatov, A. G. Filonov, A. S. Shumeiko (Russia), R. F. Haglund, D. W. Piston, B. Ivanov, M. A. Mackanos, E. D. Jansen, M. H. Mendenhall (USA), I. Kostadinov (Bulgaria), Yu. P. Polunin (USA), A. V. Kuznetsova, I. V. Sidorov, L. N. Chausova (Russia)	48
Optimization of an explosively pumped photo-dissociation iodine laser with phase conjugation F. A. Starikov, Yu. V. Dolgopolov, A. M. Dudov, N. N. Gerasimenko, G. G. Kochemasov, A. V. Kopalkin, S. A. Kovaldov, S. M. Kulikov, S. N. Pelevy, A. F. Shkapa, S. P. Smyshlyayev, S. A. Sukharev, L. I. Zykov (Russia)	49
Properties of plasma of volume nanosecond high-pressure discharge formed in non-uniform electric field V. F. Tarasenko, S. B. Alekseev, I. D. Kostyrya, V. M. Orlovskii, V. S. Skakun (Russia)	49
Investigation on an optically pumped NH₃ Laser A. Behjat, F. Soltanmoradi, K. Silakhori, M. Montazerolghaem, V. Fathi, R. Sadr (Iran)	50
SESSION 8	
<i>Solid State Lasers II</i>	
Status and trends in the development of high-power diode lasers and their applications P. Loesen (Germany)	53
Realization of time-multiplexing for high power diode lasers F. Bammer, B. Holzinger (Austria)	53
Diode-pumped Yb:YLF chirped-pulse regenerative amplifier for high average power operation J. Kawana, K. Yamakawa, H. Nishioka, K. Ueda (Japan)	54
High power fiber lasers and amplifiers – perspectives and limitations M. Reich, A. Liem, H. Zellmer, A. Tünnermann (Germany)	54
Fiber-laser power scaling beyond the 1-kilowatt level by Nd:yb co-doping V. Reichel, K. Mörl, S. Jetschke, S. Unger, H.-R. Müller, J. Kirchhof, H. Bartelt, T. Sandrock, A. Harschak, A. Liem, J. Limpert, H. Zellmer, A. Tünnermann (Germany)	55
Novel cooling technique for operation of quasi four level solid state laser T. Petrov (Bulgaria), H. Yoneda, K. Takaichi, A. Shirakawa, K. Ueda (Japan), N. Sabotinov (Bulgaria)	56
SESSION 9	
<i>Chemical Lasers, HF / DF Lasers</i>	
Recent advances, developments and future requirements in high power HF/DF laser technology J. Horkovich, L. Ryan, M. Wax, J. Betts, D. Lyman (USA)	59
Non-chain HF and DF lasers pumping self-sustained discharge A. N. Panchenko, V. F. Tarasenko, V. M. Orlovskii (Russia)	59
Design features of high power autonomous mobile cw DF laser systems A. S. Bashkin, B. I. Katorgin, N. A. Pirogov (Russia)	60
Advanced nozzles for hydrogen fluoride chemical lasers W. Welser, S. Patterson, D. Hook, S. Gordon, J. A. Betts, P. Lohn (USA)	60
On the problem of vibrational excitation in electric discharge non-chain HF lasers A. A. Belevtsev, K. N. Firsov, S. Yu. Kazantsev, I. G. Kononov (Russia)	61
Development of a compact TEA HF oscillator-double amplifier laser system with corona preionisation suitable for medical applications D. N. Papadopoulos, D. Mandridis, A. Orfanoudakis, A. A. Serafetinides (Greece)	61
SESSION 10	
<i>EUV Light Source, X-ray Lasers</i>	
Development of efficient EUV light source by laser-produced plasma Y. Izawa (Japan)	65
Development and user applications of soft X-ray lasers at PALS B. Rus, M. Kozlová, J. Polan, A. R. Prág, M. Stupka, T. Mocek (Czech Republic)	65
Simulation of a Ne-like Ge x-ray laser and comparison with experiments F. A. Starikov, F. M. Abzaev, V. I. Annenkov, A. V. Bessonab, P. D. Gasparyan, S. V. Kalipanov, S. I. Petrov, A. V. Ryadov, N. A. Suslov, V. A. Tokarev, V. A. Volkov, N. V. Zhidkov (Russia)	66
SESSION 11	
<i>Chemical Lasers, COIL / AGIL / FOIL</i>	
Technical progress in industrial COIL K. Tei, D. Sugimoto, T. Ito, G. Watanabe, O. Vyskubenko, N. Takeuchi, S. Muto, T. Fujioka (Japan)	69

New method of chemical atomic iodine generation for a COIL	69
T. L. Andreeva, S. V. Kuznetsova, A. I. Maslov, V. N. Sorokin (Russia).....	69
Chemical oxygen-iodine laser with atomic iodine generated via Cl or F atoms	70
O. Špalek, V. Jirásek, M. Čenský, J. Kodymová, I. Jakubec (Czech Republic), G. D. Hager (USA)	70
NCI₃ as a source of NCI(a) for an NCI(a)-I laser	71
W. E. McDermott (USA)	71
Fullerene-oxygen-iodine laser (FOIL). Physical principles	71
O. B. Danilov, I. M. Belousova, A. A. Mak, V. P. Belousov, A. S. Grenishin, V. M. Kiselev, A. V. Kris'ko, T. D. Murav'eva, A. N. Ponomarev, E. N. Sosnov (Russia)	71
SESSION 12	
<i>Chemical Lasers, ElectriCOIL / DOIL</i>	
The controlled avalanche discharge method of generating O₂'Δ to power oxygen iodine lasers	75
A. E. Hill (USA)	75
Singlet delta oxygen production in E-beam-sustained discharge: theory and experiment	75
A. Ionin, M. Frolov (Russia), G. Hager (USA), Yu. Klimachev, I. Kochetov, A. Kotkov, A. Napartovich, Yu. Podmarkov, L. Seleznev, D. Sinitsyn, N. Vagin, N. Yuryshev (Russia)	75
RF plasma jet generator of singlet delta oxygen and RF discharge pre-dissociation of iodine for oxygen-iodine laser at lowered temperature	76
J. Schmiedberger (Czech Republic), H. Fujii (Japan)	76
Experimental effects of atomic oxygen on the development of an electric discharge oxygen iodine laser	76
D. L. Carroll, J. T. Verdeyen, D. M. King, J. W. Zimmerman, J. K. Laystrom, B. Woodard, N. Richardson, K. Kittell, W. C. Solomon (USA)	76
Kinetic studies for advanced iodine laser concepts	77
J. Han, A. V. Komissarov, S. P. Tinney, M. C. Heaven (USA)	77
Next generation diagnostics for COIL: new approaches for measuring critical parameters	77
S. J. Davis, W. T. Rawlins, W. J. Kessler, S. Lee, M. L. Silva, P. A. Mulhall (USA)	77
SESSION 13	
<i>Gas Lasers, Excimer Lasers</i>	
Amplified spontaneous emission and nanosecond pulse amplification in large-aperture electron-beam-pumped KrF Amplifiers	81
V. D. Zvyorkin, V. G. Bakaev, A. O. Levchenko, A. G. Molchanov, N. N. Ustinovskii (Russia)	81
A three-electrode discharge system for long-pulse high-power KrCl excimer lasers	81
L. C. Casper, H. M. J. Bastiaens, P. J. M. Peters, K. J. Boller, R. M. Hofstra (Netherlands)	81
High-efficient 1.0 J ArF excimer laser on the mixture of He:Ar:F₂	82
A. M. Razhev, A. A. Zhupikov (Russia)	82
Research of shot pulse electrical discharge XeCl laser	82
V. F. Losev, Yu. N. Panchenko, Yu. I. Bychkov, A. G. Yastremsky, S. A. Yampolskaya (Russia)	82
SESSION 14	
<i>Laser Space Applications</i>	
Atmospheric applications of high energy lasers	87
J. R. Cook (USA)	87
High-power 2-micron laser for space-based remote sensing applications	87
U. N. Singh (USA)	87
The airborne laser – laser; a chemist's view	87
K. A. Truesdell (USA)	87
Airborne laser, the integration challenge	88
S. J. Thornton (USA)	88
SESSION 15	
<i>High Power Laser Applications I</i>	
Trends in high power laser applications in civil engineering	91
S. Wignarajah, K. Sugimoto, K. Nagai (Japan)	91
Machining of metals with ultrashort laser pulses: from fundamental investigations to industrial applications	91
F. Dausinger (Germany)	91
Fluid dynamics phenomena at laser beam deep penetration materials processing	92
V. S. Golubev (Russia)	92

Observation of various material surfaces irradiated and cratered with focused ArF laser lights	92
<i>K. Kasuya, T. Notimatsu, Y. Izawa, T. Yamanaka, S. Nakai (Japan), A. Prokopiuk, W. Mroz (Poland)</i>	
Material ablation induced by focused 21.2-nm radiation of Ne-like Zn x-ray laser	93
<i>M. Bittner, L. Juha, M. Kozlová, J. Krásá, V. Létal, Z. Otčenášek, J. Polan, A. R. Prág, B. Rus (Czech Republic), L. Ryč, R. Sobierajski (Poland), M. Stupka (Czech Republic)</i>	
Micro slant-processing by nano-pulsed second harmonic of Nd:YAG laser	94
<i>T. Saito, N. Nakurada, Y. Ishii, Y. Kubota, K. Watanabe (Japan)</i>	
SESSION 16	
<i>High Power Laser Applications II</i>	
Laser induced ignition of gasoline engines	97
<i>G. Liedl, D. Schuöcker, B. Geringer, J. Graf, D. Klawatsch, H. P. Lenz, W. F. Piock, M. Jetzinger, P. Kapus (Austria)</i>	
Integration of coil in high power laser systems	97
<i>A. S. Boreysho (Russia)</i>	
Excavation of methane hydrate using COIL	98
<i>K. Josui, K. Tei, D. Sugimoto, T. Fujioka (Japan)</i>	
Laser welding of AA 2024 – T3 aluminium alloy by using two different laser sources (CO₂ or Nd:YAG)	98
<i>A. D. Ludovico, G. Daurelio, L. A. C. De Filippis, A. Scialpi, F. Squeo (Italy)</i>	
Laser cutting of CVD diamond wafers	99
<i>H. Chmelíčková, M. Stranyánek, J. Rosa, M. Vaněček (Czech Republic)</i>	
SESSION 17	
<i>High Power Laser Applications III</i>	
Propulsion by light: a tribute to the German pioneer Eugen Saenger	103
<i>W. L. Bohn (Germany)</i>	
Propulsion by laser power	103
<i>W. O. Schall (Germany)</i>	
Studies on a 100-Joule-class UV-preionized TEA CO₂ laser	103
<i>D. Zuo, H. Lu, Z. Cheng (China)</i>	
Decomposition experiment of hydro-fluorocarbon gas by pulsed TEA CO₂ laser	104
<i>K. Maeno, K. Toyoda (Japan)</i>	
The use of high-power lasers in diverse cleaning applications; an overview	104
<i>M. Farsari, P. Pouli, V. Zafiropulos, C. Kalpouzos, C. Fotakis (Greece)</i>	
The influence and use of a SFR and LQS Nd-YAG laser beam on the cleaning and restoration of two diverse church façades	105
<i>I. M. Catalano, S. E. Andriani, R. Laviano, F. Vona, G. Daurelio, G. Stea (Italy)</i>	
The application of the DA. LU. method for the L.B.W. efficiency evaluation on different steels and alloys	106
<i>G. Daurelio (Italy)</i>	
POSTER SESSION 1	
Binary diffractive optical element for shaping and brightness improvement of laser beams	109
<i>K. Alt-Ameur, N. Passilly (France)</i>	
Imperfect beam collimation as a source of error in coherence length measurement	109
<i>K. Alt-Ameur, F. Sanchez (France)</i>	
Optical components for adaptive high-power beam delivery in industrial applications	110
<i>M. Ciofini, A. Lapucci (Italy)</i>	
Control of a high-power cw CO₂ laser output beam properties using an adaptive intracavity mirror	110
<i>G. Rabczuk, M. Sawczak (Poland)</i>	
Lineselective CO₂-lasers with variable line-spacing and variable reflectivity silicon gratings	111
<i>R. Schulz, M. Collischon (Germany)</i>	
Frequency stabilization of radio frequency excited CO₂ laser using photoacoustic effect	112
<i>J.-W. Choi (South Korea)</i>	
Relaxation oscillations of power in an unstable resonator of fast-flow laser	112
<i>A. I. Fedoseev, A. V. Moushenkov, A. I. Odintsov, N. E. Sarkarov (Russia)</i>	
Beam homogenisation: theory, modelling and application to an excimer laser beam	113
<i>S. Bollanti, P. Di Lazzaro, D. Murra, E. Tefouet Kana (Italy)</i>	
Software for laser beam profile analysing in accordance with ISO 11146:1999(e)	114
<i>A. G. Selivanov, P. V. Prokoshin (Belarus)</i>	

Thermal lens characterization of a side-pumped bounce geometry Nd:YVO₄ laser	114
A. Agnesi, F. Pirzio, A. Tomaselli, F. Bonfigli, T. Marolo (Italy)	
Dynamic holographic correctors with asymmetrical fringe profile	115
V. Yu. Venediktov, V. A. Berenberg (Russia)	
Simulation of phasing of COIL radiation in fiber bundle with the help of SBS mirror	115
F. A. Starikov, N. N. Gerasimenko, V. A. Eroshenko, G. G. Kochemasov (Russia)	
Development of 5kW COIL	116
Y.-S. Song (China)	
The effects of motive gas physical properties on the flow performance of ejectors for chemical lasers	116
J. Jin, S. Kim, S. Kwon (Republic of Korea)	
Problems and solutions in COIL gas dynamics	117
A. S. Boreysho, A. V. Savin, V. M. Malkov (Russia)	
Ejector COIL with supersonic nozzles for driver N2	117
V. D. Nikolaev (Russia), G. D. Hager (USA), M. I. Svistun, M. V. Zagidullin (Russia)	
Research of heat release in COIL diffuser	118
J. Liu, G.-M. Cai, Y.-S. Song, X.-F. Xie, Y.-Z. Wang (China)	
Performance experiments and scaling studies with jet-type singlet-oxygen generators	118
F. Waiblinger, C. Schreiber, W. O. Schall (Germany)	
Optimization of cross-flow jet-type singlet oxygen generator for ejector-COIL	119
G. Watanabe, D. Sugimoto, K. Tei, T. Fujioka (Japan)	
Gas flow in counter-flow jet SOG	120
I. M. Evdokimov, D. N. Vasilev, A. V. Savin, S. L. Druzhinin (Russia)	
Efficient COIL driven by SOG with filaments-guided jets	120
M. V. Zagidullin, V. D. Nikolaev, M. I. Svistun, N. A. Khvatov (Russia)	
Characteristics of prototype mist singlet oxygen generator for COIL	121
S. Muto, K. Tei, K. Nanri, T. Fujioka (Japan)	
Electrochemical regeneration of basic hydrogen peroxide for chemical oxygen iodine laser	121
M. Endo, M. Hano, S. Wakita, M. Uno, S. Takeda (Japan)	
Singlet oxygen generator on the base of solid-state fullerene-containing structures for fullerene-oxygen-iodine laser design: physical principles	122
I. M. Belousova, V. P. Belousov, O. B. Danilov, A. V. Ermakov, V. M. Kiselev, A. V. Kris'ko, T. D. Murav'eva, A. N. Ponomarev, E. N. Sosnov (Russia)	
Investigations of processes in a glow electrical discharge singlet oxygen generator for oxygen-iodine laser	122
V. Ja. Lodin, V. C. Ikonnikov, S. A. Sirotin, S. I. Zhdanovich, Yu. V. Savin, Yu. A. Adamenkov, Yu. K. Rogojnikov (Russia)	
Effective singlet oxygen production in travelling microwave discharge	123
Yu. V. Savin, L. V. Goryacheva, Yu. A. Adamenkov, T. V. Rakhimova, Yu. A. Mankelevich, N. A. Popov, A. A. Adamenkov, V. V. Egorov, S. P. Ilyin, A. M. Kalashnik, Yu. V. Kolobyanin, E. A. Kudryashov, G. S. Rogozhnikov, B. A. Vyskubenko (Russia)	
Mathematical modeling of singlet oxygen formation in oxygen dc glow discharge	123
S. S. Kharchenko, V. C. Ikonnikov (Russia)	
New mechanism of O₂($\alpha^1\Delta_g$) quenching in oxygen contained plasmas	124
Yu. V. Savin, O. V. Braginsky, A. S. Kovalev, K. S. Klopovsky, D. V. Lopaev, Yu. A. Mankelevich, N. A. Popov, T. V. Rakhimova, A. T. Rakhimov, A. N. Vasileleva (Russia)	
The influence of laser-induced vibrational excitation on the characteristics of a self-sustained volume discharge in strongly electronegative gases	124
A. A. Belevtsev, K. N. Firsov, S. Yu. Kazantsev, I. G. Kononov (Russia)	
A spatial structure and stability of a self-sustained volume discharge in laser-irradiated SF₆ based mixtures	125
A. A. Belevtsev, K. N. Firsov, S. Yu. Kazantsev, I. G. Kononov (Russia)	
Measurements of the thermodynamic parameters for CO laser gas mixture excited by pulsed electron-beam sustained discharge	126
A. Ionin, Yu. Klimachev, I. Kochetov, A. Kotkov, A. Kozlov, A. Kurnosov, A. Napartovich, L. Seleznev, D. Sinitryn, S. Vetroshkin (Russia)	
Technological continuous electric-discharge CO₂-laser of 8 kW power with cross gas pumping and high-quality radiation	126
Yu. V. Afonin, A. P. Golyshev, V. F. Filev, A. M. Orishich, V. S. Pechurin, O. A. Tsvetkov, V. B. Shuliat'ev (Russia)	
A study on supersonic CO₂ laser excited by RF discharge in closed-cycle	127
K. Harada, K. Saito, T. Uchiyama (Japan)	
Electrical parameters of radio frequency excited CO₂ lasers in presence of magnetic field	127
H. Tavassoli, F. Sohbatzadeh, A. Panahpoor, H. Latifi (Iran)	

Output characteristics of a planar RF-excited CO₂ laser with unstable-waveguide hybrid resonator	128
A. Panahpour, M. T. Soltanifard, M. Shirmahi, H. Latifi (Iran)	
Optimization of gas mixture CO₂:N₂:He in active media of CW electric-discharge CO₂-lasers	129
V. V. Nevdakh, M. Ganjali (Belarus)	
Investigation of possibility to employ the dielectric-barrier discharge for excitation of active medium of slab CO₂-laser	129
A. I. Dutov, E. A. Zobov, A. A. Kuleshov, N. A. Novoselov, N. L. Orlov, V. E. Semenov, A. A. Sokolov, A. V. Starovoitov (Russia)	
New approach to the formation of the basic waveguide radiation mode in a high-power slab-type CO₂ lasers	129
A. I. Dutov, A. A. Kuleshov, N. A. Novoselov, N. L. Orlov, V. E. Semenov, A. A. Sokolov, A. V. Starovoitov (Russia)	130
Spectral and thermodynamic effects in pulsed RF excited CO₂ slab-waveguide lasers	130
E. F. Plinski, D. A. Wojaczek, J. S. Witkowski, K. M. Abramski (Poland)	130
New grating tuned resonator fits for high power TEA CO₂ Laser	131
Y. Yu, Ch. Wan (China)	
Nonlinear aperture losses in POWER single-mode technological CO₂ lasers with cross pumping of gas	132
M. G. Galushkin, P. V. Korolenko, A. T. Polosko, V. P. Yakunin (Russia)	132
The investigation of phenomenon of enhancement of turbulence in fast-axial flow CO₂ laser	132
S. A. Buyarov, R. V. Grishayev, M. G. Galushkin, V. S. Golubev, V. D. Dubrov, V. Ya. Panchenko, Yu. N. Zavalov (Russia)	132
Time behavior of small-signal gain on high vibrational transitions for pulsed CO laser amplifier with gas mixtures CO:He, CO:N₂, and CO:O₂	132
Yu. Klimachev, A. Ionin, A. Kotkov, D. Sinitsyn, L. Seleznev, S. Vetroshkin, A. Kozlov, O. Rulev (Russia)	133
The turbulent flow structure of FAF CO₂ laser active medium at the nonuniform temperature and the generation of heat	133
M. G. Galushkin, V. S. Golubev, Yu. N. Zavalov, V. D. Dubrov, R. V. Grishayev, S. A. Buyarov (Russia)	133
High efficient optical pumping of the broadband (CO₂ + N₂O) laser medium	134
M. A. Azarov, B. S. Alexandrov, A. V. Arsenjev, A. P. Burtsev, V. A. Drozdov, V. I. Mashendzhinov, G. A. Troshchinenco (Russia)	134
The phase-conjugation method of remote measurement of turbulent flow parameters	134
S. A. Buyarov, M. G. Galushkin, V. D. Dubrov, Yu. N. Zavalov, V. Ya. Panchenko (Russia)	134
A high average power Copper vapour + HCl-H₂ laser	135
E. Le Guyadec, P. Nouvel, P. Regnard (France)	135
Influence of magnetic field on the output laser pulse duration of a copper vapor laser	135
H. Ghomi, H. Latifi, B. Shokri (Iran)	135
Theoretical investigation of copper vapor laser with modified kinetics	136
O. V. Zhdaneev (Russia)	
Calculations of effective cross sections and rates of the elementary processes at work in a strontium vapor laser	136
A. N. Soldatov, E. A. Deryabina, A. V. Stebeneva, A. G. Filonov (Russia)	136
UV Cu⁺ Ne-CuBr laser – laser tube lifetime and some problems with gas mixture	137
N. K. Vuchkov, K. A. Temelkov, N. V. Sabotinov (Bulgaria)	137
Lasing of molecular HBr in the four micron region pumped by a DF-laser	137
A. P. Burtsev, I. G. Burtseva, V. I. Mashendzhinov, V. V. Sudarikov, E. A. Klimuk (Russia)	137
Laser action investigation on calcium ion self-terminating transitions	138
E. A. Svitlichnyi, V. A. Kelman, Yu. V. Zhmenyak, Yu. O. Shpenik (Ukraine)	138
Kinetics and vibrational relaxation of XeF(B) and XeF(C) states by steady-state 160 nm photolysis of XeF_nAr, Kr, N₂, CO₂, O₂, CF₆, C₂F₆, C₃F₈, SF₆ mixtures	138
V. P. Fokanov, A. B. Pavlov, V. S. Ivanov, V. B. Sovkov, D. V. Yudnikov (Russia)	139
Improvement of simulation computing for discharge excited gas lasers	139
M. Taniwaki, K. Shimizu, S. Sato, T. Tabei, Y. Maekawa, M. Iyoda (Japan)	139
Simulation for discharge excited gas mixture executed by cellular phones	140
T. Tabei, Y. Maekawa, M. Iyoda, M. Taniwaki, K. Shimizu, S. Sato (Japan)	140
Progress in the development of compact excimer lasers	140
A. Görtler, C. Strowitzki (Germany)	
The development of a long pulse excimer laser system	141
V. F. Losev, B. M. Kovalchuk, V. F. Tarasenko, Yu. N. Panchenko, N. G. Ivanov, V. B. Zorin, V. S. Skakun, I. N. Konovalov, A. N. Panchenko, E. N. Abdullin, V. S. Tolkachev (Russia), J. R. Liu, A. P. Yi, X. Q. Zhao, Y. S. Zhang, L. Yu, L. Y. Ma, K. Huang, Y. Tang, X. Huang, X. H. Wang, X. Yuan, X. S. Ye, L. J. Wang (China)	141
The influence of isotopic composition on emission spectrum of XeCl laser	141
N. G. Zubrilin, S. I. Osypov, I. A. Pavlov (Ukraine)	141

Wide aperture discharge-pumped XeCl laser triggered by X-ray and e-beam	142
V. F. Losev, N. G. Ivanov (Russia)	
Vacuum ultraviolet argon excimer laser at 126 nm initiated by high intensity laser produced electrons	143
S. Kubodera, Y. Morita, T. Higashiguchi, W. Sasaki (Japan)	
Planar sliding discharge-driven UV excimer light source	143
N. N. Guivan, L. L. Shimon (Ukraine), J. Janča, A. Brabec, P. Sláviček, P. Stahel (Czech Republic)	
Compact 4 kHz XeF-laser with multisectional discharge gap	144
A. V. Andramanov, S. A. Kabaev, B. V. Lazhintsev, V. A. Nor-Areyan, V. D. Selemir (Russia)	
Gas discharge UV- and VUV-lasers with high average radiation power on the chemical stability molecules	144
B. A. Kozlov, N. A. Egoshkin, D. I. Ponomaryov (Russia)	
EUV emission from laser-produced plasma using water-jet target	145
T. Higashiguchi, Ch. Rayaguru, M. Koga, W. Sasaki, S. Kubodera (Japan)	
Study on discharge instabilities in high pressure helium-fluorine gas mixtures	146
D. Mathew, H. M. J. Bastiaens, P. J. M. Peters, K.-J. Boller (Netherlands)	
High-energy wide-aperture lasers pumped by radially convergent electron beams	146
V. F. Tarasenko, A. V. Fedenev, V. M. Orlovskii, V. S. Skakun (Russia)	
UV and VUV light sources on R₂* and RX* molecules	147
V. F. Tarasenko, M. V. Erofeev, M. I. Lomaev, V. S. Skakun, E. A. Sosnin, D. V. Shitz (Russia)	
Decoherence vs. Coulombic interaction in quantum systems with excitation energy transfer	147
M. Pojsík, P. Heřman, I. Barvík, M. Petřík (Czech Republic)	
Frequency converter development for the SG-III laser facility	148
Ch. Ma (China)	
Q switching of the resonator in the solid-state laser with use of self-generating holographic feedback	148
M. G. Galushkin, D. V. Zelenin, K. V. Mitin, A. M. Seryogin (Russia)	
Development of an adaptive optical system for phase correction of laser beams with wave front dislocations: generation of an optical vortex	148
F. A. Starikov, G. G. Kochemashov, S. M. Kulikov, A. N. Manachinsky, N. V. Maslov, A. V. Ogorodnikov, A. O. Shkrebo (Russia)	
Close-loop adaptive optical system for short pulse high-power laser systems	149
V. Ye. Zavalova, A. G. Alexandrov, A. L. Rukosuev, P. N. Romanov, V. V. Samarkin, A. V. Kudryashov (Russia)	
Pulse stretcher for chirped pulse amplification with a high power- and spectral-transmissions	150
M. Divoky, P. Straka (Czech Republic)	
A novel method of wavelength selection in an optical parametric oscillator	150
M. K. Moodley, J. Zwanepoel (South Africa)	
Influence of pump radiation non-monochromaticity on power efficiency of the optical parametrical oscillator	151
M. G. Galushkin, D. V. Zelenin, K. V. Mitin, A. M. Seryogin (Russia)	
Bandwidth increase by controlled angular dispersion of signal beam in optical parametric amplification	151
L. Cardoso, G. Figueira, N. Lopes, J. Wemans, J. T. Mendonça (Portugal)	
The features of coherent stimulated emission of Pr doped into LaF₃ matrix	152
G. G. Grigoryan, N. V. Znamenski Yu. V. Orlov, E. A. Petrenko, A. Yu. Shashkov (Russia)	
Laser diagnostics of the plasma in the S-300 pulsed power generator	152
Yu. G. Kalinin, A. V. Korel'skii, E. V. Kravchenko, A. Yu. Shashkov (Russia)	
Automatized tunable CO-laser for medicine, ecology and laser media and material study	153
Yu. Bulkin, A. Adamenkov, E. Kudryashov, V. Buzovtvera, M. Derugin, S. Novikov, V. Masychev (Russia)	
IGBT lifetime in all-solid-state pulsers for CO₂ tea lasers	153
T. Stehrmann, H. M. von Bergmann (South Africa)	
POSTER SESSION 2	
A new high pressure nozzle bank based on trip-jet mixing system	157
D. Sugimoto, K. Tei, T. Fujioka (Japan)	
High-efficiency mixing in high-power COIL. Experiments and numerical simulation	157
A. V. Savin, D. N. Vasilev, I. M. Evdokimov, S. Druginin (Russia)	
Numerical simulation of supersonic-flow chemical oxygen-iodine laser with high Mach-number ramp-nozzle array	157
M. Suzuki, K. Ito, W. Masuda (Japan)	
Numerical modelling of subsonic COIL with an arbitrary magnetic modulation	158
J. Beránek, K. Rohlena (Czech Republic)	
Measurement of molecular electronic ground state oxygen O₂(a³Σ) in COIL device	158
F. Duscheck, K. Grünwald, J. Handke, W. Schall (Germany)	

O₂(a'Δ_g) concentration measuring by intracavity laser spectroscopy of b'Σ_g - a'Δ_g transition	159
M. P. Frolov, A. A. Ionin, I. V. Kochetov, A. P. Napartovich, Y. P. Podmar'kov, N. P. Vagin, N. N. Yuryshев (Russia)	159
Role of vibrationally excited O₂(1Δ) in COIL	159
I. O. Antonov, V. N. Azyazov, S. Yu. Pichugin, N. I. Ufimtsev (Russia)	159
Experimental study of iodine dissociation in chemical oxygen iodine lasers	160
V. Rybalkin, A. Katz, B. D. Barmashenko, S. Rosenwaks (Israel)	160
Generation of atomic iodine for a COIL via atomic fluorine at higher pressure	161
M. Čenský, O. Špalek, V. Jirásek, J. Kodymová, I. Jakubec (Czech Republic)	161
3-D modeling of instantaneous chemical generation of atomic iodine in COIL	161
V. Jirásek (Czech Republic)	161
Modeling of the all gas-phase iodine laser (AGIL)	162
T. J. Madden, G. C. Manke II, G. D. Hager (USA)	162
Effect of NCl(a'Δ) self-annihilation on the performance of NCl(a'Δ)/I laser	162
S. Tang, L. Duo, F. Sang (China)	162
Numerical studies on hybrid resonators suitable for COIL	163
T. Hall, F. Duschek, K. M. Grünewald, J. Handke, W. O. Schall (Germany)	163
Unstable multi-pass resonator for ten-kW-class nitrogen-based supersonic COIL	163
S. L. Druzhinin, A. V. Savin, S. Yu. Strahov (Russia)	163
Industrial COIL systems. Part 1. Laser beam delivery by fiber	164
S. P. Ilyin, A. A. Adamenkov, V. V. Bakshin, V. V. Buzovarya, V. I. Efremov, D. G. Kochiev, Yu. V. Kolobyanin, V. B. Moiseev, B. A. Vyskubenko (Russia)	164
Industrial COIL systems. Part 2. Gas-laser cutting	164
Yu. V. Kolobyanin, I. A. Bulatkin, V. V. Kalinovski, V. V. Konovalov, V. B. Moiseev, Vic. D. Nikolaev, L. N. Shornikov, R. E. Sobolev, B. A. Vyskubenko (Russia)	164
Long range fiber delivery of COIL for petroleum applications	164
N. Takeuchi, K. Tei, D. Sugimoto, T. Fujioka (Japan)	164
Diffusers of COIL and DF-lasers	165
A. S. Boreysho, V. M. Malkov, A. V. Savin, S. Druginin, I. A. Kiselev (Russia)	165
One-stage free-vortex air-dynamic window with pressure ratio 100 and atmospheric exhaust.	165
Experiments and numerical simulation	165
V. M. Malkov, A. V. Trilis, A. V. Savin, S. L. Druzhinin (Russia)	165
Slow elastic solitary waves with discrete velocities in optical fiber at high CW laser power transmission experiments (conclusions from DLR-Institute of Technical Physics data analysis)	166
E. M. Kudriavtsev (Russia)	166
A cw chemical HF laser with a new method of oxidizing gas creation	167
V. K. Rebone, I. A. Fedorov, Yu. P. Maksimov, M. A. Rotinyan, N. E. Tret'yakov, A. L. Etsina (Russia)	167
A cw Q-switch chemical HF laser	167
V. I. Mashendzinov, V. E. Revitch, V. V. Sudarikov, V. A. Eller, M. A. Azarov, Yu. P. Maksimov, M. A. Rotinyan, N. E. Tret'yakov, I. A. Fedorov, A. L. Etsina (Russia)	167
HF-repetitively pulsed chemical laser with a large discharge gap, operating on the mixture F₂ + H₂	168
B. S. Alexandrov, E. A. Klimuk, C. A. Kutumov (Russia), B. Lacour, V. Puech (France), G. A. Traschchinenco (Russia)	168
Influence of various kinetic models on the numerical simulation of cw HF and DF chemical lasers	169
B. P. Aleksandrov (Russia)	169
2D numerical model of the two-band cw chemical laser on HF and HBr	169
B. P. Aleksandrov, A. A. Stepanov (Russia)	169
Laser beam profile formation in HF laser with plate-like electrodes	170
A. V. Andramanov, S. A. Kabaev, A. N. Korzenev, B. V. Lazhintsev, V. A. Nor-Areyan, A. V. Pisetskaya, V. D. Selemir (Russia)	170
Investigation of Q-switching & mode locking in diode pumped Nd:YVO₄ laser with passive saturable absorbers	171
J. Kwiatkowski, J. K. Jabczynski, W. Zendzian (Poland)	171
Q-switched Nd:YAG/V:YAG monolith microlaser	171
J. Šulc, H. Jelínková, K. Nejezchleb, V. Skoda (Czech Republic)	171
Intracavity optical parametric oscillator pumped by acousto-optically Q-switched Nd:YVO₄ laser	172
W. Zendzian, P. Wachulak, J. K. Jabczyński, J. Kwiatkowski (Poland)	172
All solid-state picosecond flashlamp pumped oscillator-amplifier Nd:YAG laser system	172
H. Jelínková, M. Čech, V. Kubeček, A. Dombrovský (Czech Republic), J.-C. Diels, A. Stintz (USA)	172
Effects of fiber length on the output characteristics of Ytterbium – doped double – clad fiber laser	173
Q. Lou, J. Zhou, J. Zhu, L. Kong, D. Xue, Z. Wang (China)	173

Electrooptically Q-switch Er:YAG laser and its application	173
P. Koranda, M. Němec, H. Jelínková, J. Šulc, M. Čech (Czech Republic), Y.-W. Shi, Y. Matsuura, M. Miyagi (Japan)	173
Dyes in PMMA	174
H. Ch. Lee (Republic of Korea)	174
Evaluation of Yb³⁺ doped crystals for laser pulse amplification	174
A. S. Yasukevich, V. G. Shcherbitsky, V. E. Kisel, A. V. Mandrik, N. V. Kuleshov (Belarus)	174
Quantum-defect-limited operation of Yb:YAG crystal	175
J. Kawanaka, M. Fujita, T. Shoji, S. Tokita, Y. Izawa (Japan)	175
Laser performance of Yb³⁺(30 at. %)-KY(WO₄)₂	175
A. E. Troshin, V. E. Kisel, V. G. Shcherbitsky, N. V. Kuleshov (Belarus)	175
Pumping mechanisms for Er:YAG upconversion lasers	176
O. Toma, S. Georgescu (Romania)	176
Ultra-short pulsed laser generated by four-wave Raman mixing communication applications	176
O. A. Hamadi, H. M. Mikhli, M. A. Ahmed (Iraq)	176
Characterisation and optimisation of a multiterawatt CPA laser system using SPIDER	177
J. Wemans, G. Figueira, N. Lopes, L. Cardoso, J. T. Mendonça (Portugal)	177
L2I multiterawatt Ti:sapphire/Nd:glass laser facility: performance and characterisation	177
G. Figueira, N. Lopes, L. Cardoso, J. Wemans, J. M. Dias, M. Fajardo, C. Leitão, J. T. Mendonça (Portugal)	177
Measurement of sub-15-fs laser pulses by a light-emitting diode	178
M. Smrž, P. Straka (Czech Republic)	178
Basic processes of pulsed laser-materials interaction. Applications to laser cleaning of oxidized surfaces before bonding	178
M. Autric, R. Oltra (France)	178
Ab initio selective UV laser cleaning	179
F. Belloni, G. Buccolieri, A. Castellano, D. Doria, A. Lorusso, V. Nassisi (Italy)	179
Investigation of the laser cleaning effect on Gotlandic sandstone by means of colorimetric and surface analysis	179
M. Janowska, G. Sliwinski (Poland)	179
Investigation of the laser cleaning effect on historical wood-pulp paper documents	180
A. Kaminska, M. Sawczak, G. Sliwinski (Poland)	180
Influence of basic parameters of metal cutting with gas laser on process energy efficiency	180
V. A. Karasev, M. G. Galushkin, V. S. Golubev, V. Ya. Panchenko, E. O. Filippova (Russia)	180
Laser drilling of AlN ceramics using nanosecond laser pulses	181
N. N. Nedalkov, P. A. Atanasov (Bulgaria), M. Sawczak, G. Sliwinski (Poland)	181
Optimization of laser microdrilling in heat resisting alloys	181
M. V. Volkov, V. A. Serebryakov (Russia), X. Zhang (China)	181
Pulsed laser welding of cylindrical profiles	182
R. Čtvrtík, M. Havelková (Czech Republic)	182
A quantitative evaluation of the L. B. W. efficiency on AISI 304 bead on plates welded under different focusing and tilted laser beam conditions	182
G. Daurelio, A. D. Ludovico, L. A. C. De Filippis, S. Rocco, A. M. Spera (Italy)	182
High speed joining of polymeric plastics by using different laser sources (CO₂, Nd - YAG and H. P. D. L.)	183
G. Daurelio, F. Memola Capece Minutolo, F. Curcio, F. Chiazzo (Italy)	183
Ti6Al4V sheets lap and butt joints carried out by CO₂ Laser: L. B. W. efficiency versus thermo-physical properties, mechanical and morphological characterization	184
F. Memola Capece Minutolo, F. Curcio, G. Daurelio, F. Caiazzo (Italy)	184
Study of microstructure and performance of knife-edge by laser hardening	184
J. Yao, Z. Chen, D. Sun (China)	184
Direct laser cladding of stellite coatings and selection of process parameters	185
R. Jendrzejewski, G. Sliwinski (Poland), A. Conde, C. Navas, J. de Damborenea (Spain)	185
Laser cladding of the protective coatings of limited cracking susceptibility	185
R. Jendrzejewski, G. Sliwinski, M. Krawczuk, W. Ostachowicz (Poland)	185
Results of micro-analyses of Ni-Cr-Si laser clad structures	186
M. Stranyánek, H. Chmelíčková, M. Hrabovský (Czech Republic)	186
A concept study on ignition of gasoline engines	187
M. Matysová, G. Liedl, D. Schuöcker (Austria)	187
Three-dimensional processing for plastic bulk material by a segmented pixel drawing method using a CO₂ laser	187
N. Sakurada, Y. Ishii, Y. Kubota, K. Watanabe (Japan)	187