

## PALS publication 2004 - 2005

### *High Power Lasers*

- M. Divoky, P. Straka: **Pulse stretcher for chirped pulse amplification with high power- and spectral-transmissions**, poster P1-74, XV International Symposium on Gas Flow and Chemical Lasers & High Power Lasers Conference (GCL-HPL 2004), 30 Aug - 03 Sep 2004, Prague, Proc. of SPIE 5777, p. 762-765.
- M. Divoky, P. Straka, P. Bohm; **Off-plane diffraction in pulse stretcher and compressor**; The European Conference on Lasers and Electro-Optics (CLEO@/Europe), The European Quantum Electronics Conference (EQEC) 16-16 June 2005, Munchen, Germany.
- J. Dostal, G. Kuhnova, H. Turcicova: **Pump Beam Preparation for the OPCPA Method in SOFIA Laboratory**, 13th Annual Conference of Doctoral Students WDS'04, June 15-18, Prague, pp. 559-565.
- K. Jungwirth: **Recent highlights of the PALS research programme**, invited talk, XXVIII ECLIM. Roma (It), September 6-10, 2004, Proc. XXVIII ECLIM p. 243-248.
- K. Jungwirth: **Laser research at the Institute of Physics AS CR**, Invited talk, XV International Symposium on Gas Flow and Chemical Lasers & High Power Lasers Conference, 30 Aug 2004 - 03 Sep 2004, Prague, Proc. of SPIE 5777, p. 1-7.
- K. Jungwirth: **Recent highlights of the PALS research program**; Laser and Particle Beams 23 (2): 177-182 June 2005.
- M. Kalal, S. Yu. Gus'kov, A. Kasperczuk, V. N. Kondrashov, E. Krousky, J. Limpouch, K. Masek, T. Pisarczyk, K. Rohlena, J. Skala, J. Ullschmied: **Prague Asterix Laser System (PALS) activities in laser fusion oriented research**, ASIA – PACIFIC LASER SYMPOSIUM (APLS 2004), 1-6 March 2004, Yongpyong, Republic of Korea.
- M. Kalal, K. Jungwirth, B. Kralikova, E. Krousky, J. Limpouch, K. Masek, M. Pfeifer, K. Rohlena, B. Rus, J. Skala, P. Straka, H. Turcicova, J. Ullschmied: **PALS (Prague Asterix Laser System) – Current status and the outlook towards the femtosecond petawatt facility**, ASIA – PACIFIC LASER SYMPOSIUM (APLS 2004), 1-6 March 2004, Yongpyong, Republic of Korea.
- M. Kalal, K. Jungwirth, E. Krousky, K. Masek, M. Pfeifer, K. Rohlena, B. Rus, J. Skala, J. Ullschmied: **Prague Asterix Laser System - PALS: Overview of Latest Activities** (Invited), 2nd Int. Conf. On the Frontiers of Plasma Physics and Technology, Goa, India, February 22-26, 2005.
- M. Smrz, P. Straka: **Measurement of sub-15-fs laser pulses by a light-emitting diode**, poster P2-41, XV International Symposium on Gas Flow and Chemical Lasers & High Power Lasers Conference (GCL-HPL 2004), 30 Aug 2004 - 03 Sep 2004, Prague, Proc. of SPIE 5777, p. 646-649.
- H. Turcicova, J. Dostal, G. Kuhnova, J. Knyttl, J. Skala, M. Pfeifer, M. Divoky, M. Smrz, O. Novak, P. Bohm, P. Straka: **Hybrid laser chain SOFIA as a test laboratory for the petawatt up-grade of Prague Asterix Laser System (PALS)**, International Workshop on Optical Parametric Processes and Periodical Structures, Vilnius, Lithuania, September 26-29, 2004, TuA2.
- H. Turcicova, J. Dostal, G. Kocourkova, J. Knyttl, J. Skala, M. Pfeifer, M. Divoky, M. Smrz, O. Novak, P. Bohm, A. Dombrovsky, W. Belardi, P. Straka: **Solid-state-gas-laser SOFIA as a pump for the optical parametric chirped pulse amplification**, oral S5-5, XV International Symposium on Gas Flow and Chemical Lasers & High Power Lasers Conference (GCL-HPL 2004), 30 Aug - 03 Sep 2004, Prague, Proc. of SPIE 5777, p. 631-635.
- H. Turcicova, J. Skala, P. Straka, J. Dostal, G. Kocourkova, J. Knyttl, M. Divoky, M. Smrz, O. Novak, P. Bohm, A. Dombrovsky; **Application of the hybrid laser SOFIA for OPCPA pumping**; The European Conference on Lasers and Electro-Optics (CLEO@/Europe), The European Quantum Electronics Conference (EQEC) 16-16 June 2005, Munchen, Germany.

### *XUV Lasers & Applications*

- M. Bittner, L. Juha, M. Kozlova, J. Krasa, V. Letal, Z. Otcenasek, J. Polan, A. R. Präg, R. Sobierajski, M. Stupka, B. Rus: **Ablation of poly(methyl methacrylate) induced by focused 21.2-nm laser radiation**, 31st EPS Conference on Plasma Phys. London, 28 June - 2 July 2004, ECA Vol.28B, P-5.009, 2004.
- M. Bittner, L. Juha, J. Krasa, Z. Otcenasek, B. Rus, M. Kozlova, J. Polan, M. Stupka, A. R. Präg, R. Sobierajski, L. Ryc: **Ablation of materials by 21.2-nm laser**, 13<sup>th</sup> Annual Student Conference Week of Doctoral Students, Prague, June 15-18 2004.

- M. Bittner, L. Juha, B. Rus, M. Kozlova, J. Krasa, Z. Otcenasek, J. Polan, A. R. Praeg, M. Stupka, L. Ryc, R. d. H. Sobierajski: **Material ablation induced by focused 21.2-nm radiation from Ne-like Zn x-ray laser**, Proc. SPIE 5777, pp. 965-969 (2005).
- K. Cassou, D. Ros, S. Kazamias, A. Klisnick, G. Jamelot, O. Guilbaud, B. Rus, M. Kozlova, J. Polan, A. R. Prag, M. Stupka, G. Eot-Houllier, E. Sage, M. Begusova, V. Stisova, MAH du Penhoat, A. Touati, A. Chetiou; **Study of damages induced in DNA by X-UV laser irradiation at 21.2 nm**; Journal de Physique IV 127: 177-180, June 2005.
- M. H. Edwards, P. Mistry, D. S. Whittaker, M. Vopsaroiu, G. J. Pert, G. J. Tallents, B. Rus, T. Mocek, M. Kozlova, J. Polan, A. Praeg, M. Stupka, P. Homer: **Ablation rates of iron and aluminium measured using an x-ray laser**, Soft X-Ray Lasers and Applications VI, Proc. SPIE 5919, 205-212 (2005).
- G. Jamelot, D. Ros, A. Carillon, B. Rus, T. Mocek, M. Kozlova, A. R. Prag, D. Joyeux, D. Phalippou, M. Boussoukaya, M. Kalmykow, F. Ballester, E. Jacques; **Nanometric deformations of thin Nb layers under a strong electric field using soft x-ray laser interferometry**; Journal of Applied Physics 98 (4): Art. No. 044308, August 2005.
- L. Juha, M. Bittner, M. Kozlova, J. Krasa, V. Letal: **Material ablation induced by focused 21.2-nm radiation from Ne-like Zn x-ray laser**, oral S15-5, XV International Symposium on Gas Flow and Chemical Lasers & High Power Lasers Conference, 30 Aug 2004 - 03 Sep 2004, Prague, Proc. of SPIE 5777, p. 965-969.
- M. Kozlova, B. Rus, T. Mocek, J. Polan, M. Stupka, A. R. Prag, P. Homer, G. Jamelot, J. Lagron, D. Ros, K. Cassou, S. Kazamias, J. J. Park, C. H. Nam: **Double Lloyd's mirror: versatile instrument for XUV surface interferometry and interferometric microscopy**, Soft X-Ray Lasers and Applications VI, Proc. SPIE 5919, 194-204 (2005).
- T. Mocek, B. Rus, M. Kozlova, J. Polan, A. R. Prag, M. Stupka, P. Homer, G. Tallents, M. Edwards, P. Mistry, D. Whittaker, M. Bittner, L. Juha, G. Jamelot, K. Cassou, S. Kazamias, D. Ros, A. Klisnick, M. Boussoukaya, M. Davidkova, V. Stisova, D. Joyeux; **Development and applications of 10-mJ x-ray lasers at PALS**; Proc. SPIE Vol. 5919, p. 120-131, Soft X-Ray Lasers and Applications VI, September 2005.
- B. Rus, M. Kozlova, J. Polan, A. R. Prag, M. Stupka, T. Mocek: **Development and user applications for soft x-ray lasers at PALS**, invited paper S10-2, XV International Symposium on Gas Flow and Chemical Lasers & High Power Lasers Conference, 30 Aug 2004 - 03 Sep 2004, Prague, Proc. of SPIE 5777, p. 617-622 (2005).
- B. Rus, G. Jamelot, H. Bercegol, M. Kozlova, T. Mocek, P. Homer, J. Polan, M. Stupka, K. Cassou, S. Kazamias, A. Klisnick, D. Ros, C. Danson, S. Hawkes; **Advanced optical damage studies using x-ray laser interferometric microscopy**; Proc. SPIE Vol. 5919, p. 146-154, Soft X-Ray Lasers and Applications VI, September 2005.
- G. J. Tallents, M. H. Edwards, P. Mistry, D. S. Whittaker, N. Booth, G. J. Pert, B. Rus, T. Mocek, M. Kozlova, C. L. S. Lewis, C. McKenna, A. Delseriey, M. Notley, D. Neely: **Hot dense plasma opacity measurements using x-ray lasers**, Soft X-Ray Lasers and Applications VI, Proc. SPIE 5919, 112-119 (2005)

## *XUV Radiation Sources & Applications*

- H. Fiedorowicz, A. Bartnik, L. Juha, K. Jungwirth, B. Kralikova, J. Krasa, P. Kubat, M. Pfeifer, L. Pina, P. Prchal, K. Rohlena, J. Skala, J. Ullschmied, M. Horvath, J. Wawer: **High-brightness laser plasma soft X-ray source using a double-stream gas puff target irradiated with the Prague Asterix Laser System (PALS)**, Journal of Alloys and Compounds, 362 (1-2), 67-70, 14 January 2004.
- G. Poletti, F. Orsini, J. Ullschmied, J. Skala, B. Kralikova, M. Pfeifer, C. Kadlec, T. Mocek, A. R. Prag, F. Cotelli, C. L. Lamia, D. Batani, A. Bernardinello, T. Desai, A. Zullini: **X-ray microscopy and imaging of Caenorhabditis elegans nematode using a laser-plasma-pulsed x-ray source**, proc. SPIE 5196, 375-382, January 2004, Laser-Generated and Other Laboratory X-Ray and EUV Sources, Optics and Applications.
- G. Poletti, F. Orsini, D. Batani, A. Bernardinello, T. Desai, J. Ullschmied, J. Skala, B. Kralikova, E. Krousky, L. Juha, M. Pfeifer, C. Kadlec, T. Mocek, A. Prag, O. Renner, F. Cotelli, C. L. Lamia, A. Zullini: **Soft X-ray contact microscopy of nematode Caenorhabditis elegans**, European Physical Journal, D 30 (2), 235-241, August 2004.

## *XUV Ablation*

- A. Bartnik, H. Fiedorowicz, R. Jarocki, L. Juha, J. Kostecki, R. Rakowski, M. Szczurek; **Micromachining of organic polymers by X-ray photo-etching using a 10 Hz laser-plasma radiation source**; Microelectronic Engineering 78-79: 452-456 Sp. Iss. SI, March 2005.
- M. Bittner, L. Juha, D. Chvostova, V. Letal, J. Krasa, Z. Otcenasek, M. Kozlova, J. Polan, A. R. Praeg, B. Rus, M. Stupka, J. Krzywinski, A. Andrejczuk, J. B. Pelka, R. Sobierajski, J. Feldhaus, F. P. Boody, M. E. Grisham, G. O. Vaschenko, C. S. Menoni, J. J. Rocca: **Comparing ablation induced by fs, ps, and ns XUV-laser pulses**,

Proc. Intern. Symposium High-Power Laser Ablation, Taos 25 – 30 April 2004, NM, USA, Proc SPIE Vol. 5448, pp. 827-836, 2004.

H. Fiedorowicz, A. Bartnik, M. Bittner, L. Juha, J. Krasa, P. Kubat, J. Mikolajczyk, R. Rakowski: **Micromachining of organic polymers by direct photo-etching using a laser plasma X-ray source**, Microelectronic Engineering, Vol. 73-74, 336-339, June 2004.

H. Fiedorowicz, M. Bittner, A. Bartnik, L. Juha, J. Krása: **Photo-etching of organic polymers using a laser plasma XUV source irradiated with the PALS facility**, poster P2-65, XV International Symposium on Gas Flow and Chemical Lasers & High Power Lasers Conference, 30 Aug 2004 - 03 Sep 2004, Prague, Proc. of SPIE 5777, p. 970-973 (2005).

L. Juha, M. Bittner, D. Chvostova, V. Letal, J. Krasa, Z. Otcenasek, M. Kozlova, J. Polan, A. R. Prag, B. Rus, M. Stupka, J. Krzywinski, A. Andrejczuk, J. B. Pelka, R. Sobierajski, L. Ryc, J. Feldhaus, F. P. Boody, M. E. Grisham, G. O. Vaschenko, C. S. Menoni, J. J. Rocca: **XUV-laser induced ablation of PMMA with nano-, pico-, and femtosecond pulses**, The Fourteenth International Conference on Vacuum Ultraviolet Radiation Physics, July 19-23 2004, Cairns, Australia, Journal of Electron Spectroscopy and Related Phenomena, 144: 929-932 Sp. Iss. SI, JUN 2005.

L. Juha, M. Bittner, D. Chvostova, V. Letal, J. Krasa, Z. Otcenasek, M. Kozlova, M. Pfeifer, J. Polan, A.R. Prag, B. Rus, M. Stupka, J. Feldhaus, J. Krzywinski, R. Nietubyc, J. B. Pelka, A. Andrejczuk, R. Sobierajski, L. Ryc, F. P. Boody, H. Fiedorowicz, A. Bartnik, J. Mikolajczyk, R. Rakowski, P. Kubat, L. Pina, M. Horvath, M. E. Grisham, G. O. Vaschenko, C. S. Menoni, J. J. Rocca; **Short-wavelength ablation of molecular solids: pulse duration and wavelength effects**; SPIE Annual Meeting 2004, August 2-6 2004, Denver CO USA, Proc. SPIE 5534, 95-107 (2004), Fourth Generation X-Ray Sources and Optics II, J. Microlith. Microfab. Microsyst. 4(3), Art. No. 033007 (2005)

L. Juha, M. Bittner, D. Chvostova, J. Krasa, Z. Otcenasek, A. R. Prag, J. Ullschmied, Z. Pientka, J. Krzywinski, J. B. Pelka, A. Wawro, M. E. Grisham, G. Vaschenko, C. S. Menoni, J. J. Rocca: **Ablation of organic polymers by 46.9-nm laser radiation**, Appl. Phys. Lett., 86 (3): Art. No. 034109 JAN 17 2005.

L. Juha, M. Bittner, D. Chvostova, J. Krasa, Z. Otcenasek, A.R. Prag, J. Ullschmied, Z. Pientka, J. Krzywinski, J.B. Pelka, A. Wawro, M.E. Grisham, G. Vaschenko, C.S. Menoni, J.J. Rocca; **Ablation of organic polymers by 46.9-nm-laser radiation**; Applied Physics Letters 86 (3): Art. No. 034109, January 2005.

L. Juha, M. Bittner, M. De Grazia, J. Feldhaus, J. Gaudin, S. Guizard, S. Jacobi, M. Kozlova, J. Krasa, J. Krzywinski, H. Merdji, C. Michaelsen, T. Mocek, R. Nietubyc, M. Jurek, J. Polan, A. R. Prag, B. Rus, R. Sobierajski, B. Steeg-Keitel, M. Stoermer, M. Stupka, V. Vorlicek, J. Wiesmann, J. Wild; **Radiation damages to amorphous-carbon optical coatings**; Proc. SPIE Vol. 5917, p. 91-96, Fourth Generation X-Ray Sources and Optics III, August 2005.

M. Kalbac, L. Kavan, L. Juha, S. Civis, M. Zikalova, M. Bittner, P. Kubat, V. Vorlicek, L. Dunsch; **Transformation of fullerene peapods to double-walled carbon nanotubes induced by UV radiation**; CARBON 43 (8): 1610-1616 July 2005.

J. Vacik, H. Naramoto, S.I. Kitazawa, S. Yamamoto, L. Juha; **Laser-induced phase separation in the nickel-fullerene nano-composite**; Journal of Physics and Chemistry of Solids 66 (2-4): 581-584 Sp. Iss. SI, FEB-APR 2005

R. Viskup, L. Juha, J. Krasa: **Influence of irradiation conditions on polytetrafluoroethylene ablation induced by soft x-rays emitted from laser-produced plasma**, Acta Physica Slovaca, vol. 54, no. 3, 277-284, June 2004.

## *XUV Detection*

J. Krasa, L. Juha, V. Vorlicek, A. Cejnarova: **Application of CVD diamonds as dosimeters of soft X-ray emission from plasma sources**, Nucl. Instrum and Methods in Physics Research A 524 (1-3), 332-339, 21 May 2004.

L. Ryć, J. Krása, L. Láška, K. Rohlena, J. Skála; **Three-hump curve of laser plasma X-ray emission vs. Varied focusing conditions**; Int. Conf. PLASMA-2005 on Research and Applications of Plasmas combined with the 3rd German-Polish Conference on Plasma Diagnostics for Fusion and Applications and the 5th French-Polish Seminar on Thermal Plasma in Space and Laboratory, Opole-Turawa, Poland, September 6-9, 2005, AIP Conf. Proc.

L. Ryc, P. Machac, A. Bartnik, L. Juha, J. Kaczmarczyk, J. Krasa, J. Mikołajczyk, M. Bittner, M. Pfeifer and J. Ullschmied, **Application of Resistive Bolometer to Measurement of X-ray Radiation from Laser Plasmas**, Int. Conf. PLASMA-2005 on Research and Applications of Plasmas combined with the 3rd German-Polish Conference on Plasma Diagnostics for Fusion and Applications and the 5th French-Polish Seminar on Thermal Plasma in Space and Laboratory, Opole-Turawa, Poland, September 6-9, 2005, AIP Conf. Proc.

## *XUV Spectroscopy*

F. B. Rosmej, A. Y. Faenov, T. A. Pikuz, A. Calisti, L. Godbert-Mouret, R. Stamm, B. Talin, H. R. Griem, R. C. Elton, V. L. Jacobs, M. Geissel, D. H. Hoffmann, M. Schollmeier, E. E. Fill, K. J. Witte, O. Renner, E. Krousky, J. Krasa, L. Láška, B. Kralikova, J. Skála, M. Bodnar: **Overview of x-ray spectroscopy of laser-**

**produced plasmas**, invited talk, proc. SPIE 5196, p. 163-176, 2004, Conf. Laser-Generated and Other Laboratory X-Ray and EUV Sources, Optics, and Applications.

O. Renner, S. G. Podorov, O. Wehrhan, E. Förster: **Application of 1-D bent crystals in advanced x-ray spectroscopy of hot dense plasma**, Jahrestagung der Deutschen Gesellschaft für Kristallographie, Jena, 15 – 19 March 2004.

### *Laser Ion Sources, Ion Implantation*

J. Badziak, P. Parys, J. Wolowski, H. Hora, J. Krasa, L. Laska, K. Rohlena; **Fast ion generation by a picosecond high-power laser**; *Optica Applicata* 35 (1): 5-22 2005.

J. Badziak, S. Glowacz, S. Jablonski, P. Parys, J. Wolowski, H. Hora, J. Krasa, L. Laska, K. Rohlena; **Production of ultrahigh ion current densities at skin-layer subrelativistic laser-plasma interaction**; *Plasma Physics and Controlled Fusion* 46: B541-B555 Sp. Iss. SI Suppl. 12B, December 2004.

S. Gammino, L. Torrioni, G. Ciavola, L. Ando, L. Celona, S. Manciangli, J. Krasa, L. Laska, M. Pfeifer, K. Rohlena, A. M. Mezzasalma, C. Gentile, A. Picciotto, J. Wolowski, E. Woryna, J. Badziak, P. Parys, D. Hitz, G. A. Shirkov: **The electron cyclotron resonance coupled to laser ion source for charge state enhancement experiment: Production of high intensity ion beams by means of a hybrid ion source**, *Journal of Applied Physics* 96 (5), 2961-2968, 1 September 2004.

S. Gammino, G. Ciavola, L. Celona, L. Torrioni, L. Andó, M. Presti, L. Laska, J. Krasa, J. Wolowski: **Innovative ion sources for accelerators: the benefits of the plasma technology**, *Czechoslovak J. Phys.*, 54(Suppl. C), 883-888, 2004.

L. Laska, J. Krasa, M. Pfeifer, K. Rohlena, S. Gammino, L. Torrioni, L. Ando, G. Ciavola: **Generation of intense streams of metallic ions with a charge state up to 10+ in a laser ion source**, *Review of scientific instruments* 75 (5), 1575-1578, Part 2, May 2004.

L. Laska, K. Jungwirth, J. Krasa, M. Pfeifer, K. Rohlena, J. Ullschmied, J. Badziak, P. Parys, J. Wolowski, F. P. Boody, S. Gammino, L. Torrioni: **Generation of extreme high laser intensities in plasma**, Proc. 21<sup>st</sup> Symp. on Plasma Phys. and Technology, SPPT 2004, Czech Jour. Phys. 54-C, C370-377, 2004.

L. Laska, K. Jungwirth, B. Kralikova, J. Krasa, E. Krousky, K. Masek, M. Pfeifer, K. Rohlena, J. Skala, J. Ullschmied, J. Badziak, P. Parys, L. Ryc, A. Szydowski, J. Wolowski, E. Woryna, G. Ciavola, S. Gammino, L. Torrioni, F. P. Boody: **Review of LIS developments in Prague and production of q over 50+ ions at PALS**, Invited talk, 10th Int. Conf. on Ion Sources, September 2003, JINR, Dubna, Russia, c 75 (5), 1546-1550, Part 2, May 2004.

L. Laska, K. Jungwirth, B. Kralikova, J. Krasa, M. Pfeifer, K. Rohlena, J. Skala, J. Ullschmied, J. Badziak, P. Parys, J. Wolowski, E. Woryna, L. Torrioni, S. Gammino, F. P. Boody: **Charge-energy distribution of Ta ions from plasmas produced by 1 $\omega$  and 3 $\omega$  frequencies of the high-power iodine laser**, 10th Int. Conf. on Ion Sources September 2003, JINR, Dubna, Russia, *Review of Scientific Instruments* 75 (5), 1588-1591, Part 2, May 2004.

L. Laska, J. Badziak, F. P. Boody, S. Gammino, K. Jungwirth, J. Krasa, P. Parys, M. Pfeifer, K. Rohlena, L. Torrioni, J. Ullschmied, J. Wolowski: **Laser production of ions at different pre-formed plasma conditions**, 31st EPS Conference on Plasma Phys. London, 28 June - 2 July 2004, ECA Vol. 28B, P-4.027, 2004.

L. Laska, K. Jungwirth, J. Krasa, M. Pfeifer, K. Rohlena, J. Ullschmied, J. Badziak, P. Parys, L. Ryc, J. Wolowski, S. Gammino, L. Torrioni, F. P. Boody: **The effect of pre-plasma and self-focusing on the characteristics of laser-produced ions**, XXVIII ECLIM. Roma (It), September 6-10, 2004, Proc XXVIII ECLIM p. 164-180, also *Czech Jour. Phys.* 55 (6): 691-699 JUN 2005.

L. Laska, K. Jungwirth, J. Krasa, M. Pfeifer, K. Rohlena, J. Ullschmied; **The effect of pre-plasma and self-focusing on characteristics of laser produced ions**; *Czechoslovak Journal of Physics* 55 (6): 691-699 June 2005.

L. Laska, K. Jungwirth, J. Krasa, M. Pfeifer, K. Rohlena, J. Ullschmied, J. Badziak, P. Parys, J. Wolowski, S. Gammino, L. Torrioni, F.P. Boody; **Charge-state and energy enhancement of laser-produced ions due to nonlinear processes in preformed plasma**; *Applied Physics Letters* 86 (8): Art. No. 081502, February 2005.

L. Laska, K. Jungwirth, J. Krasa, M. Pfeifer, K. Rohlena, J. Ullschmied, J. Badziak, P. Parys, J. Wolowski, S. Gammino, L. Torrioni, F.P. Boody; **Self-focusing in processes of laser generation of highly-charged and high-energy heavy ions**; (invited), 2nd Int. Conf. On the Frontiers of Plasma Physics and Technology, February 22-26, Goa, India 05, *Laser and Particle Beams* 24 (1), 175-179, MAR 2006.

L. Laska, L. Ryc, J. Badziak, F.P. Boody, S. Gammino, K. Jungwirth, J. Krasa, E. Krouský, A. Mezzasalma, P. Parys, M. Pfeifer, K. Rohlena, L. Torrioni, J. Ullschmied, J. Wolowski; **Correlation of highly-charged ion and X-ray emission from the laser produced plasma in the presence of non-linear phenomena**; 2nd Workshop PIBHI 2005, June 8-11, Giardini Naxos, Italy, *Radiation Effects and Defects in Solids*, 160 (10-12), p. 557-566, OCT-DEC 2005.

- L. Laska, J. Badziak, F.P. Boody, S. Gammino, L. Juha, K. Jungwirth, J. Krasa, E. Krousky, A. Mezzasalma, P. Parys, M. Pfeifer, K. Rohlena, L. Ryc, L. Torrisci, J. Ullschmied, J. Wolowski; **Several promising application possibilities of high-power lasers**; 5th International Symposium on Applied Plasma Science, 26-30 September, 2005, Hawaii, USA, Proc. ISAPS'05, p.289-294.
- L. Láška; **Selected results relevant to the ion diagnostics and to the characteristics of ions produced at PALS experiments**; Int. Conf. PLASMA-2005 on Research and Applications of Plasmas combined with the 3rd German-Polish Conference on Plasma Diagnostics for Fusion and Applications and the 5th French-Polish Seminar on Thermal Plasma in Space and Laboratory, Opole-Turawa, Poland, September 6-9, 2005, invited paper, AIP Conf. Proc.
- J. Krasa, A. Lorusso, D. Doria, F. Belloni, V. Nassisi, K. Rohlena; **Time-of-flight profile of multiply-charged ion currents produced by a pulse laser**; Plasma Physics and Controlled Fusion 47 (8): 1339-1349, August 2005.
- J. Krása, L. Torrisci, A. Piccoto, D. Margarone, L. Láška, K. Rohlena; **Retrieval of currents of differently charged ions emitted from laser-produced carbon plasma**; 2nd Workshop PIBHI 2005, June 8-11, Giardini Naxos, Italy.
- A. Lorusso, F. Belloni, D. Doria, V. Nassisi, J. Wolowski, J. Badziak, P. Parys, J. Krása, L. Láška, F.P. Boody, L. Torrisci, A. Mezzasalma, A. Piccoto, S. Gammino, L. Clagnile, G. Quarta, D. Bleiner; **Modifications of materials by high energy plasma ions**; Nuclear Instruments and Methods B 240 (2005) 229-233.
- A. Picciotto, J. Krása, L. Láška, K. Rohlena, L. Torrisci, S. Gammino, A.M. Mezzasalma, F. Caridi; **Plasma temperature and ion current analysis of gold ablation at different laser power rates**; Nuclear Instruments and Methods B – Beam Interaction with Materials and Atoms, 247 (2), 261-267, JUN 2006.
- A. Picciotto, L. Torrisci, S. Gammino, F. Caridi, D. Margarone, A.M. Mezzasalma, L. Ando, J. Krása, L. Láška, J. Wolowski; **Temperature measurements in plasmas generated by using lasers at different intensities**; 2nd Workshop PIBHI 2005, June 8-11, Giardini Naxos, Italy, Radiation Effects and Defects in Solids.
- K. Rohlena, L. Laska, K. Jungwirth, J. Krasa, E. Krousky, M. Masek, M. Pfeifer, J. Ullschmied, J. Badziak, P. Parys, J. Wolowski, S. Gammino, L. Torrisci, F.P. Boody; **Characteristics and applications of ion streams produced by long-pulse lasers**; 32nd EPS Conference on Plasma Phys. Tarragona, 27 June - 1 July 2005, Plasma Phys. Control. Fusion, (2005) B503-B512.
- K. Rohlena, L. Laska, K. Jungwirth, J. Krasa, E. Krousky, M. Masek, M. Pfeifer, J. Badziak, P. Parys, T. Pisarczyk, J. Wolowski, S. Gammino, L. Torrisci; **Ions from expanding laser plasmas**, Fourth Int. Conf. on Inertial Fusion Sciences and Applications, IFSA 2005, Biarritz, France, September 4-9, 2005, J. Phys. IV France 1 (2005).
- M. Rosinski, J. Badziak, F.P. Boody, S. Gammino, H. Hora, J. Krasa, L. Laska, A.M. Mezzasalma, P. Parys, K. Rohlena, L. Torrisci, J. Ullschmied, J. Wolowski, E. Woryna; **Application of laser ion source for ion implantation technology**; Vacuum 78 (2-4): 435-438 May 2005 and Proceedings of the fifth International Conference on Ion Implantation and other Applications of Ions and Electrons (ION 2004); 14-17 June 2004.
- M. Rosinski, J. Wolowski, J. Badziak, F.P. Boody, S. Gammino, J. Krása, L. Láška, A. Mezzasalma, P. Parys, M. Pfeifer, K. Rohlena, L. Torrisci, J. Ullschmied; **Investigation of Plasma Produced by High-energy Low-intensity Laser Pulses for Implantation of Ge Ions into Si and SiO<sub>2</sub> Substrates**; Int. Conf. PLASMA-2005 on Research and Applications of Plasmas combined with the 3rd German-Polish Conference on Plasma Diagnostics for Fusion and Applications and the 5th French-Polish Seminar on Thermal Plasma in Space and Laboratory, Opole-Turawa, Poland, September 6-9, 2005, AIP Conf. Proc.
- L. Torrisci, S. Gammino, A. Picciotto, L. Andò, L. Laska, J. Krasa, K. Rohlena, J. Wolowski; **Measurements of "Equivalent ion temperature" in plasma pulse laser-generated at INFN-LNS and PALS**; 32nd EPS Conference on Plasma Phys. Tarragona, 27 June - 1 July 2005 ECA Vol.29C, P-1.144 (2005).
- L. Torrisci, S. Gammino, A. Picciotto, J. Wolowski, J. Krása, L. Láška, L. Calcagnille, G. Quarta; **RBS analysis of ions implanted in light substrates exposed to hot plasmas laser-generated at PALS**; 2nd Workshop PIBHI 2005, June 8-11, Giardini Naxos, Italy, Radiation Effects and Defects in Solids.
- L. Torrisci, S. Gammino, A. Picciotto, D. Margarone, L. Laska, J. Krasa, K. Rohlena, J. Wolowski; **Temperature measurements in plasma produced by high power lasers interacting solid targets**; Proc. 11th Int. Conf. On Ion Sources, ICIS05, Caen, France, September 12-16, 2005.
- J. Wolowski, J. Badziak, P. Parys; **The influence of pre-pulse plasma on ion and x-ray emission from Ta plasma produced by a high-energy laser pulse**, Proc. 21<sup>st</sup> Symp. on Plasma Phys. and Technology, SPPT 2004, Czech Jour. Phys. 54-C, 385, 2004.
- J. Wolowski, J. Badziak, F. P. Boody, S. Gammino, H. Hora, J. Krasa, L. Laska, A. M. Mezzasalma, P. Parys, M. Pfeifer, K. Rohlena, M. Rosinski, L. Torrisci, J. Ullschmied, E. Woryna; **Ion emission from plasmas produced by a 438-nm laser radiation focused on targets of different Z-numbers**, 31st EPS Conference on Plasma Phys. London, 28 June - 2 July 2004, ECA Vol. 28B, P-4.034, 2004.
- J. Wolowski, J. Badziak, F. P. Boody, S. Gammino, K. Jungwirth, J. Krasa, L. Laska, A. Mezzasalma, P. Parys, M. Pfeifer, K. Rohlena, L. Torrisci, J. Ullschmied, E. Woryna; **Laser-produced ion streams useful for technological applications**, XXVIII ECLIM. Roma (It), September 6-10, 2004, Proc XXVIII ECLIM p. 283-286.
- J. Wolowski, J. Badziak, A. Czarnecka, S. Gammino, J. Krása, L. Láška, A. Mezzasalma, P. Parys, M. Pfeifer, K. Rohlena, M. Rosinski, L. Torrisci, J. Ullschmied; **Interaction of high-energy laser pulses with plasmas of different**

**density gradients**); 32nd EPS Conference on Plasma Phys. Tarragona, 27 June - 1 July 2005 ECA Vol.29C, P-1.147 (2005).

J. Wolowski, J. Badziak, A. Czarnecka, F.P. Boody, S. Gammino, J. Krása, L. Láska, A. Mezzasalma, P. Parys, M. Rosinski, K. Rohlena, L. Torrissi, J. Ullschmied; **Characteristics of laser-produced Ge ion streams used for modification of semiconductor materials**; 2nd Workshop PIBHI 2005, June 8-11, Giardini Naxos, Italy.

J. Wolowski, J. Badziak, S. Gammino, J. Krasa, L. Laska, A. Mezzasalma, P. Parys, M. Pfeifer, K. Rohlena, M. Rosinski, L. Torrissi, J. Ullschmied: **Implantation of Ge ions into Si and SiO<sub>2</sub> substrates with the use of Ge ions produced by high-energy low-intensity laser pulses**, Proc First. Int. Workshop on Semiconductor Nanocrystals, SEMINANO 2005, September 10-12, 2005, Budapest, p. 157-160.

## *Laser Plasma, Laser Ablation, Shock Waves, Craters*

I.V. Akimova, N.G. Borisenko, A.I. Gromov, A.M. Khalenkov, V.G. Pimenov, V.N. Kondrashov, S.F. Medovshikov, J. Limpouch, E. Krousky, K. Masek, J. Kuba, M. Pfeifer; **Intensive (up to  $10^{15}$  W/cm<sup>2</sup>) laser light absorption and energy transfer in subcritical media with or without high-Z dopants**; Book of abstracts of VIII Zababakhin Scientific Talks, 2005, Snezhinsk, Russia, p. 92-93. Proceedings of VIII Zababakhin Scientific Talks (International conference), 2005, Snezhinsk, Russia .

D. Batani, F. Strati, H. Stabile, M. Tomasini, G. Lucchini, A. Ravasio, M. Koenig, A. Benuzzi-Mounaix, H. Nishimura, Y. Ochi, J.Ullschmied, J. Skala, B. Kralikova, M Pfeifer, Ch. Kadlec, T. Mocek, A. Präg, I.M. Hall, P. Milani, E. Barborini, P. Piseri: **Hugoniot data for carbon at Megabar pressures**, Phys. Rev. Lett. 92 (6), Art. No. 065503, 13 February 2004.

D. Batani, S. Barbanotti, F. Canova, R. Dezulian, H. Stabile, A. Ravasio, G. Lucchini, J. Ullschmied, E. Krousky, J. Skala, L. Juha, B. Kralikova, M. Pfeifer, Ch. Kadlec, T. Mocek, A. Präg, H. Nishimura, Y. Ochi: **Laser driven shock experiments at PALS**, Proc. 21<sup>st</sup> Symp. on Plasma Phys. and Technology, SPPT 2004, Czech Jour. Phys. 54-C, C431, 2004.

F.P. Boody, J. Badziak, H.-A. Eckel, S. Gammino, J. Krása, L. Láska, A.J. Pakhomov, P. Parys, M. Pfeifer, K. Rohlena, W. Schall, L. Torrissi, J. Wolowski; **The ALP-PALS project: optimal coupling for laser propulsion**; 2nd Workshop PIBHI 2005, June 8-11, Giardini Naxos, Italy, Radiation Effects and Defects in Solids.

N.G. Borisenko, I.V. Akimova, A.I. Gromov, A.M. Khalenkov, Y.A. Merkuliev, V.N. Kondrashov, J. Limpouch, J. Kuba, E. Krousky, K. Masek, W. Nazarov, V.G. Pimenov: **Regular 3-D Networks with Clusters for Controlled Energy Transport Studies in Laser Plasma near Critical Density**, Fusion Science and Technology 49 (4), 676-685, May 2006.

S. Borodziuk, A. Kasperczuk, T. Pisarczyk, S. Gus'kov, J. Ullschmied, B. Kralikova, K. Rohlena, J. Skala, M. Kalal, P. Pisarczyk: **Investigation of plasma ablation and crater formation processes in the Prague Asterix Laser System laser facility**, Optica Applicata 34 (1), 31-42, 2004.

S. Borodziuk, A. Kasperczuk, T. Pisarczyk, N. N. Demchenko, S. Yu. Gus'kov, V. B. Rozanov, M. Kalal, J. Limpouch, J. Ullschmied, K. Rohlena, J. Skala, V. N. Kondrashov, P. Pisarczyk: **Application of the 3-frame interferometry and the crater replica method for investigation of laser accelerated macroparticles interacting with massive targets in the Prague Asterix Laser System (PALS) experiment**, Optica Applicata 34.: 385-403, 2004.

S. Borodziuk, I. Ya. Doshach, S. Gus'kov, K. Jungwirth, M. Kalal, A. Kasperczuk, B. Kralikova, E. Krousky, J. Limpouch, K. Masek, M. Pfeifer, P. Pisarczyk, T. Pisarczyk, K. Rohlena, V. Rozanov, J. Skala, J. Ullschmied: **Experimental and theoretical investigations of crater formation in an aluminium target in a PALS experiment**, Nukleonika 49, 7–14, 2004.

S. Borodziuk, N.N. Demchenko, S.Y. Gus'kov, K. Jungwirth, M. Kalal, A. Kasperczuk, V.N. Kondrashov, B. Kralikova, E. Krousky, J. Limpouch, K. Masek, P. Pisarczyk, T. Pisarczyk, M. Pfeifer, K. Rohlena, V.B. Rozanov, J. Skala, J. Ullschmied; **High power laser interaction with single and double layer targets**; Optica Applicata 35 (2): 241-262 2005.

S. Borodziuk, N. N. Demchenko, S. Y. Gus'kov, K. Jungwirth, M. Kalal, A. Kasperczuk, B. Kralikova, E. Krousky, V. N. Kondrashov, J. Limpouch, K. Masek, M. Pfeifer, P. Pisarczyk, T. Pisarczyk, K. Rohlena, V. B. Rozanov, J. Skala, J. Ullschmied; **Numerical modelling of strong shock waves and craters for the experiments using single and double solid tar gets irradiated by high power iodine laser (PALS)**; 32nd EPS Conference on Plasma Phys. Tarragona, 27 June - 1 July 2005 ECA Vol.29C, P-1.142 (2005).

S. Borodziuk, N.N. Demchenko, S.Y. Gus'kov, K. Jungwirth, M. Kalal, A. Kasperczuk, B. Kralikova, E. Krousky, J. Limpouch, K. Masek, P. Pisarczyk, T. Pisarczyk, M. Pfeifer, K. Rohlena, V.B. Rozanov, J. Skala, J. Ullschmied ; **Flyer target acceleration and energy transfer at its collision with massive targets**; International Conference Plasma 2005 & 3 rd GPPD & 5 th FPSTP, Opole-Turawa, September 6-9, 2005, P4-08 (2005), AIP Conf. Proc.

- S. Yu. Gus'kov, Borodziuk S, Kalal M, Kasperczuk A, Kralikova B, Krousky E, Limpouch J, Masek K, Pisarczyk T, Pisarczyk P, Pfeifer M, Rohlena K, Skala J, Ullschmied J: **Generation of shock waves and formation of craters in a solid material irradiated by a short laser pulse** J. Quantum Electronics 34 (11) 989-1003, NOV 2004.
- S. Yu. Gus'kov, S. Borodziuk, N. N. Demchenko, K. Jungwirth, M. Kalal, A. Kasperczuk, V. N. Kondrashov, B. Kralikova, E. Krousky, J. Limpouch, K. Masek, P. Pisarczyk, T. Pisarczyk, M. Pfeifer, K. Rohlena, V. B. Rozanov, J. Skala, J. Ullschmied: **Ablation loading efficiency and shock wave generation driven by powerful laser pulse of different wavelengths**, XXVIII ECLIM Roma September 6-10 2004, Proc. XVIII ECLIM p. 266-270.
- S. Y. Gus'kov, S. Borodziuk, M. Kalal, A. Kasperczuk, V. N. Kondrashov, J. Limpouch, P. Pisarczyk, T. Pisarczyk, K. Rohlena, J. Skala, J. Ullschmied; **Investigation of shock wave loading and crater creation by means of single and double targets in the PALS-laser experiment**; Journal of Russian Laser Research, 26 (3), 228-244, 2005.
- S.Y. Guskov, S. Borodziuk, M. Kalal et al: **Generation of shock waves and formation of craters in a solid material irradiated by a short laser pulse**, Quantum Electronics 34 (11) 2005.
- M. Kalal, J. Limpouch, S. Borodziuk, A. Kasperczuk, T. Pisarczyk, N. N. Demchenko, S. Yu. Gus'kov, V. B. Rozanov, K. Rohlena, J. Skala, J. Ullschmied, V. N. Kondrashov, T. Pisarczyk: **Investigation of the wavelength influence on the efficiency of macroparticles acceleration and craters creation in the PALS double targets experiment**, Cz. J Phys. 54, Suppl. C, 415-420, 2004.
- M. Kalal, S. Borodziuk, N. N. Demchenko, S. Yu. Gus'kov, A. Kasperczuk, V. N. Kondrashov, J. Limpouch, P. Pisarczyk, T. Pisarczyk, K. Rohlena, V. B. Rozanov, J. Skala, J. Ullschmied: **High power laser interaction with single and double layer targets**, invited paper XXVIII ECLIM Roma September 6-10, 2004, Proc. XXVIII ECLIM p. 249-260.
- M. Kalal, S. Yu. Gus'kov, A. Kasperczuk, V. N. Kondrashov, E. Krousky, J. Limpouch, K. Masek, T. Pisarczyk, K. Rohlena, J. Skala, J. Ullschmied: **Laser Imprint Problem and its Treatment by Double Pulse Plasma and Porous Layers**, Joint seminar of IPPLM and Swierk Nuclear Center, February 24, 2004, Warsaw, Poland.
- M. Kalal, J. Limpouch, N. N. Demchenko, S. Yu. Gus'kov, A. I. Gromov, A. Kasperczuk, V. N. Kondrashov, E. Krousky, K. Masek, M. Pfeifer, P. Pisarczyk, T. Pisarczyk, K. Rohlena, V. B. Rozanov, J. Sinor, J. Ullschmied: **Interactions of Subnanosecond Laser Pulses with Low-Density Plastic Foams**, Third IAEA Technical Meeting (IAEA-TM) on Physics and Technology of Inertial Fusion Energy Targets and Chambers, 11 -13 October 2004, Daejon, Republic of Korea.
- M. Kalal, N. N. Demchenko, S. Yu. Gus'kov, A. I. Gromov, A. Kasperczuk, V. N. Kondrashov, E. Krousky, J. Limpouch, K. Masek, M. Pfeifer, P. Pisarczyk, T. Pisarczyk, K. Rohlena, V. B. Rozanov, J. Ullschmied: **Thermal Smoothing of Laser Imprint in Double-Pulse Plasma**, IAEA Research Coordination Meeting (IAEA-RCM) for the Coordination Research Project on Elements of power plant design for inertial fusion energy, 14-15 October 2004, Daejon, Republic of Korea.
- A. Kasperczuk, S. Borodziuk, N. N. Demchenko, S. Yu. Gus'kov, M. Kalal, V. N. Kondrashov, B. Kralikova, E. Krousky, J. Limpouch, K. Masek, M. Pfeifer, P. Pisarczyk, T. Pisarczyk, K. Rohlena, V. B. Rozanov, J. Skala, J. Ullschmied: **Investigation of crater creation efficiency by means of single and double targets in the PALS experiment**, 31st EPS Conference on Plasma Phys. London, 28 June - 2 July 2004 ECA Vol.28G, P-5.067, 2004.
- A. Kasperczuk, S. Borodziuk, N.N. Demchenko, S.Y. Gus'kov, K. Jungwirth, M. Kalal, B. Kralikova, E. Krousky, J. Limpouch, K. Masek, P. Pisarczyk, T. Pisarczyk, M. Pfeifer, K. Rohlena, V.B. Rozanov, J. Skala, J. Ullschmied; **Plasma and shock generation by indirect laser pulse action**; International Conference Plasma 2005 & 3 rd GPPD & 5 th FPSTP, Opole-Turawa, September 6-9, 2005, P4-01 (2005), AIP Conf. Proc.
- Limpouch J., N. N. Demchenko, S. Yu. Gus'kov, A. I. Gromov, M. Kalal, A. Kasperczuk, V. N. Kondrashov, E. Krousky, K. Masek, M. Pfeifer, P. Pisarczyk, T. Pisarczyk, K. Rohlena, V. B. Rozanov, M. Sinor, J. Ullschmied: **Laser interactions with low-density plastic foams**, Proc. XXVIII ECLIM p. 261-265, Laser and Particle Beams 23 (3): 321-325 SEP 2005.
- J. Limpouch, N. N. Demchenko, S. Yu. Gus'kov, V. B. Rozanov, A. Kasperczuk, T. Pisarczyk, M. Kalal, V. N. Kondrashov, E. Krousky, K. Masek, P. Pisarczyk: **Iodine Laser Interactions with Porous Matter**, Proceedings IFSA2003, American Nuclear Society, pp. 170-3, 2004.
- J. Limpouch, N. N. Demchenko, S. Yu. Gus'kov, A. I. Gromov, M. Kalal, A. Kasperczuk, V. N. Kondrashov, E. Krousky, K. Masek, P. Pisarczyk, T. Pisarczyk, V. B. Rozanov: **PALS Laser Interactions with Foam Targets**, 31st EPS Conference on Plasma Phys. London, 28 June - 2 July 2004 ECA Vol.28G, P-2.031, 2004.
- J. Limpouch, N. N. Demchenko, S. Yu. Gus'kov, A. I. Gromov, M. Kalal, A. Kasperczuk, V. N. Kondrashov, E. Krousky, K. Masek, M. Pfeifer, P. Pisarczyk, T. Pisarczyk, K. Rohlena, V. B. Rozanov, M. Sinor, J. Ullschmied: **Laser interactions with low-density plastic foams**, XXVIII ECLIM Roma September 6-10 2004, Proc. XXVIII ECLIM, p. 261-265.
- J. Limpouch, N N. Demchenko, S. Yu. Gus'kov, M. Kalal, A. Kasperczuk, V. N. Kondrashov, E. Krousky, K. Masek, P. Pisarczyk, T. Pisarczyk, V. B. Rozanov: **Laser interactions with plastic-foam-metallic foil layered targets**, Plasma Phys. Control. Fusion 46, 1831-1841, 2004.

- J. Limpouch, N.N. Demchenko, S.Y. Gus'kov, A.I. Gromov, M. Kalal, A. Kasperczuk, V.N. Kondrashov, E. Krousky, K. Masek, M. Pfeifer, P. Pisarczyk, T. Pisarczyk, K. Rohlena, V.B. Rozanov, M. Sinor, J. Ullschmied; **Laser interactions with low-density plastic foams**; Laser and Particle Beams 23 (3): 321-325 Sep 2005.
- J. Limpouch, N. G. Borisenko, N. N. Demchenko, S. Y. Gus'kov, A. Kasperczuk, A. M. Khalenkov, V. N. Kondrashov, E. Krousky, J. Kuba, K. Masek, W. Nazarov, P. Pisarczyk, T. Pisarczyk, M. Pfeifer, V. B. Rozanov, J. Ullschmied; **Laser Interactions with Foam-Foil Layered Targets**; 32nd EPS Conference on Plasma Phys. Tarragona, 27 June - 1 July 2005 ECA Vol.29C, O-2.022 (2005).
- T. Pisarczyk, S. Borodziuk, A. Kasperczuk, N. N. Demchenko, S. Yu. Guskov, V. B. Rozanov, M. Kalal, J. Limpouch, K. Jungwirth, B. Kralikova, E. Krousky, K. Masek, M. Pfeifer, K. Rohlena, J. Skala, J. Ullschmied, V. N. Kondrashov, T. Pisarczyk: **Experimental and theoretical studies of the crater formation process on PALS experiments**, Cz. J Phys. 54, Suppl. C, 403-408, 2004.
- T. Pisarczyk, S. Borodziuk, N. N. Demchenko, S. Yu. Gus.kov, M. Kalal, A. Kasperczuk, V. N. Kondrashov, B. Kralikova, E. Krousky, J. Limpouch, K. Masek, M. Pfeifer, P. Pisarczyk, K. Rohlena, V. B. Rozanov, J. Skala, J. Ullschmied: **Experimental and theoretical investigations of the crater formation process by means of double-target technique**, 31st EPS Conference on Plasma Phys. London, 28 June - 2 July 2004, ECA Vol.28G, P-5.066, 2004.
- T. Pisarczyk, S. Borodziuk, N. N. Demchenko, S. Yu. Gus'kov, M. Kalal, A. Kasperczuk, V. N. Kondrashov, J. Limpouch, P. Pisarczyk, K. Rohlena, V. B. Rozanov, J. Skala, J. Ullschmied: **Energy transfer and shock wave generation at the collision of laser-driven macroparticle**, XXVIII ECLIM Roma September 6-10 2004, Proc. XXVIII ECLIM p. 465-469.
- T. Pisarczyk, S. Borodziuk, N. N. Demchenko, S. Y. Gus'kov, K. Jungwirth, M. Kala, A. Kasperczuk, V. N. Kondrashov, B. Kralikova, E. Krousky, J. Limpouch, K. Masek, M. Pfeifer, P. Pisarczyk, K. Rohlena, V. B. Rozanov, J. Skala, J. Ullschmied; **Optical investigation of flyer disk acceleration and collision with massive target on the PALS laser facility**; 32nd EPS Conference on Plasma Phys. Tarragona, 27 June - 1 July 2005 ECA Vol.29C, P-1.141 (2005).
- T. Pisarczyk, S. Borodziuk, N.N. Demchenko, S.Y. Gus'kov, K. Jungwirth, M. Kalal, A. Kasperczuk, B. Kralikova, E. Krousky, J. Limpouch, K. Masek, P. Pisarczyk, M. Pfeifer, K. Rohlena, V.B. Rozanov, J. Skala, J.Ullschmied ; **Optical investigation of powerful laser actions on massive and flyer targets**; International Conference Plasma 2005 & 3 rd GPPD & 5 th FPSTP, Opole-Turawa, September 6-9, 2005 , I-11 (2005), AIP Conf. Proc.
- L. Torrisi, S. Gammino, A. M. Mezzasalma, A. M. Visco, J. Badziak, P. Parys, J. Wołowski, E. Woryna, J. Krasa, L. Laska, M. Pfeifer, K. Rohlena, F. P. Boody: **Laser ablation of UHMWPE-polyethylene by 438 nm high energy pulsed laser**, Applied Surface Science, 227, 164-174, 2004.

## *Laser Sparks*

- S. Civis, L. Juha, D. Babankova, J. Cvacka, O. Frank, J. Jehlicka, B. Kralikova, J. Krasa, P. Kubat, A. Muck, M. Pfeifer, J. Skala, J. Ullschmied: **Amino acid formation induced by high-power laser in CO<sub>2</sub>/CO-N<sub>2</sub>-H<sub>2</sub>O gas mixtures**, Chemical Physics Letters, 386 (1-3), 169-173, 1 March 2004.
- D. Babankova, L. Juha, S. Civis, M. Bittner, J. Cihelka, A. Bartnik, H. Fiedorowicz, J. Mikolajczyk, L. Ryc, M. Pfeifer, J. Skala, J. Ullschmied; **Large laser sparks for laboratory simulation of high-energy-density events in planetary atmospheres**; Proc. SPIE Vol. 5906, p. 336-345, Astrobiology and Planetary Missions.

## *Laser Plasma Theory*

- M. Masek, K. Rohlena: **Evolution of electron distribution function in a laser plasma at SRS**, 31st EPS Conference on Plasma Phys. London, 28 June - 2 July 2004, ECA Vol. 28B, P-5.041, 2004.
- M. Masek, K. Rohlena; **Kinetics of the Raman instability in laser plasma**; Czechoslovak Journal of Physics 55 (8): 973-988 August 2005.
- V. Petržilka, L. Krlin, J. Ullschmied, J. A. Tataronis: **External Magneto-static Field Effects on Plasma Flows Arising from Primary Electron Acceleration in Two Crossed Laser Beams**, 31<sup>th</sup> EPS Conference, London, June 2004.
- M. Mašek, K. Rohlena; **Electron gas at Raman scattering of laser beam**; 32nd EPS Conference on Plasma Phys. Tarragona, 27 June - 1 July 2005 ECA Vol.29C, D-4.005 (2005).