

Oral Session

Monday, October 1

Opening

8:45 Opening Address

I. Fundamentals of Laser Ablation

Chair: J. T. Dickinson

- 9:00 I-1 **Laser Photothermal Ablation Studied by Ultrafast Microscopy: Fundamental Mechanisms of Ultra Low Threshold Ablation**, Dana D. Dlott, *School of Chemical Sciences, University of Illinois at Urbana Champaign, USA* (Invited)
- 9:30 O-1 **Bond-Selective Desorption and Ionization of Water Clusters and Biomolecules from Water Ices using a Picosecond Tunable Infrared Laser**, M. Baltz-Knorr, K. R. Schriver and R. F. Haglund, Jr., *Vanderbilt University, USA*
- 9:50 O-2 **Dynamics of Laser-Shocked Condensed Matter Probed by Nanosecond Raman Spectroscopy**, K. G. Nakamura, K. Wakabayashi, A. Matsuda and K. Kondo, *Materials and Structures Laboratory, Tokyo Institute of Technology, Japan*
- 10:10 O-3 **Temporal and Spatial Analysis of Plasmas during Graphite Laser Ablation**, S. Acquaviva and M. L. De Giorgi, *INFN and Università di Lecce, Dipartimento di Fisica via Arnesano, Italy*
- 10:30 Coffee Break

II. Fundamentals of Laser Ablation

Chair: J. Schou

- 11:00 I-2 **Control of Laser Induced Reactions in Solids Using Femtosecond and Nanosecond Pulses**, Wayne P. Hess¹, Alan G. Joly¹, Kenneth M. Beck¹, Daniel P. Gerrity², Peter V. Sushko³ and Alexander L. Shluger³, ¹*Pacific Northwest National Laboratory, USA*, ²*Department of Chemistry, Reed College, USA*, ³*Department of Physics and Astronomy, University College London, UK* (Invited)
- 11:30 O-4 **Multiscale Computational Study of Laser Ablation of Organic Materials**, Leonid V. Zhigilei, Michael Zeifman, Barbara J. Garrison, *Department of Materials Science & Engineering, University of Virginia, USA*, *Department of Chemistry, Penn State University, USA*
- 11:50 O-5 **Fundamental Studies of Photodesorption of Cations from Ionic Inorganic Crystals at 157 nm**, L. Cramer, S. C. Langford, W. Hess and J. T. Dickinson, *Washington State University, USA*
- 12:10 O-6 **Phase Explosion under Ultrashort Pulsed Laser Ablation: Modeling with Analysis of Metastable State of Melt**, Nadezhda M. Bulgakova¹ and Igor M. Bourakov², ¹*Institute of Thermophysics SB RAS, Russia*, ²*Novosibirsk State University, Russia*

12:30 Lunch Time

13:30 Poster Session I

Coffee Break

III. Pulsed Laser Deposition of Films

Chair: J. S. Horwitz / H. Koinuma

- 16:00 I-3 **Development of Prominent PLD (Aurora method) Suitable for High-Quality and Low-Temperature Film Growth**, Takeshi Kobayashi and Hideki Akiyoshi, *Department of Physical Science, Osaka University, Japan* (Invited)
- 16:30 O-7 **Properties of Epitaxially Grown Single Phase $\text{RuSr}_2\text{GdCu}_2\text{O}_8$ Thin Films Prepared by Pulsed Laser Deposition**, H.-U. Habermeier, G. Cristiani and O. Lebedev, *Max-Planck-Institut für Festkörperforschung, Germany*
- 16:50 O-8 **Picosecond and Femtosecond Pulsed Laser Ablation and Deposition of Quasicrystals**, R. Teghil¹, L. D'Alessio¹, A. Santagata¹, M. Zaccagnino¹, D. Ferro², D. J. Sordet³, *Dipartimento di Chimica, Università della Basilicata, Italy, ²CNR Centro per la Termodinamica Chimica alle Alte Temperature, Italy, ³Department of Materials Science & Engineering, Iowa State University, USA*
- 17:10 O-9 **Rapid Optimization of Y-Type Magnetoplumbite Thin Films Growth by Combinatorial Pulsed Laser Deposition Technique**, I. Ohkubo¹, Y. Matsumoto¹, K. Itaka¹, T. Hasegawa¹, K. Ueno², M. Ohtani³, M. Kawasaki³, H. Koinuma⁴, *¹Ceramics Materials and Structures Laboratory, Tokyo Institute of Technology, Japan, ²Central Technology Research Laboratories, ASAHI KASEI CORPORATION, Japan, ³Department of Innovative and Engineered Materials, Japan, ⁴Frontier Collaborative Research Center and Ceramics Materials and Structures Laboratory Tokyo Institute of Technology, Japan and CREST-Japan Science and Technology*
- 17:30 I-4 **Materials by Design: Control of Film Stoichiometry by Decoupling Plasma and Surface Processes in Transition Metal Carbonitrides**, P. R. Willmott¹, H. Spillmann¹ and M. Morstein², *¹Physical Chemistry Institute, University of Zurich, Switzerland, ²ETH Zürich, Laboratory for Surface Science and Technology, Dept. of Materials, Switzerland* (Invited)
- 18:00 O-10 **Influence of the Nitrogen Content on the Field Emission Properties of $\alpha\text{-CN}_x$ Films Prepared by Pulsed Laser Deposition**, E. Fogarassy¹, T. Szorenyi^{1,2}, F. Antoni¹, J. P. Stoquert¹, P. Legagneux³, G. Pirio³, D. Pribat³, P. Boher⁴, J. Perrière⁵, *¹CNRS-PHASE, France, ²Research Group on Laser Physics, Hungary, ³THALES-LCR, Domaine de Corbeville, France, ⁴SOPRA S.A., France, ⁵GPS, Université Paris VII, France*
- 18:20 O-11 **Critical Issues in Enhancing Brightness in Thin Film Phosphors for Flat Panel Display Applications**, R. K. Singh, D. Kumar, K. Cho, M. Ollinger and Z. Chen, *Department of Materials Science and Engineering, University of Florida, USA*
- 18:40

Tuesday, October 2

IV. NanoScience / NanoTechnology using Laser-Solid Interactions

Chair: Key Note: K. Murakami / The Others: F. Traeger

- 9:00 I-5 **Nanotechnology of C Nanotubes and Laser Ablation Methods**, Sumio Iijima, *NEC, Meijo University, Japan* (Key-Note Lecture, Invited)
- 9:40 I-6 **Time-Resolved Diagnostics of Single-Wall Carbon Nanotube Synthesis by Laser Vaporization**, Alex A. Puretzky, *Dep. Material Science and Engineering, Univ. of Tennessee, USA* (Invited)
- 10:10 O-12 **Role of the Catalytic Particle Size in the Laser-Ablation Synthesis of Single-Wall Carbon Nanotubes**, A. Gorbunov¹, O. Jost¹, W. Pompe¹, A. Graff², ¹*Dresden University of Technology, Germany*, ²*Institute for Solid State and Materials Research (IFW), Germany*
- 10:30 Coffee Break

V. NanoScience / NanoTechnology using Laser-Solid Interactions

Chair: D. B. Geohegan

- 11:00 O-13 **Vertically Aligned Carbon Nanotube Growths by Pulsed Laser Deposition (PLD) and Chemical Vapor Deposition (CVD) Methods**, Jung-Inn Sohn and Seonghoon Lee, *Department of Materials Science and Engineering, Kwangju Institute Science and Technology (K-JIST), Korea*
- 11:20 I-7 **Gas Phase ZnO Nanoclusters and Structural, Optical and Lasing Properties of Corresponding Nanostructured Thin Films**, W. Marine, A. V. Bulgakov, D. Nelson, I. Ozerov and M. Sentis, *Groupement Interdisciplinaire Ablation Laser et Applications, UMR CNRS 6631 et UMR CNRS 6594, Faculté des Sciences de Luminy, France* (Invited)
- 11:50 O-14 **Metallic and Intermetallic Nanoparticles, Filaments and Tree-Like Aggregates Prepared by Laser Vaporization Controlled Condensation**, V. Abedelsayed, Y. B. Pithawalla, E. Alsharaeh and M. S. El-Shall, *Department of Chemistry Virginia Commonwealth University, Richmond, USA*
- 12:10 O-15 **Dynamics of Hydrogenation of Si Nanoparticles with Green Photoluminescence**, T. Mizuta, D. Takeuchi, Y. Kawaguchi, T. Makimura, K. Murakami, *Institute of Applied Physics, University of Tsukuba, Japan*
- 12:30 O-16 **The Role of Local Ablation due to Near Field Effects in Laser Cleaning and Surface Nanostructuring**, P. Leiderer¹, M. Mosbacher^{1,2}, H.-J. Münzer¹, M. Bertsch¹, O. Dubbers¹, J. Boneberg¹, B.-U. Runge¹, ¹*University of Konstanz, Center of Modern Optics, Germany*, ²*Johannes-Kepler-Universität Linz, Institute of Applied Physics, Austria*
- 12:50 Lunch Time
- 14:00 Poster II
- Coffee Break

VI. Laser Processing: Modification, Etching, Cleaning, Machining

Chair: T. Okada / E. Fogarassy

- 16:30 I-8 **Laser Creation of 3-Dimensional Micro- and Nanostructures: Processing, Properties and Applications**, M. Stuke, M. Koch, A. Moore, K. Mueller, M. Lapczyna, G. Padeletti¹, *Max-Planck-Institut f. biophys. Chemie, Germany*, ¹*CNR Monterotondo (I)* (Invited)
- 17:00 O-17 **Polycarbazoles Microcavities: towards Plastic Blue Lasers**, M. C. Castex¹, C. Olivero¹, A. Fischer¹, D. Ades² and A. Siove², ¹*Laboratoire de Physique des Lasers (CNRS)*, ²*Laboratoire de Recherches sur les Macromolécules (CNRS), Université Paris Nord, France*
- 17:20 O-18 **Laser Tuning Technique for Analogue Microelectronics: Process Modeling and Device Characterization**, M. Meunier, M. Cadotte and M. Ducharme, *École Polytechnique de Montréal, Canada*
- 17:40 I-9 **Multiwavelength Excitation Processing Using F₂ and KrF Excimer Lasers for Precision Microfabrication of Hard Materials**, Koji Sugioka¹, Toshimitsu Akane¹, Kotaro Obata², Koichi Toyoda² and Katsumi Midorikawa¹, ¹*RIKEN - The Institute of Physical and Chemical Research, Japan*, ²*Science University of Tokyo, Japan* (Invited)
- 18:10 O-19 **Radioactive Oxyde Removal by XeCl Laser**, Ph. Delaporte¹, M. Gastaud¹, W. Marine², M. Sentis¹, O. Uteza¹, P. Thouvenot³, J. L. Alcaraz³, B. Fournel³ D. Blin⁴, ¹*Laboratoire Lasers, Plasmas et Procédés Photoniques LP3, FRE 2165 CNRS - Université de la Méditerranée*, ²*Groupe de Physique des Etats Condensés GPEC, UMR 6631 CNRS - Université de la Méditerranée, France*, ³*Commissariat à l'Energie Atomique Centre d'études de Cadarache, France*, ⁴*ONECTRA, France*
- 18:30 O-20 **Laser Crystallization during Pulsed Laser Deposited of Barium Titanate Thin Films at Low Temperatures**, Jens Gottmann, Bernd Vosseler, Ernst Wolfgang Kreutz, *Lehrstuhl für Lasertechnik RWTH Aachen, Germany*

18:50

Wednesday, October 3

VII. fs-Laser Ablation & Applications

Chair: M. Stuke

- 9:00 I-10 **Holographic Encoding of Micro-Grain in Transparent Materials by a Single Pulse from Femtosecond Laser**, Hideo Hosono¹, Ken-ichi Kawamura² and Masahiro Hirano², ¹*Tokyo Institute of Technology, Japan*, ²*Hosono Transparent Electro Active Materials Project, ERATO, Japan Science and Technology Corporation (JST), Japan* (Invited)
- 9:30 O-21 **Ablation of Solids by Femtosecond Lasers: Ablation Mechanism and Ablation Thresholds for Metals and Dielectrics**, E. G. Gamaly¹, A. V. Rode¹, B. Luther-Davies¹, V. T. Tikhonchuk², ¹*Research School of Physical Sciences and Engineering, Australian National University, Australia*, ²*Institute of Fundamental Physics, University Bordeaux-1, France*
- 9:50 O-22 **Application of Femtosecond Laser Pulses for Microfabrication of Transparent Media**, Hiroaki Misawa, Vygantas Mizeikis, Saulius Juodkasis, Andrius Marcinkevicius, Hongbo Sun, Shigeki Matsuo, *The University of Tokushima, Japan*
- 10:10 O-23 **Fundamental and Analytical Aspects of Femtosecond Laser Microablation**, A. F. Semerok, *Commissariat à l'Energie Atomique, France*
- 10:30 Coffee Break

VIII. NanoScience / NanoTechnology & Nonthermal Effects

Chair: R. H. Haglund, Jr.

- 11:00 I-11 **Laser Manipulation of Metal Nanoparticles**, F. Stietz, *Univ. Kassel, Germany* (Invited)
- 11:30 O-24 **The Atomic Processes of Ultraviolet-Laser-Induced Etching of Chlorinated Silicon (111) Surface**, H. Amasuga, M. Nakamura, Y. Mera and K. Maeda, *Department of Applied Physics, Graduate School of Engineering, University of Tokyo, Japan*
- 11:50 O-25 **Transient Center Photodecomposition in Potassium Bromide**, Kenneth M. Beck¹, Alan G. Joly¹, Wayne P. Hess¹, Dan Gerrity², Alexander L. Shluger³ and Peter V. Sushko³, ¹*Pacific Northwest National Laboratory, William R. Wiley Environmental Molecular Sciences Laboratory, USA*, ²*Department of Chemistry, Reed College, Portland, USA*, ³*Condensed Matter and Materials Physics, Department of Physics and Astronomy, University College London, UK*
- 12:10
- 12:30 **Bus Starts !
Excursion**
- 19:00 **Bunquet** at Sansuitei (Tel: 55-8181)
- 21:00

Thursday, October 4

IX. Variety of Ultrashort Laser Ablation and Spectroscopy

Chair: W. Kautek

- 9:00 I-12 **In-Depth Profiling of Multilayer Samples with Femtosecond Laser**, Vanja Margetic, Kay Niemax and Roland Hergenröder, *Institute of Spectrochemistry and Applied Spectroscopy, Germany* (Invited)
- 9:30 O-26 **Dephasing of Coherent THz Phonons in Bismuth Studied by Femtosecond Pump-Probe Technique**, M. Hase¹, K. Ishioka¹, M. Kitajima¹, S. Hishita¹ and K. Ushida², ¹National Institute for Materials Science, Japan, ²RIKEN (The Institute of Physical and Chemical Research), Japan
- 9:50 O-27 **Ultra-Short Infrared Laser Interactions: Measurements of Nonlinear and Nonthermal Effects and Applications**, David R. Ermer¹, Michelle Baltz-Knorr² and Richard F. Haglund², ¹Mississippi State University, USA, ²Vanderbilt University, USA
- 10:10 O-28 **Simultaneous Atomization and Ionization of Large Organic Molecules Using Femtosecond Laser Ablation**, Mizuki Kurata-Nishimura, Fuyuki Tokanai, Yukari Matsuo, Tohru Kobayashi, Jun Kawai, Hiroshi Kumagai, Katsumi Midorikawa, Isao Tanihata and Yoshihide Hayashizaki, *RIKEN, Japan*
- 10:30 Coffee Break

X. Variety of Laser Ablation

Chair: J. G. Lunney

- 11:00 I-13 **Atmospheric Pressure Matrix-Assisted Laser Desorption Ionization as a Plume Diagnostic Tool in Laser Evaporation Methods**, John H. Callahan¹, Marsha C. Galicia² and Akos Vertes², ¹Naval Research Laboratory, Chemical Dynamics and Diagnostics Branch, USA, ²Department of Chemistry, George Washington University, USA (Invited)
- 11:30 O-29 **Analytical Applications of Laser Induced Breakdown Spectroscopy in Art Conservation and Archaeology**, Demetrios Anglos, *Foundation for Research and Technology-Hellas (FORTH), Institute of Electronic Structure and Laser, Greece*
- 11:50 Lunch Time

XI. Laser Ablation of Polymer / Organic Materials

Chair: A. Yabe

- 13:30 I-14 **Polymers Designed for Laser Ablation-Influence of Photochemical Properties**, T. Lippert¹, J. T. Dickinson², M. Hauer¹, S. C. Langford², H. Masuhara³, O. Nuyken⁴, J. Robert⁴, T. Tada³, K. Tomita³ and A. Wokaun¹, ¹Paul Scherrer Institut, Switzerland, ²Washington State University, USA, ³Osaka University, Japan, ⁴Technische Universität München, Germany (Invited)
- 14:00 O-30 **Chemical and Structural Modifications in the UV Laser Ablation of Polymers. Implications for the Laser Cleaning of Molecular Substrates**, D. Anglos, A. Athanassiou, S. Georgiou, V. Tornari and J. Venturini, *Foundation for Research and Technology-Hellas (FORTH), Institute of Electronic Structure and Laser, Greece*

- 14:20 O-31 **Remarkable Enhancement on Elimination Reaction of Side Groups in Excimer Laser Ablation of Mixture Targets of Perylene Derivatives with Metal Powder**, Satoru Nishio, Kazuyuki Tamura, Yukari Tsujine, Tomoko Fukao, Masayoshi Nakano, Akiyoshi Matsuzaki and Hiroyasu Sato, *Laser Photochemistry Research Group, Department of Chemistry for Materials, Faculty of Engineering, Mi'e University, Japan*
- 14:40 I-15 **Laser-Induced Nanometer-Nanosecond Ablation, Expansion, and Contraction Dynamics of Some Polymer Films Studied by Time-Resolved Interferometry**, Hiroshi Masuhara, Tomokazu Masubuchi, Takashi Mito and Takuji Tada, *Department of Applied Physics, Osaka University, Japan* (Invited)
- 15:10 O-32 **Resonant IR-Pulsed Laser Deposition of Polymer Films Using a Free-Electron Laser**, Daniel M. Bubb¹, J. S. Horwitz¹, J. H. Callahan¹, R. A. McGill¹, E. J. Houser¹, D. B. Chrisey¹, M. R. Papantonakis², R. F. Haglund, Jr.², M. Galicia³, A. Vertes³ and Bo Toftmann⁴, ¹*Naval Research Laboratory, USA*, ²*Vanderbilt University, USA*, ³*George Washington University, USA*, ⁴*Risø National Laboratory, Denmark*
- 15:30 Coffee Break

XII. Pulsed Laser Deposition of Films

Chair: W. Marine / J. S. Horwitz

- 16:00 I-16 **Pulsed Laser Deposition of SrTiO₃ on InP for the Integration of Piezoelectric Pb_{0.775}La_{0.15}TiO₃**, E. Vasco¹, C. Polop¹, C. Coya², A. Kling³ and C. Zaldo¹, ¹*Instituto de Ciencia de Materiales de Madrid. Consejo Superior de Investigaciones Científicas, Spain*, ²*Escuela Superior de Ciencias Experimentales y Tecnología. Universidad Rey Juan Carlos, Spain*, ³*Instituto Tecnológico e Nuclear, Portugal* (Invited)
- 16:30 O-33 **Advanced Pulsed Laser Deposition for Growth Manipulation**, Dave H. A. Blank and Guus Rijnders, *MESA+ Research Institute, Applied Physics, University of Twente, Netherlands*
- 16:50 O-34 **Properties of Piezoelectric and Ferroelectric Heterostructures Prepared by Pulsed Laser Deposition**, I. Vrejoiu, R. Dinu, R. Savu, C. Grigoriu, F. Craciun¹, P. Verardi¹, M. Dinescu, *IFA, NILPRP, Lasers Dept., Romania*, ¹*Institute of Acoustics "O.M. Corbino", CNR, Italy*
- 17:10 I-17 **Oxygen Atmosphere Laser Ablation of Graphite for Synthesis of Diamond and Carbon Nanostructures**, M. Yoshimoto, K. Nakajima, M. Furusawa, J. Tashiro and A. Sasaki, *Ceramics Laboratory, Tokyo Institute of Technology, Japan* (Invited)
- 17:40 O-35 **Study of Expansion of Laser Ablation Plumes of Ga and GaN in Various N₂ Atmospheres Using Stigmatic Emission Spectroscopy**, A. P. McKiernan¹, E. T. Kennedy¹, J. G. Lunney² and J.-P. Mosnier¹, ¹*School of Physical Sciences and National Centre for Plasma Science and Technology, Ireland*, ²*Physics Department, Trinity College, Ireland*
- 18:00 O-36 **Advantages of PLD in Group III nitride growth**, H. Fujioka¹, J. Ohta¹, H. Takahashi¹, S. Ito¹, M. Oshima¹ and H. Koinuma², ¹*Department of Applied Chemistry, The University of Tokyo, Japan*, ²*Materials and Structures Laboratory, Tokyo Institute of Technology, Japan*
- 18:20 O-37 **Pulsed Laser Deposition of Cubic Boron Nitride Films at High Growth Rates**, Steffen Weißmantel, Günter Reißer, *Hochschule Mittweida, University of Applied Sciences, Germany*
- 18:40

Friday, October 5

XIII. Laser Plasma and Applications

Chair: C. Fotakis

- 9:00 I-18 **X-Ray Generation from fs Laser Heated Xe Clusters**, Kiminori Kondo, M. Mori and T. Shiraishi, *Center for Tsukuba Advanced Research Alliance (TARA), University of Tsukuba, Japan*
(Invited)
- 9:30 O-38 **Time-Resolved EUV Spectroscopy in the Early Stage of Laser Ablation of Carbon**, Pierre Loiseau¹, Tue N. Hansen² and James G. Lunney², ¹*Laboratoire de Physique et Technologie des Plasmas, CNRS/Ecole Polytechnique, France*, ²*Department of Physics, Trinity College, Dublin 2, Ireland*
- 9:50 O-39 **Large Area PLD of nm-Multilayers**, R. Dietsch¹, Th. Holz¹, R. Scholz², D. Weißbach¹, ¹*Fraunhofer Institute Material and Beam Technology, Germany*, ²*Max Planck Institute for Microstructure Physics, Germany*
- 10:10 Coffee Break

XIV. Laser Plasma and Applications

Chair: W. P. Hess

- 10:40 I-19 **The Role of Hot Ballistic Electrons for Ablation of Metals by Ultrashort Laser Radiation**, W. Husinsky, V. Schmidt, R. Siebenküttel, R. Schmitzer and G. Betz, *Institut für Allgemeine Physik, Vienna University of Technology, Austria*
(Invited)
- 11:10 O-40 **Ion Dynamics in Laser Ablation Plumes from Selected Metals at 355 nm**, B. Thestrup¹, B. Toftmann¹, J. Schou¹, B. Doggett² and J. G. Lunney², ¹*Department of Optics and Fluid Dynamics, Risø National Laboratory, Denmark*, ²*Physics Department, Trinity College, Dublin 2, Ireland*
- 11:30 O-41 **Dynamics of Plume Generation in a Laser Forward Transfer Process**, D. Young¹, R. C. Y. Auyeung¹, H. Denham¹, A. Piqué¹, D. B. Chrissey¹ and D. D. Dlott², ¹*Naval Research Laboratory, Washington DC, USA*, ²*Department of Chemistry, University of Illinois at Champaign-Urbana, USA*

Closing

- 11:50 Poster Award
Closing Remarks
- 12:10