

The 4th International Congress on Laser Advanced Materials Processing

LAMP2006

LPM2006-The 7th International Symposium on Laser Precision Microfabrication

HPL2006- The 4th International Symposium on High Power Laser Processing

MAY 16-19, 2006, KYOTO RESEARCH PARK, KYOTO, JAPAN

Abstract Submission: <http://www.jlps.gr.jp/lamp/lamp2006/>

Abstract Submission Due Date (Extended): Dec. 10, 2005

Proceedings Submission Due Date: May 16, 2006



LPM2006 TOPICS

1. Fundamental aspects (Dynamics, modeling, simulation, etc.)
2. Process monitoring and control
3. Laser- and photochemistry
4. Nanotechnology
5. Ultra-short pulse laser processing
6. VUV laser and x-ray processing
7. Surface treatment (Texturing, cleaning, annealing, modification, etc.)
8. Micro-patterning and micro-structuring
9. Micro-machining
10. 3-D micro- and nano-fabrication
11. Micro drilling and cutting
12. Micro welding and bonding
13. Micro forming
14. Wafer dicing
15. Marking and trimming
16. Packaging and mounting process
17. Lithography (including EUV source and application)
18. Manufacture of micro devices and systems
19. Film deposition and synthesis of advanced materials (PLD, CVD, etc)
20. Nanomaterials synthesis
21. Optics and systems for laser micro- and nano-processing
22. Laser devices
23. Industrial applications
24. **Special Session L1**
The future of ultrashort laser manufacturing
25. **Special Session L2**
Laser-based direct-write techniques
26. **Special Session L3**
Laser micro/nano-engineering for biomedical applications
27. Others

HPL2006 TOPICS

1. Fundamentals of laser-materials interactions
2. Laser-induced plasma
3. Process sensing, monitoring and control
4. Modeling and simulation
5. Materials and metallurgical aspects
6. Evaluation of properties (Strength, etc.)
7. Laser systems (Remote control, etc.)
8. Gas laser
9. Solid-state laser
10. High power laser diode
11. LD-pumped solid laser
12. Optics and beam delivery systems
13. Welding and brazing
14. Hybrid welding
15. Laser welding of light metals
16. Welding imperfection and defects
17. Materials removal (Cutting, drilling, etc.)
18. Surface modification and fabrication (Quenching, alloying cleaning, etc.)
19. Cladding
20. Rapid prototyping
21. Forming and shaping
22. New and innovative applications (Sandwich panel, etc.)
23. Applications (Automobiles, ship, trains, airplanes, etc.)
24. Applications (Steel, motors, parts, nuclear fields, etc.)
25. Present status and future prospects
26. Others

JOINT SESSION

1. Crossover regions of LPM and HPL
2. **Special Session J1**
"Advances in fiber and disk lasers and their novel applications to materials processing"

► **ORGANIZED by:** JLPS-Japan Laser Processing Society, AIST-National Institute of Advanced Industrial Science and Technology, RIKEN-The Institute of Physical and Chemical Research



► Aims and Scope

The International Congress on Laser Advanced Materials Processing (LAMP) deals with science and technology of advanced laser materials processing covering precision microfabrication and high power laser processing. Basically LAMP is held every four years, and the former LAMPs have won the good reputation and popularity as the one of the most excellent international meetings in the world. LAMP 2006 is held during May 16-19, 2006, in Kyoto, the ancient capital of Japan with the most authentic and traditional atmosphere. LAMP 2006 consists of International Symposia on Laser Precision Microfabrication (LPM) and High Power Laser Processing (HPL) and covers hardware as well as software for fundamental research and industrial applications in both micro and macro processing. LAMP 2006 is planned as a four-day event with a plenary session, oral and poster sessions, special sessions dealing with topical issues, and a table-top exhibition with inviting most important world authorities in this field. The aim of this congress is to provide a forum for discussion of fundamental aspects of laser-matter interaction, the state-of-the-art of laser materials processing, and topics for the next generation with fundamental scientists, end users and laser manufactures. We expect that LAMP 2006 would play an important role not only for understanding fundamental knowledge of laser materials processing but also forecasting future technologies to be developed and the future laser market.

► PLENARY TALKS

Eckhard Beyer (Fraunhofer IWS, Dresden, Germany):

Laser macro processing - today and tomorrow

Eric Mazur (Harvard University, USA):

Femtosecond laser micro and nano engineering for photonics and biology

► INVITED SPEAKERS of LPM2006 (Tentative list of LPM2006 Invited speakers)

Fundamentals and Theoretical Approach

Nadezda Bulgakova (Institute of Thermophysics, Russia):

Theoretical models and qualitative interpretations of fs-laser material processing

Nanostructuring

Samuel S. Mao (Lawrence Berkeley National Laboratory, USA):

Photonic semiconductor one-dimensional nanostructures fabricated by fs lasers

Laser-and Photochemistry

Stavros Pissadakis (IESL-FORTH, Greece):

Deep UV radiation induced photodissociative processes in transparent optical materials: index engineering and structural modification effects (Tentative)

Analytical Application

Eric Mottay (Amplitude Systemes, France):

Femtosecond laser applications in analytical chemistry

Advanced Material Synthesis

Shojiro Komatsu (Advanced Materials Laboratory National Institute for Materials Science, Japan):

Sp³-bonded 5H-BN films grown by plasma-assisted laser CVD for electron field emitter applications: its growth mechanism and the FE properties

Glass/Ceramics Processing

Heinrich Graener (Martin-Luther-University Halle-Wittenberg, Germany):

Structuring of nanocomposite glass using femtosecond lasers

Organic material Processing

Horst-Guenter Rubahn (Fysisk Institut, Syddansk Universitet, Denmark):

UV-laser forming of organic nanoaggregates and polymeric films

Micromachining

Andreas Ostendorf (Laser Zentrum Hannover e.V., Germany):

Metal and Polymer Microparts Generated by Laser Rapid Prototyping

Assembling of Microcomponents

Natallia Karlitskaya (Philips Applied Technologies, The Netherlands):

Laser-induced transfer process for die assembly

Laser Applications in Industry

Adrian Boyle (Xsil Limited, Ireland):

Advanced laser machining technology and systems for semiconductor manufacturing

Special Session L1: The future of ultrashort laser manufacturing

Man Seop Lee (PHOCO Company, Korea):

Femtosecond laser-assisted micro-machining for display panel and optical device applications

Ralf Knappe (Lumera Laser, Germany) (Tentative):

Picosecond Lasers for Manufacturing

Special Session L2: Laser-based direct-write techniques**Boris Chichkov** (Laser Zentrum Hannover e.V., Germany):

2D and 3D photofabrication with fs lasers for applications in photonics and biomedicine

Frank Livingston (The Aerospace Corporation, USA):

Tailoring Light Pulses for Optimal Laser Processing and Material Modification Applications

Pere Serra (University of Barcelona, Spain):

Laser-induced forward transfer: a direct writing technique for biosensors preparation

Special Session L3: Laser micro/nano-engineering for biomedical applications**Alfred Vogel** (Institute of Biomedical Optics, Univ. of Lubeck, Germany):

Mechanisms of femtosecond laser nanosurgery of cells and tissues

Benoit Simard (National Research Council of Canada, Steacie Institute for Molecular Sciences, Canada)

Laser-assisted synthesis of magnetic core shell nanoparticles for biological and environmental applications

One more invited talk will be scheduled.

▶ INVITED SPEAKERS of HPL2006 (Tentative list of HPL2006 Invited speakers)**Zhaogu Cheng** (Shanghai Institute of Optics and Fine Mechanics, CAS, China):Hybrid laser welding for fabrication of ship structural components using tens kW high power CO₂ lasers**Paul Hilton** (TWI Ltd., UK): (Title is not available.)**Veli Kujanpää** (Lappeenranta University of Technology, Finland): (Title is not available.)**Simeon Metev** (BIAS-Bremer Institut für angewandte Strahltechnik, Germany):

Laser-induced high-rate photon plasma CVD synthesis of diamond coatings (and other advanced materials)

Reinhard Poprawe (Fraunhofer Institute for Laser Technology, Germany):

Prospective of laser macroprocessing

A few more invited talks will be scheduled.

▶ INVITED SPEAKERS of JOINT SESSION (LPM & HPL) (Tentative list of Invited speakers)**Frank Vollertsen** (BIAS-Bremer Institut für angewandte Strahltechnik, Germany):

Micro and macro welding for fiber lasers up to 17kW (Tentative)

Several more invited talks will be scheduled.

▶ LPM2006 SPECIAL SESSIONS**SP L1) The future of ultrashort laser manufacturing****Organizer: Peter Herman** (University of Toronto, Canada)

Ultrashort lasers have slowly evolved into reliable sources that now present unique opportunities for manufacturing applications. When are ultrashort pulses advantageous? Is picosecond duration enough? In this session, industry speakers address the utility of both picosecond and femtosecond lasers in manufacturing by examining:

- the reliability of new ultrafast laser systems,
- benefits of picosecond and femtosecond interactions,
- the merits of pulse shaping and repetition rate,
- the industrial forefront in nanofabrication,
- successful commercial applications of ultrashort lasers.

SP L2) Laser-based direct-write techniques**Organizers: Alberto Piqué** (Naval Research Laboratory, USA); **Andreas Ostendorf** (Laser Zentrum Hannover, Germany);**Craig Arnold** (Princeton University, USA)

In the past few years, significant progress has been made in the use of lasers for direct-write applications. Laser-based direct-write techniques offer the ability to perform ablation, transfer or modification of virtually any type of material or surface in a point-wise fashion, opening the opportunity for the fabrication of novel structures or devices. LPM 2006 will host a special session in laser direct-write to explore the latest developments in this expanding area. Papers are solicited in the use of laser direct-write techniques for electronic, photonic, microfluidic, sensing and biomedical applications. This session will also accept contributions in the use of ultrafast lasers for direct-write, fabrication of 3-D microstructures, materials development for laser direct-write and studies of the fundamental mechanisms responsible for the process.

SP L3) Laser micro/nano-engineering for biomedical applications**Organizer: Michel Meunier** (École Polytechnique de Montréal, Canada)

The use of lasers for microprocessing biological and biocompatible materials is now becoming an established enabling technology and various industrial and medical applications are emerging at an increasing rate. This special session will focused on the development and modeling of new laser processing of biological and biocompatible materials. Papers are solicited on, but not limited to, the following topics within the broad area of biomedical applications: fundamental aspects and modeling of laser-biomaterials and tissue interaction (from cw to fs time scales and from VUV to IR); laser modification, cleaning and texturing of biomaterials; Pulsed laser deposition, laser pattern transfer, laser-induced forward transfer, and direct-write of biocompatible thin films; Diagnostics for in situ laser microprocessing for biomedical applications; Laser micro-engineering and nano-engineering of biomaterials and nanomaterials; Laser processing of BioMEMS and biosensors, Laser applications to medicine.

▶ JOINT SESSION (LPM&HPL)

SP J1) " Advances In fiber and disk lasers and their novel applications to materials processing"

Organizers: Friedrich Dausinger (Stuttgart University, Germany); Isamu Miyamoto (Osaka University, Japan)

In the past few years, fiber and disk lasers have shown dramatic progress due to their novel design concept, providing excellent beam quality at high power levels as well as long life time, compactness, high-efficiency and so on. These lasers are now replacing the existing lasers for materials processing, and laser materials processing in next generation will, without any doubt, depend on the progress and the competition of these two lasers. LAMP2006 will host a joint-special session of HPL and LPM to highlight the latest progress of development and applications of these two lasers. Papers are solicited on the following topics for macro and micro fields: laser and system developments, technical and economical assessment of the laser system, laser-matter interaction fundamentals, their applications to welding, cutting, drilling, sintering, surface structuring and other potential new applications.

▶ ONLINE-REGISTRATION

<http://www.jlps.gr.jp/lamp/lamp2006/>

Registration Fee	MEMBER	NON-MEMBER
Early Registration	¥48,000-	¥54,000-
On-site Registration	¥60,000-	¥65,000-
One-Day	¥32,000-	
Student	¥12,000-	
Banquet	One-Day Participant	¥10,000-
	Student	5,000-
	Accompanying Person with General Participant	¥5,000-
	Accompanying Person with Invited Speaker	FREE-

▶ Abstract Submission

Please submit your abstract through LAMP2006 website at <http://www.jlps.gr.jp/lamp/lamp2006/>

Abstract Submission Due Date (Extended): December 10, 2005 JST

▶ Manuscript Submission & Online Proceedings

Please submit your manuscript on site, Kyoto Research Park, on May 16, 2006.

Online Proceedings will be published after the event.

Manuscript Guideline can be downloaded through LAMP2006 website at <http://www.jlps.gr.jp/lamp/lamp2006/>

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▶ **Hotel Accommodations**

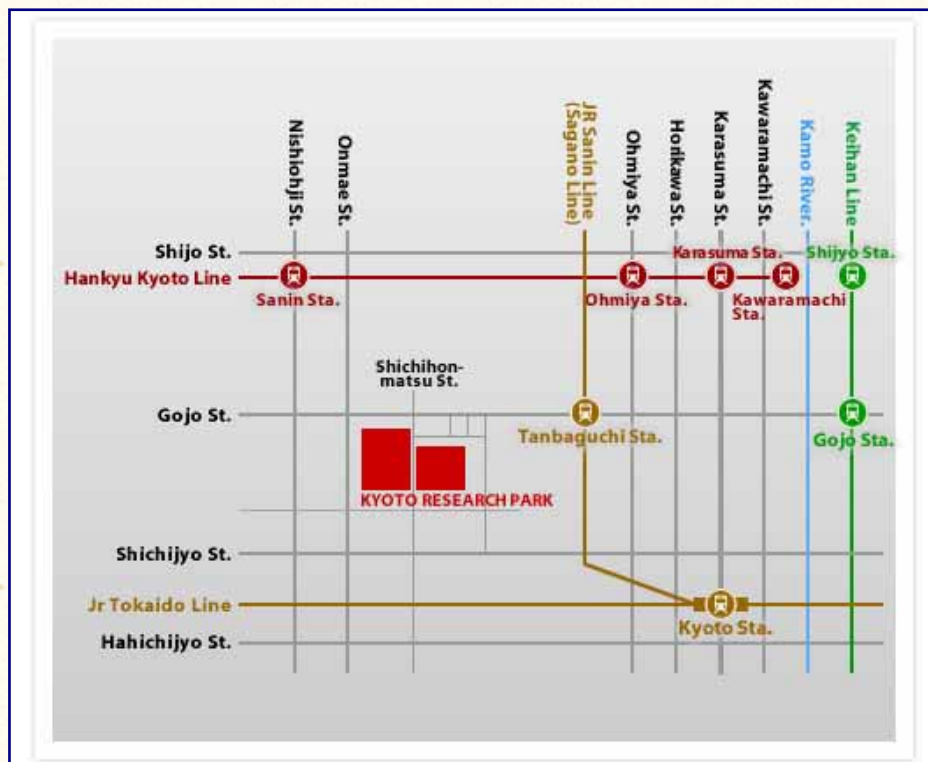
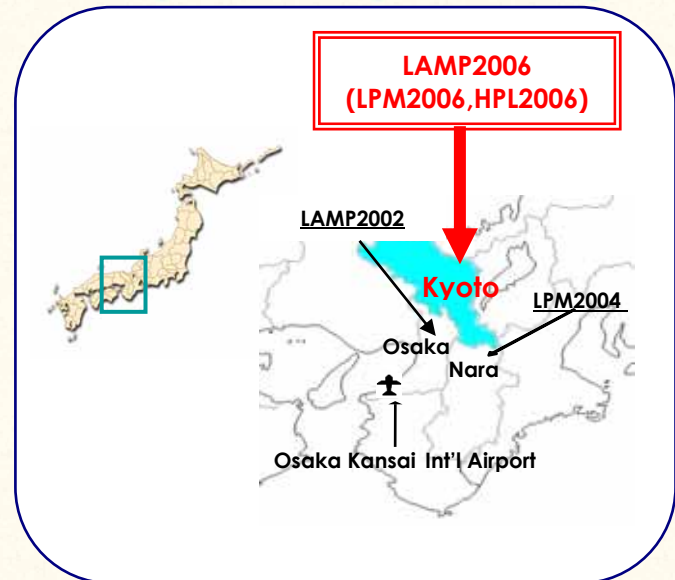
The Hotel information will be available at
<http://www.jlps.gr.jp/lamp/lamp2006/>.

▶ **In Coporated with:**

HTS-High Temperature Society of Japan
 JSPE-The Japan Society for Precision Engineering
 JWS-The Japan Welding Society
 LIA-Laser Institute of America
 LSJ-The Laser Society of Japan

▶ **Advertisement & Table-Top Exhibition**

Advertisement for Technical Digest
 (A4 sized One-Page, Black & White) ¥70,000-/page
 Table-Top Exhibition (20 booths) ¥145,000-/booth
 For further details, please contact LAMP2006 Office.



▶ **CONTACT:**

JLPS-Japan Laser Processing Society, LAMP2006 Office
 c/o Katayama Lab., JWRI-Joining and Welding Research Institute, Osaka University
 11-1 Mihogaoka, Ibaraki, Osaka, 567-0047, Japan
 TEL/FAX: +81-6-6879-8642 **E-mail:** teraoka@jlps.gr.jp