



European Materials Research Society

2026 Spring Meeting

May 25 - 29
Strasbourg Convention Centre

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SYMPOSIUM N

Innovation and sustainability through material laser processing: Advancing knowledge and emerging applications

Oral sessions : [CHURCHILL - FIRST FLOOR](#)

Poster sessions : [ETOILE - FIRST FLOOR](#)

Symposium Organizers:

[Antoniu MOLDOVAN](#), National Institute for Laser, Plasma and Radiation Physics (INFLPR), Romania

[Mario GARCIA LECHUGA](#), Instituto de Óptica "Daza de Valdés", CSIC, Spain

[PoI SOPEÑA \(Main organizer\)](#), Aix-Marseille University, CNRS (LP3 laboratory), France

[Stephan GRÄF](#), LOtto Schott Institute of Materials Research (OSIM), Germany

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Monday May 25

N02 Advanced beam shaping for dielectrics writing

Chairperson(s): POL SOPEÑA Mario garcia

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- 10:30 3194 Ultrafast Laser-Induced Extrusion of Nano-Pillars
COURVOISIER Francois (Invited)
- 11:00 2775 Femto-second Laser-processing of Diamond for Active Electronics
HENDERSON Calum
- 11:15 3124 Tailoring the Axial Intensity of Bessel-like Beams for Thin-Material Processing
SCHLUTOW Henrike
- 11:30 3204 Investigation of the resulting weld seam morphology and quality in femtosecond laser welding of borosilicate glass
JARWITZ Michael
- 11:45 2926 Pattern Transfer via Laser-Generated Plasmas for Ultra-Precise Surface Machining
EHRHARDT Martin

Monday May 25

N03 Mechanisms behind surface nanopatterning

Chairperson(s): TANI Shuntaro

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- 14:30 630 Understanding frequency-resolved spatial material density dynamics in ultrashort laser-irradiated metal targets by 3D electromagnetic-hydrodynamic simulations
RUDENKO Anton (Invited)
- 15:00 2805 Control of coherent LIPSS propagation in doped zinc oxide under 1030 nm fs-laser processing.
GOMEZ-MUNOZ Gonzalo
- 15:15 2210 Role of chemistry changes in the hydrophobic transition following femtosecond laser texturing of metals
LAMOUR Laora
- 15:30 3329 Hierarchical Ti-TiO₂ Photoelectrodes with Laser-Induced Nanoarchitectures and ALD-Grown Oxide Layers
GNILITSKYI Iaroslav

Monday May 25

N04 Industrial laser processes and applications

Chairperson(s): JÖRN BONSE François courvoisier

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- 16:30 2010 Laser micro-processing with ultra-short pulses and industrial applications
NEUENSCHWANDER Beat (Invited)
- 17:00 651 From Static to Dynamic: Efficient Simulation of Helical Laser Drilling Programs with Time-Varying Parameters
KROSCHEL Alexander
- 17:15 1362 Laser debonding of encapsulants in photovoltaics for improved silver recovery
CAMERON Joseph
- 17:30 3268 Dew water harvesting with laser micropatterned surfaces
POU-ÁLVAREZ Pablo
- 17:45 3388 Challenges and opportunities in glass processing with MHz/GHz burst-mode femtosecond lasers
Andriukaitis Deividas
- 18:00 1235 Residue-free directional water transport on hybrid-gradient laser-patterned surfaces
WU Tianhao
- 18:15 3375 Direct Laser Writing of Sharkskin-Inspired Riblet Structures for Fluid-Dynamic Surface Functionalization of a Ship Propeller Model
GRUNER Andreas

Tuesday May 26

N05 Laser nanomanufacturing for next-generation electronic and energy systems

Chairperson(s): MÓNICA MORALES-MASIS Belen sotillo

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- 08:30 639 Engineering Vacancies to Grow van der Waals Heterostructures and Nanoribbons
STELA Canulescu (Invited)
- 09:00 1431 Elective microthermal actuation enabled by complex patterning of laser-induced graphene
MOON-YOUNG Choi
- 09:15 2657 Processing window and structure-property relations for CW laser-engraver reduction of graphene oxide on CMOS-compatible SiO₂/Si substrate
NAZAROV Oleksiy
- 09:30 3321 Next-Generation Supercapacitors Based on Laser-Nanostructured Metal Current Collectors
GNILITSKYI Iaroslav
- 09:45 3272 A Full Physical Strategy for Electrical Contacts on Laser Induced Graphene Electrodes
ARCORACI Davide

Tuesday May 26

N06 Smart laser processing: AI and numerical models

Chairperson(s): ANTON RUDENKO Pol sopeña

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- 10:30 2794 Neural-Network-Based Digital Twins for Precision Laser Processing
TANI Shuntaro (Invited)
- 11:00 2857 Ultrafast Laser-Induced Material Transformation: Atomistic Insight into Phase Transitions, Oxidation, and Nanoparticle Formation
ITINA Tatiana
- 11:15 2845 Pathways to Complex Nanostructure Formation Utilizing Thin-Film Properties
WANG Yi
- 11:30 459 Numerical investigations of ultrafast laser-triggered nanostructural organization in ZnO and AZO
IABBADEN Djafar
- 11:45 124 Enhanced Adhesive Bonding in Thermoplastic Composites through Laser Surface Patterning and Machine Learning based Parameter Optimization for Sustainable Applications
ASIF Muhammad Bilal

Tuesday May 26

N07 Laser-induced periodic surface structuring

Chairperson(s): STEPHAN GRÄF Beat neuenschwander

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- 14:00 2240 Probing the formation of laser-induced periodic surface structures (LIPSS) by ultrafast X-ray pulses
BONSE Jörn (Invited)
- 14:30 2913 Femtosecond temporal pulse shaping for efficient energy deposition towards LIPSS formation on aluminium and aluminium alloys
FIEDLER Florian
- 14:45 2555 Laser-induced periodic surface structures on niobium: morphology and oxidation study
SOTILLO Belen
- 15:00 2190 Engineering magnetic and superconducting anisotropy in permalloy and Nb thin films through progressive LIPSS generation by fs UV laser
FRECHILLA ZABAL Javier
- 15:15 429 Formation and control of highly regular laser-induced periodic surface structures (LIPSS) on Cu-Ni alloys
RAHNER Eric
- 15:30 1274 Femtosecond laser nanostructuring of copper surfaces for plasmonic photocatalysis
HENRY Julien
- 15:45 874 Cardio Vascular Stents with Cell-repellent Micro- and Nanostructures Generated by fs Laser Processing
HEITZ Johannes

Tuesday May 26

N08 Laser growth and nanostructuring of optoelectronic materials

Chairperson(s): STELA CANULESCU Mario garcia

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- 16:30 2760 Pulsed Laser Deposition of Metal Halide Perovskites For Optoelectronics
MORALES-MASIS Monica
- 17:00 2580 Ultrafast laser induced nanopatterning of metal halide perovskites: mechanisms and optoelectronic implications
ARIZA Rocío
- 17:15 3255 Laser processing of complex oxide materials for enhanced dielectric response
GHITIU Ioan-Mihail
- 17:30 3356 Sustainable Transparent Conductive TiON Nanofilms: Laser-Based Tailoring of Optoelectronic Properties
MARISCAL Antonio
- 17:45 2643 Optimizing sensitivity in materials analysis via laser-induced breakdown spectroscopy
HERMANN Jörg
- 18:00 3278 Large-Area Pulsed Laser Deposition Growth of Transparent Conductive Al-Doped ZnO Thin Films
BANCU Elena-Isabela

Wednesday May 27

N09 Laser-induced forward transfer and additive manufacturing

Chairperson(s): IRINA ALEXANDRA PAUN Pol sopeña

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- 08:30 556 Deposition dynamics in laser-induced forward transfer of microlenses
FERNÁNDEZ-PRADAS J. Marcos (Invited)
- 09:00 2040 Laser-Induced Forward Transfer of Hydrophilic Graphene Composites for High-Sensitivity Capacitive Humidity Sensors
PACHIU Cristina
- 09:15 462 Development of an on-demand laser process for manufacturing biosensors: application to electrophysiology
ROLANDO Enzo
- 09:30 3303 Glass Laser Morphing (GMORPH): A New Route for the Valorisation of Hard-to-Recycle Glass Waste
POU Juan
- 09:45 1675 Advances in Laser-Induced Forward Transfer of Polymer Photonic Crystal Thin Films through Material and Process Optimization
MOCANU Alexandra

Wednesday May 27

N10 Lasers for biomedical applications

Chairperson(s): JOHANNES HEITZ Juan marcos fernandez-pradas

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- 10:30 1559 Multiphoton 3D Printing for Biomedical Engineering: Microscale Precision with Macroscale Impact
PAUN Irina Alexandra (Invited)
- 11:00 1922 Manufacturing of temperature microsensors by ultrafast laser processes for biomedical applications
CHAUSSARD Joseph
- 11:15 1487 Solid state chemistry approaches in the service of laser processing of hydroxyapatite bioceramics
GAUDON Manuel
- 11:30 1481 Magnetically active microstructures produced by laser direct writing via two photon polymerization for improving osteogenesis
CALIN Bogdan Stefanita
- 11:45 916 Scalable Fabrication of plasmonic TiN Nanoparticles by Pulsed Laser Ablation in Liquids for Biomedical Applications
PLIATSIKAS Nikolaos

Wednesday May 27

NPO3 Poster session 3

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- 13:45 01_1456 Laser-fabricated nanostructures for Surface Enhanced Raman Spectroscopy
NEDYALKOV Nikolay
- 13:45 02_1534 Control of fibroblast activation via surface microtopography fabricated by Laser Direct Writing via Two Photon Polymerization
GHITA Roxana Gabriela
- 13:45 03_1663 Process optimization of gradient periodic microstructures with anisotropic wetting using Direct Laser Interference Patterning
WU Tianhao
- 13:45 04_1678 Improving the regularity of high spatial frequency laser-induced periodic surface structures (HSFL) through alteration of the microscale morphology of titanium materials
VOSS Heike
- 13:45 05_1698 Optimization of LIFT Parameters for Reproducible Free-Standing Carbon Targets in Ion Acceleration
PALLA-PAPAVLU Alexandra
- 13:45 06_1769 Laser-Controlled Porosity in Transparent CuI-Polymer Composite Coatings
MOLDOVAN Antoniu
- 13:45 07_2191 More than size matters: Bacterial adhesion on ultrashort pulse laser textured surfaces
BONSE Jörn
- 13:45 08_2234 Silver thin film deposition on periodically structured silicon substrate for antibacterial applications
LOUNIS Lynda
- 13:45 09_2291 Dopant Engineering and Laser Processing of ZnS:Cu,Cl AC Electroluminescent Thick-Films
KLAVE Madara

- 13:45 10_2385 Mechano-responsive wetting of laser-structured PDMS surfaces
Gräf Stephan
- 13:45 11_2386 Laser Pyrolysis-Derived Turbostratic Carbon Nanoparticles for Heat Transfer Applications
DUMITRACHE Florian
- 13:45 12_2499 CALGO and CALYO from powders to single crystals
SKRUODIENE Monika
- 13:45 13_2501 Engineered biomimetic interfaces using laser methods as effective platforms to enhance in vitro cellular interactions
Rusen Laurentiu
- 13:45 14_2624 Femtosecond laser microfabrication of stretchable DECT transducers for soft neural probes
SAMUEL Jibin
- 13:45 15_2808 Infrared absorption improvement in germanium through femtosecond laser structuring in a reactive atmosphere.
GOMEZ-MUNOZ Gonzalo
- 13:45 16_2817 Towards crack-free ultrafast laser processing of sapphire
LATHIKA SANTHOSH Namitha
- 13:45 17_2855 Accelerated degradation of micro-/nanoplastics in water driven by laser radiation
SMARANDACHE Adriana-Loredana
- 13:45 18_2906 Nanometric ripple formation in silicon under UV radiation and strong light focusing
GARCIA LECHUGA Mario
- 13:45 19_2929 High-Precision Laser Patterning of Masters for Large-Area Roll-to-Roll Optical Fabrication
EHRHARDT Martin
- 13:45 20_2960 Laser induced carbon sensors formed on PEEK substrates for water micropollutant detection
ASPE Barthélemy
- 13:45 21_3031 High repetition rate ultrafast laser processing of commercial polymers: Ablation cooling and thermal regimes
SOPEÑA Pol
- 13:45 22_3116 Nitrogen containing Fe-based core-shell nanoparticles from laser pyrolysis: a platform for coupled magnetism and charge transport
FLEACA Claudiu
- 13:45 23_3150 Synthesis, characterization, and bio-functionalization of iron nitride nanoparticles synthesized by ammonia sensitized laser pyrolysis
DUMITRACHE Florian
- 13:45 24_3154 Tailoring the functional properties of TiO₂ nanoparticles produced by laser pyrolysis for sensor applications
DUMITRACHE Florian
- 13:45 25_3206 Observation of Femtosecond Laser-Induced Plasma and Shockwave in Thin Flat Water Jet
FIEDLER Florian
- 13:45 26_3208 Ultrafast time-resolved microscopy of plasma formation and structural modification in polymers induced by femtosecond laser pulses
GARCIA LECHUGA Mario
- 13:45 27_3230 Development of double-layer foam targets for improving laser driven proton acceleration
MAGUREANU Alexandru

13:45	28_3295	Laser processing of metal oxide thin film for photonic applications STINGESCU Maria-Luiza
13:45	30_3334	Angular anisotropy in pulsed electron beam deposition and its role in the growth of oxide thin films: a RBS study NISTOR Magdalena
13:45	31_3378	Optimized Transparent p-Type Conducting CuCrO ₂ Films Synthesized by Pulsed Laser Deposition ABBASI S.A.
13:45	32_3418	Phonon Dynamics and Thermoelectric Transport in Buried Graphitic Channels in Diamond SALAMI Sana
13:45	33_78	CO ₂ Laser-Induced Surface Modification of Graphite Felt for High-Performance Redox Flow Battery Electrodes AFTAB Muhammad
13:45	34_804	Spark plasma sintering and laser welding of CrCuFeV medium-entropy alloy TOMASHCHUK Iryna
13:45	35_808	Silanization of nanosecond laser-treated titanium surfaces in view of superhydrophobic behavior TOMASHCHUK Iryna
13:45	36_877	Single-pixel terahertz imaging with laser fabricated beam shaping elements using angular momentum of structured light KIZEVICIUS Paulius
13:45	37_879	Light Engineering and Laser fabricated Nonparaxial Terahertz Homodyne Imaging MUNDRYS Karolis
13:45	38_921	Regularity – A free tool for the objective, high-throughput quantification of the regularity of laser-induced periodic surface structures (LIPSS) RAHNER Eric

Thursday May 28

N12 Laser engineering of functional nanomaterials for structural color and plasmonics

Chairperson(s): STEFAN NOLTE Stephan gräf

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08:30	2791	Laser-induced porosity in asymmetric Fabry-Perot resonators for multi-mode structural colors DESTOUCHES Nathalie (Invited)
09:00	2858	Laser-driven synthesis and transformation of glass-Ag nanoparticle nanocomposites for plasmonic and structural coloration GONZALO Jose
09:15	860	Laser-Ablated Cu ₂ O Inks with Embedded Cu ⁰ Nanodomains Enable Stable Spray-Processed Photocathodes LAMBERTI Francesco
09:30	538	Laser-induced reductive sintering of various metal oxide nanoparticle inks LEE Daeho
09:45	2245	Tamm Plasmon Lasers Enabled by Metal-DBR Material Engineering LAUPRETRE Maël

Thursday May 28

N13 Laser processing and fabrication of thin films

Chairperson(s): THOMAS LIPPERT Pol sopeña

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10:30	2647	Transparent p-type semiconductor layers based on copper compounds LANCOK Jan
10:45	953	Excimer Laser Annealing for Phase-Controlled Crystallization of Hafnia Thin Films CHO Hans
11:00	2696	Femtosecond structuration and crystallization of vanadium oxide thin films JMYI Bassma
11:15	2082	Laser Engineering of Functional Thin Films DINESCU Maria (Invited)

Thursday May 28

N14 From surface to bulk semiconductor laser writing

Chairperson(s): MARIO GARCIA Stephan gräf

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14:00	2684	Ultrafast laser in-volume processing of narrow-bandgap semiconductors NOLTE Stefan (Invited)
14:30	2359	Manipulating Defect Formation Energetics in Semiconductors by Laser Crystallization NIELSEN Rasmus
14:45	1255	Laser-induced In-bulk Column Modifications in Silicon with Ultrashort Single and Multi-pulses. FENECH Maxime
15:00	528	Ultrathin Amorphous Silicon Layers by Deep-UV Femtosecond Laser for Microelectronics BENALI Wissal
15:15	188	Laser Based Stressed Layers for Wafer Bow Control in MEMS Manufacturing STEINER Fritz
15:30	1358	Suppressing compensating dopant-vacancy clusters using nanosecond laser processing in ion implanted Ge and GeSn thin films EKSTEEN Michael

Thursday May 28

N15 Nanoparticle laser synthesis and functionalization

Chairperson(s): NATHLIE DESTOUCHES Antoniu moldovan

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16:30	1313	Recent advances in laser-synthesized nanoparticles for biomedical and tissue engineering applications AL-KATTAN Ahmed
16:45	3273	One Pot LASER-driven Functionalization of Cu Nanoparticles and Optimization for Electrochemical Biosensors development IACONO Valentina
17:00	1282	Laser sintering of silver nanoparticles thin films for display industry LOSI Tommaso
17:15	1819	Atomistic Modeling of Ultrafast Laser-Induced Carbon Adsorption and Oxidation on Nickel Nanoparticles TOULIL Abderrazak
17:30	929	Pump-Wavelength-Tunable Lasing in Self-Assembled Quantum Dot Superparticles REALE Marco