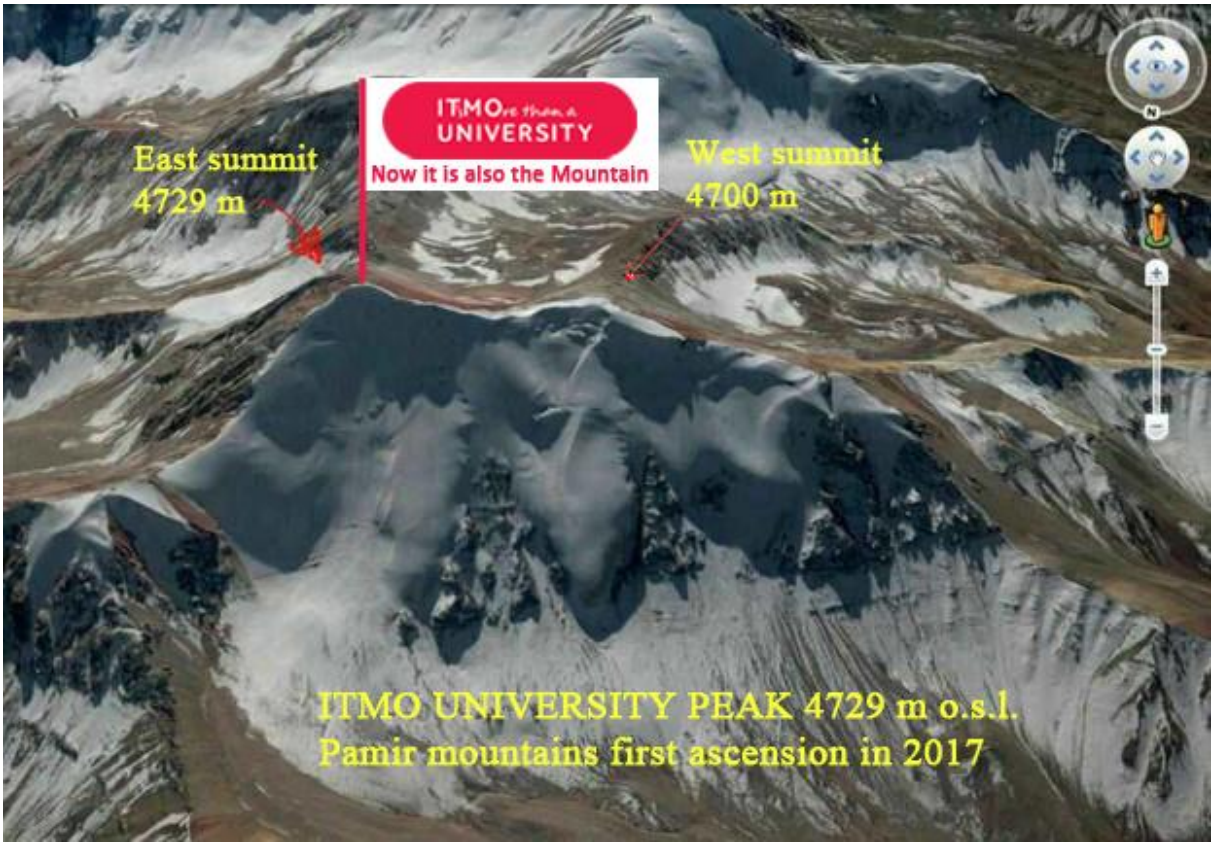
First Announcement

INTERNATIONAL SYMPOSIUM FLAMN-19

Fundamentals of Laser Assisted Micro– & Nanotechnologies

Dedicated to the 50th anniversary of the first Conference of Non-resonant Laser-Matter Interaction

June 30 - July 4, 2019
St. Petersburg, Russia



Important dates

March 1, 2019	Abstracts submission due to date
March 15, 2019	Notification of paper acceptance
April 1, 2019	Visa application deadline
May 31, 2019	Final program
June 30 - July 4, 2019	**Manuscript due date**
June 30 - July 4, 2019	**Symposium**

Honorary Chairs

Vladimir N. Vasiliev,
ITMO University, St. Petersburg

Ivan A. Shcherbakov
GPI RAS, Moscow

Symposium Chairs

Vadim P. Veiko,
ITMO University, St. Petersburg

Vitaly I. Konov
GPI RAS, Moscow

Program Committee Co-Chairmen

A. Belikov, ITMO University, Russia
S. Garnov, GPI RAS, Russia
B. Chichkov, LUH and Laser Zentrum, Germany
Lu Yongfeng, Nebraska University, USA
A. Rode, ANU, Australia
A. Semerok, SACLAY, France
M.J. Soileau, CREOL, USA
K. Sugioka, RIKEN, Japan

Scientific Secretary

Odintsova G., ITMO University

Preliminary International Advisory Committee

Anisimov S., Russia
Ashmontas S., Lithuania
Bulgakova N., Czech Rep
Fotakis K., Greece
Gaponov S., Russia
Gapontsev V., Russia
Garanin S., Russia
Grigoryants A., Russia
Ionin A., Russia
Kashkarov P., Russia
Kautek W., Austria
Kazuyoshi I., Japan
Kivshar Yu., Australia
Klimov V. Russia
Kopaeva V., Russia
Krokhin O., Russia
Luches A., Italy
Miyamoto I., Japan
Ochkin V., Russia
Orlovich V., Belarus
Panchenko V., Russia
Poprawe R., Germany
Sergeev A., Russia
Soifer V., Russia
Soskin M., Ukraine
Zheltikov A., Russia

Preliminary International Program Committee

Altshuler G., USA
Arakelyan S., Russia
Caricato A., Italy
Cheng Y., China
Destouches N., France
Detalle V., France
Efimov O., USA
Gelfond M., Russia
Gillner A., Germany
Gordienko V., Russia
Gorny S., Russia
Gruzdev V., USA
Helvajian H., USA
Hennig G., Switzerland
Hermann P., Canada
Inogamov N., Russia
Ivanov D., Germany
Itina T., France
Kabashin A., France
Klimentov S., Russia
Kolobov A., Japan
Komolov V., Russia
Kozlov S., Russia
Kudryashov S., Russia
Luk'yanchuk B., Singapore
Makarov S., Russia
Matiushkov V., Belarus
Meunier M., Canada
Mihailescu I., Romania
Odintsova G., Russia
Ostendorf A., Germany
Piqué A., USA
Račiukaitis G., Lithuania
Rethfeld B., Germany
Sentis M., France
Sergeev M., Russia
Serra P., Spain
Shahno E., Russia
Shiganov I., Russia
Sirro S., Russia
Smurov I., France
Sobol E., Russia
Szörenyi T., Hungary
Tribelsky M., Russia
Tsuboi Y., Japan
Turichin G., Russia
Tuchin V., Russia
Vartanyan T., Russia
Wintner E., Austria
Yakovlev E., Russia
Zavestovskaya I., Russia
Zergioti I., Greece
Zhigilei L., USA
Zhu Xiao, China

Organizing Committee

Ageev E., ITMO University, St. Petersburg
Andreeva Ya., ITMO University, St. Petersburg
Brui E., ITMO University, St. Petersburg
Komolov V., ITMO University, St. Petersburg
Semyashkina Y., ITMO University, St. Petersburg
Schedrina N., ITMO University, St. Petersburg
Sirro S., The State Russia Museum, St. Petersburg
Petrov A., ITMO University, St. Petersburg
Yakovlev E., ITMO University, St. Petersburg

Introduction

This Symposium continues well-known symposia ILATA (Intensive Laser Actions and Technological Applications) consisted from LAMN (Laser-Assisted Microtechnologies) and LMI (Laser-Matter Interaction) conferences used to be organized in former Leningrad, USSR since the middle of the sixties of the past century.

Laser–assisted micro- and nanotechnologies are rapidly growing areas of research, development and production.

The Symposium will be devoted to the broad spectrum of laser micro– and nano– processing from physical fundamentals of different processes and their experimental demonstration to the development and realization of industrial equipment.

FLAMN-19 will include two main sections:

Laser-Assisted Micro- and Nanotechnologies and **Laser-Matter Interaction**
and special scientific events (preliminary):

- **Conference for young scientists, engineers and students "Intensive Laser Actions and Applications"**
- **Conference "Intensive laser actions in biology and medicine"**
- **Workshop "Photophysics of Nano-scale Systems"**
- **Workshop "Laser Technologies for Nanophotonics"**
- **Workshop "Lasers for Cleaning and Artifacts Restoration"**
- **Workshop "Laser surface microstructuring"**
- **Workshop "Industrial application of lasers"**

Main Topics of the Symposium

Laser-Assisted Micro- and Nanotechnologies

- physical fundamentals of laser-based microtechnologies, modeling, and quantitative analysis;
- precision laser microshaping: cutting, drilling etc;
- local laser modification of different materials composition and properties;
- laser surface microstructuring;
- laser melting, welding, and soldering of microcomponents including plastics;
- laser-based metho
- laser processing of thin films;
- laser trimming of electronic and optical components, mask saving;
- laser technology for MEMs and fluidic devices;
- physical, optical and computer feedbacks on laser microtechnologies;
- in-situ measurements of laser processing properties;
- laser and optical devices and laser systems for microtechnologies;
- laser soldering and micro-welding;
- physical conceptions of laser cleaning of solid surfaces;
- applications of laser cleaning in mechanical engineering (cleaning pipes, removal of surface layers and coatings, cleaning cutting edges, etc.);
- laser decontamination of radioactively polluted surfaces;
- advanced applications of phase-change phenomena in optical materials and memory alloys ds of photonics components fabrication;
- laser cleaning of the surface;
- laser forming.

Laser-Matter Interaction

- mechanisms of laser heating, structural and phase transitions in condensed matter;
- nonlinear optical effects in the matter under intensive laser irradiation;
- physical mechanisms of laser damage of optical materials and elements;
- laser-induced surface phenomena;
- laser-matter interaction in the near-field optics;
- mechanisms and regularities of laser ablation;
- instabilities and self-organization processes under laser conditioning;
- adsorption and orientation of organic molecules on surfaces;
- interaction of ultrashort laser pulses with a matter;
- electronic and optical properties of nanostructures;
- interaction of light with clusters and nanostructures;
- near field phenomena;

- ultrafast dynamics of plasmon excitations in nanostructures;
- physical fundamentals of femtosecond laser action technologies;
- ultrafast laser heating, melting, and ablation;
- laser-induced reversible structural transformations in solids;
- photo-induced crystallization and amorphisation.

Conference for young scientists, engineers and students "Intensive Laser Actions and Applications"

Co-chairman: **Maksim Sergeev**, **Tigran Vartanyan.**

- physical fundamentals of laser–based microtechnologies, modeling, and quantitative analysis;
- precision laser microshaping: cutting, drilling etc;
- local laser modification of different materials composition and properties;
- laser melting, welding, and soldering of microcomponents including plastics;
- pulsed laser deposition including local laser-plasma deposition of thin films;
- laser and optical devices and laser systems for microtechnologies;
- mechanisms of laser heating, structural and phase transitions in condensed matter;
- nonlinear optical effects in the matter under intensive laser irradiation;
- physical mechanisms of laser damage of optical materials and elements;
- laser–induced surface phenomena;
- electronic and optical properties of nanostructures.

Conference "Intensive laser actions in biology and medicine"

Co-chairman: **Andrey Belikov**, **Valery Tuchin**.

- light-tissue interaction;
- mechanisms of laser-tissue interaction;
- surgical and other applications of lasers;
- laser and optical diagnostics;
- optical clearing and light propagation in cells and biotissues;
- laser-tissue microprocessing and drug delivery;
- laser printing of living cells;
- photodynamics therapy;
- optical coherence tomography and its application;
- laser action on cartilage tissues;
- laser–induced biotissue regeneration;
- selective laser photothermolysis and its applications;
- subablative laser processing of biotissues;
- adaptive laser for biotissues processing;
- ultrafast lasers for biomedical applications;
- terahertz waves interaction with cells and tissues.

Workshop "Photophysics of Nano-scale Systems"

Co-chairman: **Tigran Vartanyan**, **Nathalie Destouches**.

- physics behind laser methods of nanostructures manufacturing;
- nanostructures modification and conditioning via optical means;
- laser driven self-assembly of nanoparticles;
- spectral and time-resolved optical characterization of nanostructures;
- enhancement of exciton-plasmon interactions in hybrid nanostructures;
- linear and nonlinear optical processes in nanostructured materials;
- nanostructures-based photodetectors and solar cells;
- nanostructures for non-electrical conversion of optical energy: water boiling, chemical reaction etc.;
- nanocomposite materials for optical chemi- and biosensors;
- plasmon enabled near-infrared overtone molecular sensing;
- nanoscale lasers and spasers;
- advanced computational methods for modelling of photophysical processes in nanostructures.

Workshop "Laser Technologies for Nanophotonics"

Co-chairman: **Sergey Makarov**, **Boris Chichkov.**

- laser fabrication of plasmonic nanostructures;
- laser fabrication of nanoparticles;
- nanostructures under strong laser field;
- laser fabrication of functional nano- and microstructures;
- laser processing of advanced optical materials;
- laser-assisted bio-nanophotonics;
- 3D laser printing;
- nanoscale laser ablation;
- laser-assisted self-organization of nanostructures;
- laser-matter interaction at nanoscale;
- laser transfer of nano- and microparticles;

- new designs for laser-matter interaction;
- new methods of optical nanolithography.

Workshop "Lasers for Cleaning and Artifacts Restoration"

Co-chairman: **Vincent Detalle**, **Alexandre Semerok**, **Sergey Sirro**, **Elena Shahno**

Laser Cleaning of Artefacts

- laser cleaning of stone, metals, wood, paper, parchments, painted surfaces;
- recent advances:
- remote cleaning;
- laser pulse duration effects and other.

Analysis of composition and structural diagnostics by NDT

- laser spectroscopic techniques: Optical (LIF, LIBS, Raman) and Mass spectrometric (LMS);
- interferometric techniques: Double exposure holography, Speckle Interferometry, Optical Coherence Tomography and other;
- 3D laser and fringe-pattern projection scanning;
- multicolor and Terahertz imaging;
- IR-thermography, imaging and testing.

Workshop "Laser surface microstructuring"

Co-chairman: **Sergey Klimentov** and **Galina Odintsova**.

- physical fundamentals of laser microstructuring of solid surfaces;
- ultrafast laser structuring of hard and soft materials;
- laser -induced periodic surface structures;
- main functional surfaces in medical, solar cell, instrumentation and other industry fields;
- peculiarities of laser control of various properties of materials: optical, chemical, electrical, mechanical, biocompatability etc.;
- measuring of surface geometry and properties;
- laser smoothing.

Workshop "Industrial application of lasers"

Chairman: **Sergey Gorny**.

Organizers

– St. Petersburg National Research University of Information Technologies, Mechanics and Optics (ITMO University), St. Petersburg, Russia
– General Physics Institute of Russian Academy of Sciences (GPI RAS), Moscow, Russia

In cooperation with:

– The State Russia Museum;
– Laser Association;
– D.S. Rozhdestvensky Russian Optical Society;
and other organizations.

Expected Sponsors

– Russian Federation Ministry of Education and Science;
– Russian Foundation for Basic Researches;
– St. Petersburg National Research University of Information Technologies, Mechanics and Optics;
– General Physics Institute of Russian Academy of Sciences;
– Journal "Photonics Russia".

FLAMN-19 will be held on June 30 - July 4, 2019, St. Petersburg, ITMO University

The selected papers of the Symposium will be published in International and Russian scientific journals: *"Optical and Quantum Electronics", "Quantum Electronics", "Journal of Optical Technologies", "Journal of Instrument Engineering", "Scientific and Technical Journal of Information Technologies, Mechanics and Optics".*

The registration and accommodation guidance, Call for Papers and the list of invited speakers will be specified in the Second Announcement.

Languages

The official language of the Symposium is English.

Elaboration of Contributions

Authors are invited to submit electronically 1-page abstracts of 250-300 words (**in MS WORD only**).
Abstract submission form will be available online after registration at the Symposium site.

Saint-Petersburg

Saint-Petersburg has earned the reputation of being one of the most beautiful cities in the world thanks not only to its unique palaces and churches but also to its inimitable architectural ensembles of streets, canals, and squares. St. Petersburg is a city of splendid palaces and beautiful buildings, its most common architectural styles being baroque and classical, which reached their peak here on Russian soil.
There are more than 90 museums in the city and its surroundings, including the Hermitage - one of the world's leading treasures stores of art. St. Petersburg is the home of the famous Russian classical ballet school and numerous ballet and opera theaters will be available during Symposium time.
Symposium time is a time of world known White Nights when many cultural events (musical, theatrical and art show) take place here.

Contact Information for FLAMN–19 Program & Organizing Committees

St. Petersburg National Research University of Information Technologies, Mechanics and Optics (ITMO University).
Address: 49 Kronverksky pr., 197101, St. Petersburg, Russia.
Phone/FAX: +7 (812) 233 3406.

E–mails:
flamn_org@corp.ifmo.ru (Organizing Committee).
flamn_prog@corp.ifmo.ru (Program Committee).

Website: https://flamn.ifmo.ru

Symposium address

ITMO University, St. Petersburg.
49 Kronverksky pr., 197101, St. Petersburg, Russia.
Tel.: +7(812) 449-54-38.