6th EUCASS
Aerospace Thematic Workshop: Fundamentals of Aerodynamic Flow and Combustion Control by Plasma

Program

Pushkin, Saint Petersburg
Russia

April 9-14, 2017

SPONSORS:

PARTNERS:

SUNDAY, APRIL 9

17:00	**REGISTRATION**
19:00	**WELCOME RECEPTION**

SCHEDULE OF REGISTRATION DESK

08:00 - 17:00	**Monday, April 10**
10:00 - 17:00	**Tuesday, April 11**
10:00 - 17:00	**Wednesday, April 12**
10:00 - 12:00	**Thursday, April 13**

SOCIAL PROGRAM

Sunday, April 9, 19:00	Welcome Reception
Monday, April 10, 13:00	Bus tour to Pavlovsk
Wednesday, April 12, 13:30	Walking tour to Tsarskoe Selo (Pushkin)
Thursday, April 13, 13:00	Bus tour to Saint Petersburg with a visit to Peter and Paul Fortress and Conference banquet

MONDAY, APRIL 10

Topic: Aerodynamic flow control

08:40 - 09:00	**OPENING**
09:00 - 10:00	**Ivan MORALEV** *(JIHT, Moscow)* Surface DBD plasma actuators: 3D effects and their possible effect on flow control applications
10:00 - 10:30	**COFFEE BREAK**
10:30 - 11:30	**Jenny LARFELDT** *(Siemens Industrial Turbomachinery AB, Sweden)* Challenges for flexible operation of Siemens industrial gas turbines
11:30 - 12:30	**Igor MASHEK** and **Valery LASHKOV** *(SPSU, Russia)* Beamed Energy Deposition in Supersonic Flows. Physics and Aerodynamic Applications
12:30	**LUNCH**

Topic: Aerodynamic flow control

17:00 - 18:00	**Andrei SIDORENKO** *(ITAM, Russia)* Plasma control of transonic and supersonic separated flows
18.00 - 19.00	**Sergey STEPANYAN** *(Ecole Centrale, France)* Hydrodynamic effects induced by nanosecond discharges in air, Ar, combustible mixtures
19.30	**DINNER**
20.30 - 22.30	**POSTER SESSION 1**

POSTER SESSION 1

N	Presenting author	Poster title
1	**Chen She** Eindhoven University of Technology, Netherlands	Modelling ionic wind by negative corona in ambient air with experimental validation
2	**Anton Karpenko** Saint Petersburg State University, Russia	Efficiency of the drag reduction of the blunt body by microwave energy deposition in supersonic flow
3	**Aleksandr Kuryachii** Central aerohydrodynamic institute (TsAGI), Russia	Approximation of volumetric force distribution generated by DBD actuator
4	**Annie Leroy** Universite Orleans, France	Experimental investigation of the effects of a pulsed actuation on the flow topology induced by a DBD actuator
5	**Nikolai Monahov** Ioffe Physical-Technical Institute of the Russian Academy of Sciences, Russia	Shock wave interaction with the glow discharge
6	**Aleksandr Lazukin** Moscow Power Engineering Institute, Russia	Electrode and dieletric barrier modification in a dielectric barrier discharge
7	**Alexei Savelev** Saint Petersburg State University, Russia	Assessment of state-resolved rate coefficients of dissociation and exchange reactions in air species
8	**Augustin Tibère-Inglesse** Ecole Centrale Paris, France	Radiation of nonequilibrium recombining flows
9	**Georgy Shoev** Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Russia	Kinetic and continuum simulation of weakly ionized flows around re-entry body
10	**Vladimir Istomin** Saint Petersburg State University, Russia	State-Specific Transport Properties of Partially Ionized Atomic Gases with Electronic Excitation
11	**Konstantin Son** Moscow Institute of Physics and Technology, Russia	Scientific research of hypersonic and plasma technologies laboratory

TUESDAY, APRIL 11

Topic: Plasma-assisted combustion

09:00 - 10:00	**Wenting SUN** *(Georgia Tech, USA)* Combustion control with ozone addition: the effect of explosive ozonolysis reactions on jet flames
10:00 - 10:30	**COFFEE BREAK**
10:30 - 11:30	**Min Suk CHA** *(KAUST)* Reforming of liquid hydrocarbons using electrical discharges
11:30 - 12:30	**Elena FILIMONOVA** *(JIHT, Moscow, Russia)* Controlling combustion timing in HCCI engine through an activation of low temperature combustion mode by streamer electrical discharges
12:30	**LUNCH**

Topic: Plasma-assisted combustion

17:00 - 18:00	**Nikolay POPOV** *(SINP, MSU, Russia)* Filamentary nanosecond SDBD: physics and application for plasma assisted combustion
18.00 - 19.00	**Huyngrok DO** *(Seoul National University, Korea)* Plasma for ignition and measurements
19.30	**DINNER**
20.30 - 22.30	**POSTER SESSION 2**

POSTER SESSION 2

N	Presenting author	Poster title
1	**Denis Komratov** Central Institute of Aviation Motors (CIAM), Russia	Investigation of poor propane-air mixture ignition by microwave discharge
2	**Alexander Kuranov** Hypersonic Systems Research Enterprise, Russia	Initiation of the exothermic decomposition of liquid hydrocarbon fuels in transonic flows by high-temperature flames from the auxiliary source
3	**Sergey Shcherbanev** Ecole Polytecnique, France	Multi-point dielectric barrier discharge at high pressures for plasma assisted ignition: spectroscopy study of the filament
4	**Nicolas Minesi** Ecole Centrale Paris, France	Hydrodynamic effects induced by nanosecond sparks in air and air/fuel mixtures
5	**Wu Yun** Xi'an Jiaotong University, China	Multi-channel discharge plasma actuation for flow control and ignition
6	**Fabrice Foucher** Université d'Orléans, France	Premixed and Partial Premixed Compression Ignition combustion engine control by using plasma discharge
7	**Olaf Bölke** Technische Universität Berlin, Germany	Low-frequency-modulated NRP plasma forcing of a swirl-stabilized flame: post-spark light emission and unsteady flame response
8	**Vladimir Zudov** Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Russia	Researches of Methane-Air Mixtures combustion Assisted by Transverse pulse-periodical Laser Radiation in Supersonic Stream
9	**Sylvain Heitz** ISTA - TU Berlin, Germany	Experimental study of nanosecond plasma discharges effect on methane-air premixed stagnation flames
10	**Ahmed Elkholy** Technical University of Eindhoven - TU/e, Netherlands	A novel micro-plasma reactor to study the thermal and chemical effect of nanosecond plasma discharge on flame stabilization
11	**Kseniya Konina** Moscow Institute of Physics and Technology, Russia	Effect of Electronically and Vibrationally Excited Particles on Combustion Characteristics of Hydrocarbons under GTE Condition

WEDNESDAY, APRIL 12

Topic: Kinetics modelling

09:00 - 10:00	**Nickolay ALEKSANDROV** *(MIPT, Russia)* Kinetics of water-containing plasmas: state-of-the-art and unsolved problems
10:00 - 10:30	**COFFEE BREAK**
10:30 - 11:30	**Alexander KONNOV** *(Lundt University, Sweden)* Response of laminar burning velocity on flame conditions and plasma constituents: experiments vs modelling
11:30 - 12:30	**Vasco GUERRA** *(Instituto Superior Técnico, Portugal)* Evidence and modelling of vibrational excitation in N_2, O_2 and CO_2 plasmas
12:30	**LUNCH**

Topic: Diagnostics

17:00 - 18:00	**Armelle CESSOU** *(CORIA, France)* Space and time analysis of energy deposition of nanosecond overvoltage pulsed discharge with spark phase
18.00 - 19.00	**Dmitry LOPAEV** *(SINP, MSU, Russia)* Elementary processes in oxygen plasma. What ever is actually important and what is still questionable
19.30	**DINNER**
20.30 - 22.30	**POSTER SESSION 3**

POSTER SESSION 3

N	Presenting author	Poster title
1	**Nikita Lepikhin** Ecole Polytechnique, France	Fast gas heating in pure nitrogen excited by a nanosecond capillary discharge
2	**Georgii Oblapenko** Saint Petersburg State University, Russia	KAPPA: an object-oriented C++ library for kinetic theory computations
3	**Evelina Prozorova** Saint Petersburg State University, Russia	Influence of the angular momentum on collective interaction in a rarefied plasma
4	**Zhang Yibin** Princeton University, United States of America	Towards shear flow measurements using FLEET
5	**Duann Yi** National Central University, Taiwan	Photochemical model for atomic oxygen ion retrieval from ground-based observations of airglow
6	**Benjamin Goldberg** Princeton University, United States of America	Electric Field Measurements in a Nanosecond Pulse Discharge in Atmospheric Pressure Air
7	**Benjamin Goldberg** Princeton University, United States of America	Femtosecond Localized Electric Field Measurements
8	**Christopher Peters** Princeton University, United States of America	Kinetics Modeling of Femtosecond Laser Tagging in Nitrogen and Gas Mixtures
9	**Igor Selivonin** Joint Institute for High Temperatures of RAS, Russia	Electrical characteristics of the surface barrier discharge
10	**Evgeniy Dolgov** Joint Institute for High Temperatures of RAS, Russia	High-speed visualisation of gasdynamics caused by spark discharge
11	**Zhu Yifei** Ecole Polytechnique, France	Study of the fine structure of streamer with hydrodynamics in nanosecond surface dielectric barrier discharge

THURSDAY, APRIL 13

Topic: Diagnostics

09:00 - 10:00	**Azer YALIN** *(Colorado State Univ., USA)* Laser Ignition: from laboratory investigation to real world application
10:00 - 10:30	**COFFEE BREAK**
10:30 - 11:30	**Ryo ONO** *(University of Tokyo, Japan)* Measurement of streamers propagation, temperature, density of radicals and electrons
11:30 - 12:30	**Giorgio DILECCE** *(CNR, Italy)* LIF on simple molecular radicals from gas discharges to combustion
12:30	**LUNCH / FREE TIME**
19.30	**BANQUET DINNER**

FRIDAY, APRIL 14

Topic: Advanced simulations

09:00 - 10:00	**Marc MASSOT** *(Ecole Polytechnique, France)* Adaptive time-space algorithms with error control for the simulation of multi-scale reaction waves: plasma/combustion applications
10:00 - 10:30	**COFFEE BREAK**
10:30 - 11:30	**Laxminarayan RAJA** *(Univ. of Texas at Austin, USA)* Multi-scale computational modeling of plasma-assisted ignition and combustion control
11:30 - 12:30	**Victor SOLOVIEV** *(MIPT, Russia)* Fundamentals of SDBD development
12:30	**CONCLUSIONS / LUNCH**

CULTURAL PROGRAM

Bus tour to Pavlovsk

April 10

Departure: 13:00 from Kochubey hotel

Price: 1600 RUB

This is the superb palace-and-park ensemble of the late 18 – early 19 centuries which was used as a summer residence of the Russian emperor Paul I and his family. The landscape park, one of the largest in Europe, covers the area of 600 ha.

Walking tour to Tsarskoe Selo (Pushkin)

April 12

Departure: 13:30 from Kochubey hotel

Included in the registration fee

Tsarskoe Selo (Royal Village), located 25 km south of St. Petersburg, first appeared in the 18C as the summer residence of the Russian tsars. Created for two centuries by many prominent architects, the unique architectural ensemble of Pushkin is world famed for its elegant palaces and pavilions, landscape parks and ponds, 18-century marble statues and historic obelisks.

Bus tour to Saint Petersburg with a visit to Peter and Paul Fortress and Conference banquet

April 13

Departure: 13:00 from Kochubey hotel

Price of the banquet: 1000 RUB

The tour includes picturesque sightseeing peculiarities that are most favored by tourists from all over the world. You'll invariably see and admire the Palace Square, make a stop by the beautifully decorated Church of Resurrection, Saint Isaac's Cathedral and Peter and Paul fortress with Cathedral where all Russian emperors were buried.

Tickets can be booked via Personal area.

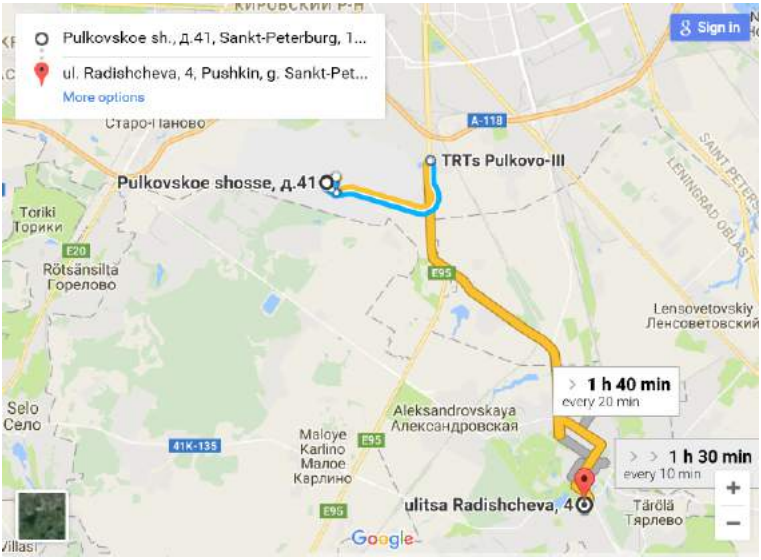
Please note that the number of tickets for the tour to Tsarskoe Selo (Pushkin) is limited.

TRANSPORTATION

From Saint Petersburg airport Pulkovo:

By public transport:

Please take a bus #39 or a minibus #K39 from the terminal to the stop "Shopping mall Pulkovo III". There take a minibus #K299 (with the destination of Pavlovsk) to the stop "Parkovaya street/Sadovaya street". Walk straight along Parkovaya street up to the corner with Radischeva street. Turn left. The address of the Kochubey hotel is 4, Radischeva street.



By taxi:

We recommend you to use a mobile app for ordering a taxi (Uber, Yandex taxi) or use the services of Taxi Pulkovo. Taxi Pulkovo counters are located at Arrivals hall on the first floor of the Terminal.
Please do not use an illegal taxi as it may not be safe.

From railway station Moskovskii:

By public transport: http://onlinereg.ru/site.php?go=267&page=6304&lang=ENG

By taxi:

We recommend to use a taxi - you can either order it by a mobile app (Uber, Yandex taxi) or use the services of the following companies:
Taxi 068 - tel: 8 800 550 0 068
Taxi Vezet - tel: +7 (812) 600 5006