

IWEPAC – 7

Tentative Agenda

Monday, 12 September

16.00 – 18.00 Registration: Excalibur-Hotel, Lobby
3850 Las Vegas Blvd South, Las Vegas, NV 89109 USA
Phone: 1-877-750-5464, <http://www.excalibur.com/hotel>

Tuesday, 13 September

8.30 – 9.00 Registration: Luxembourg Room

9.00 – 9.30 **IWEPAC-7 OPENING**

Welcome remarks from:

- *Dr. Igor Matveev* (Applied Plasma Technologies, LLC)
- *Dr. Louis Rosocha* (Los Alamos National Laboratory, DOE and Applied Physics Consulting)

Announcements

9.30 – 12.15 **PLASMA GENERATION, DIAGNOSTICS, AND MODELING**

Chaired by *Dr. Igor Matveev*, Applied Plasma Technologies, LLC, USA

9.30 – 10.00 **Thermal Plasma Jet Generated by Gas-Water Torch: Properties and Applications**

M. Hrabovsky, M. Konrad, V. Kopecky, T. Kavka, O. Chumak, V. Sember, A. Maslani (Institute of Plasma Physics AS CR, Czech Republic)

10.00 – 10.30 **High Efficient Vortex Steam Plasma Torch – Preliminary Study**

L. Charokhovski, A. Marquesi, Ch. Otani, G. Petraconi Filho, R. Bicudo, A.S. da Silva Sobrinho, M. Massi, A. V. Gorbunov (Technological Institute of Aeronautics, Brazil)

10.30– 11.00 **Analysis of Transport Properties of Contaminated Plasmas in 300 kW Transferred Arc DC Reactor Under Gasification and Vitrification of High-ash Fuels and Wastes**

A.V. Gorbunov, Prof. H.S. Maciel, A.F. Bubljevsky, S.I. Kas'kova, V.A. Gorbunova, A.A. Galinovsky (Technological Institute of Aeronautics, Brazil)

11.00 – 11.15	Break
11.15 – 11.45	Some Results of High Power Atmospheric Pressure RF Torches Development <i>Dr. Igor Matveev</i> (Applied Plasma Technologies, LLC, USA)
11.45 – 12.15	Round Table on Plasma Generation, Diagnostics, and Modeling
12.15 – 15.15	PLASMA IGNITION AND FLAME CONTROL Chaired by <i>Prof. Homero S. Maciel</i> , Technological Institute of Aeronautics, Brazil
12.15 – 12.45	Ionization and Energy Deposition in Pulsed Nanosecond Discharges in the Filamentary Regime at Different Pressures and Temperatures <i>C. Guerra Garcia, M. Martinez Sanchez</i> (Aeronautics and Astronautics Department, Massachusetts Institute of Technology, USA)
12.45 – 13.45	Lunch
13.45 – 14.15	Supersonic Ignition System Utilizing Gliding Arc Plasma <i>Hadade Neto, A. C. Pereira Filho, H. S. Maciel, M. Médici</i> (Turbotronic Tecnologia; IEAv – Instituto de Estudos Avançado; ITA – Instituto Tecnológico de Aeronáutica, Brazil)
14.15 – 14.45	Development of the Convective Cooling System for the Gas Turbine Plasma Assisted Combustor <i>Prof. Serhiy Serbin, Anna Mostipanenko, Kateryna Serbina</i> (National University of Shipbuilding, Ukraine) <i>Dr. Igor Matveev</i> (Applied Plasma Technologies, LLC, USA)
14.45 – 15.15	Ultra Lean Burn Combustion Via Nanosecond Discharge Plasma Ignition <i>Lonnie Lenarduzzi</i> (Plasmatronics, LLC, USA)
15.15 – 15.30	Round Table on Plasma Ignition and Flame Control
15.30 – 15.45	Break
15.45 – 17.15	FUEL ACTIVATION AND REFORMATION Chaired by <i>Prof. Serhiy I. Serbin</i> , National University of Shipbuilding, Ukraine

15.45 – 16.15 **Efficient Conversion of CO₂ to CO by Novel Plasma Method**

Dr. Louis Rosocha, Dr. Yong Ho Kim (Los Alamos National Laboratory, DOE, USA)

Prof. Yuri Korolev (Institute of High Current Electronics, Russia)

16.15 – 16.45 **Methane Oxidation in a Plasma Torch of Non-steady State Plasmatron**

Yu.D. Korolev, O.B. Frants, S.I. Galanov, O.I. Sidorova, V.S. Kasyanov (Institute of High Current Electronics, Russia)

Y. Kim, L.A. Rosocha (Los Alamos National Laboratory, Los Alamos, USA)

Dr. Igor Matveev (Applied Plasma Technologies, LLC, USA)

16.45 – 17.15 Round Table on Fuel Activation and Reformation

18.00 – 22.00 Welcome Reception (Kent Hall)

Wednesday, 14 September

9.00 – 10.30

PLASMA KINETICS AND FLOW DYNAMICS

Chaired by *Dr. Louis Rosocha* (Los Alamos National Laboratory, DOE and Applied Physics Consulting)

9.00 – 9.30 **Kinetics and Plasma Chemistry of Nanosecond Pulse Discharges and Fast Ionization Wave Discharges**

Keisuke Takashima, Igor V. Adamovich (Department of Mechanical and Aerospace Engineering The Ohio State University, USA)

9.30 – 10.00 **Development of Synthesis Gas Afterburner Based on Injector Type Plasma Assisted Combustion System**

Prof. Serhiy Serbin, Serhiy Vilkul (National University of Shipbuilding, Ukraine)

Dr. Igor Matveev (Applied Plasma Technologies, LLC, USA)

10.00 – 10.30 Round Table on Plasma Kinetics and Flow Dynamics

10.30 – 10.45 Break

10.45 – 15.15

COAL, BIO-MASS, AND WASTE INTO ENERGY PROCESSING

Chaired by *Dr. Edberto Leal-Quiros*, University of California, USA

10.45 – 11.15 **Gasification of Pyrolytic Oil from Scrap Tires by Thermal Plasma**

M. Hrabovsky, M. Konrad, M. Hlina, V. Kopecky, T. Kavka, O. Zivny, O. Chumak, A. Maslani (Institute of Plasma Physics AS CR, Czech Republic)

11.15 – 11.45 **Production of Synthesis Gas with Atmospheric Pressure Plasma Processing of Coffee Grounds (Borra de Café) and other Organic Waste**

Dr. E. Leal-Quiros, G. Diaz, N. Sharma, S. Pineda, S. Fleming, I. Hussein, A. Robles (University of California, USA)

11.45 – 12.15 **Features of the Working Process in Three-stage Plasma Coal Gasification System**

Prof. Serhiy Serbin, Natalia Goncharova (National University of Shipbuilding, Ukraine)

Dr. Igor Matveev (Applied Plasma Technologies, LLC, USA)

12.15 – 12.45 **Thermochemical Assessment of Arc Plasma Gasification Efficiency for Brazilian Subbituminous Coal and Related Feedstock**

A.V. Gorbunov, A.R. Marquesi, Prof. H.S. Maciel, Prof. P.T. Lacava (Technological Institute of Aeronautics, Brazil)

12.45 – 13.45 Lunch

13.45 – 14.15 **Effect of Gas Dynamic Mixing of Thermal Plasma Jets With Spray of Coal Slurry / Hydrocarbon-based Feedstock on the Operation of Plasma Gasification System**

A.V. Gorbunov, Prof. H.S. Maciel, A.R. Marquesi, Prof. C. Otani, A.A. Galinovsky, V.A. Gorbunova (Technological Institute of Aeronautics, Brazil)

14.15 – 14.45 **Plasma Coal Burner**

Dr. Igor Matveev (Applied Plasma Technologies, LLC, USA)

14.45 – 15.15 Round Table on Coal, Bio-mass, and Waste into Energy Processing

15.15 – 15.45 Break

15.45 – 17.45

WATER TREATMENT

Chaired by *Dr. Isaiah Blankson*, NASA, USA

15.45 – 16.15 **An Overview of Water Treatment by Plasmas – Advanced Oxidation/Reduction Technologies AO/RTs**

Dr. Louis Rosocha (Applied Physics Consulting, USA)

16.15 – 16.45 **Non-equilibrium Plasma Applications for Water Purification Supporting Human Spaceflight and Terrestrial Point-of-Use: Organic Chemical Decomposition via HV Nanosecond Plasma Discharge**

Dr. Isaiah Blankson (NASA, USA)

Dr. John E. Foster (University of Michigan, USA)

16.45 – 17.15 **Water Treatment and Power Co-Generation Using Hydrothermal, Supercritical Water Produced by Pulsed Electric Discharges**

W. Lowell Morgan (Kinema Research & Software, LLC, USA)

Louis A. Rosocha (Applied Physics Consulting, USA)

17.15– 17.45 Round Table on Water Treatment

Thursday, 15 September

9.00 – 11.45

POWER SOURCES

Chaired by *Prof. Yuri Korolev*, Institute of High Current Electronics, Russia

9.00 – 9.30 **Power Supply for Discharges in Gas Flow**

Prof. Yu.D. Korolev, V.G. Geyman, O.B. Frants, V.A. Panarin, S.B. Alekseev (Institute of High Current Electronics, Russia)

Y. Kim, L.A. Rosocha (Los Alamos National Laboratory, USA)

C. Cassarino, T. Frambes (Leonardo Technologies, Inc. USA)

9.30 – 10.00 **Power Supplies for Non-thermal Torches**

Dr. Igor Matveev (Applied Plasma Technologies, LLC, USA)

Sergey Zakharov (ZS Systems, LLC, USA)

10.00 – 10.15 Break

10.15 – 10.45	An Overview of Recent Innovations in Power Sources for Advanced Plasma Processes <i>Dr. Pawel Grabowski</i> (HUETTINGER Electronic Inc, USA)
10.45 – 11.15	Main Requirements to Prospective Power Supplies for High Power 1+ Bar Pressure RF Torches <i>Dr. Igor Matveev, Evgeniy Petrov</i> (Applied Plasma Technologies, LLC, USA)
11.15 – 11.45	Round Table on Power Sources
11.45 – 12.00	Break
12.00 – 15.00	NEW PLASMA EFFECTS AND PROSPECTIVE APPLICATIONS Chaired by <i>Dr. Rajan Bamola</i> , Surface Modification Systems, Inc., USA
12.00 – 12.30	Current Status of Plasma Spray Coatings <i>Dr. Rajan Bamola, Dr. Vasudevan Srinivasan</i> (Surface Modification Systems, Inc., USA)
12.30 – 13.00	Advantages of High Pressure RF Torches with Reverse Vortex Stabilization for Plasma Sprayed Coating and Powders Treatment <i>Dr. Igor Matveev</i> (Applied Plasma Technologies, LLC, USA) <i>Prof. Serhiy Serbin</i> (National University of Shipbuilding, Ukraine)
13.00 – 14.00	Lunch
14.00 – 14.30	Matching Electric Power to Processing <i>Dr. E.J.M. van Heesch, A.J.M. Pemen, F.J.CM. Beckers, W.F.L.M. Hoben, K. Yan, G.J.J. Winards</i> (Eindhoven University of Technology, Netherlands)
14.30 – 15.00	Round Table on New Plasma Effects and Prospective Applications
15.00 – 16.00	DISCUSSIONS, NEGOTIATIONS Conference Closing
	ELECTRONIC POSTERS
	Non Self Maintained Gas Discharge Ignition System for Impact on Flammable Gas Mixtures

D.V. Bychkov, V. L. Bychkov, S.V. Denisiuk (FSUE “Moscow Radiotechnical Institute of Russian Academy of Sciences”, Russia)

N.V. Ardelyan, K. V. Kosmachevskii (M.V. Lomonosov Moscow State University, Russia)

I.V. Kochetov (*State Research Center of Russia Troitsk Institute for innovation and Thermonuclear Research (TRINITI), Russia*)

Experiments With Discharge Created Fireballs

V. L. Bychkov (FSUE “Moscow Radiotechnical Institute of Russian Academy of Sciences”, Russia)

S. E. Emelin (*Faculty of Physics, Saint-Petersburg State University, Russia*)