

ICOPS 2017 Program (as of May 15)

Session PL1: Plenary 1

Monday, May 22 08:30-08:45, Wildwood 3

Session Chair: Jose Lopez, Seton Hall University

8:30 PL1-1 (invited) HIGH-POWER MILLIMETER-WAVE SOURCES

A. D. R. Phelps

Physics, University of Strathclyde, Glasgow, United Kingdom

Session MO 1.1: Basic Plasma Phenomena I

Monday, May 22 10:00-12:00, Wildwood 9

Session Chair: Andrew S Fierro, Sandia National Laboratories

10:00 MO 1.1-1 DARK-TO-ARC TRANSITION IN AIR FOR PLANAR ELECTRODES WITH MICROSCALE GAPS

A. D. Strongrich¹, G. Shivkumar¹, D. Peroulis², A. A. Alexeenko¹

¹*School of Aeronautics and Astronautics, Purdue University, West Lafayette, IN, United States*

²*School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, United States*

10:30 MO 1.1-2 INVESTIGATION OF MICRODISCHARGES IN ASSYMMETRIC ARRANGEMENTS OF A PIN AND A HEMISPHERICAL ELECTRODE WITH NON-UNIFORM ELECTRIC FIELD

S. Jahanbakhsh, V. Brueser, R. Brandenburg

INP Greifswald, Greifswald, Germany

10:45 MO 1.1-3 UNIVERSAL GAS BREAKDOWN THEORY FROM MICROSCALE TO THE CLASSICAL PASCHEN LAW

A. M. Loveless, A. L. Garner

Nuclear Engineering, Purdue University, West Lafayette, IN, United States

11:00 MO 1.1-4 SIMULATION OF STRIATIONS IN DC GLOW DISCHARGES IN NITROGEN

R. Mahamud¹, T. Farouk¹, V. Kolobov²

¹*Mechanical Engineering, University of South Carolina, Columbia, SC, United States*

²*CFD Research Corporation, Huntsville, AL, United States*

11:15 MO 1.1-5 OPTICAL EMISSION SPECTROSCOPY OF PLASMA EVOLUTION IN OVERVOLTAGED SPARK GAPS

T. R. Schmidt Jr., A. T. Elshafiey, S. Portillo

Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States

11:30 MO 1.1-6 MICROPLASMA COUPLING EFFECT IN ARRAYS OF HYBRID STRUCTURE MICROCAVITIES

Y. Wang, X. Zhang, Z. He, C. Liu

electronic and information engineering, xi'an jiaotong university, xi'an, shaan xi, China

11:45 MO 1.1-7 INFLUENCE OF THE PULSED AMF ARC CONTROL ON THE VACUUM ARC AND POST ARC CHARACTERISTIC IN VACUUM INTERRUPTERS

G. Ge, M. Liao, X. Duan, Z. Huang, J. Zou

school of electrical engineering, dalian university of technology, dalian, China

Session MO 1.2: Laser Produced Plasmas

Monday, May 22 10:00-11:15, Wildwood 10

Session Chair: Guy Rosenzweig, MIT - PSFC

10:00 MO 1.2-1 CONFIGURATION OF WAVES IN TWO-PLASMON DECAY INSTABILITY UNDER WEAK LANDAU DAMPING OF PLASMA WAVES

G. S. Cho¹, J. Lee¹, Y. Y. Tsui²

¹Department of Nanoscience and Engineering, Inje University, Gimhae, Gyeongnam, South Korea

²Department of Electrical and Computer Engineering, University of Alberta, Edmonton, Alberta, Canada

10:15 MO 1.2-2 HOT ELECTRON GENERATION AND SPATIAL ENERGY DEPOSITION BY INFRARED LASER AT SHOCK IGNITION RELEVANT INTENSITY

S. Zhang¹, C. M. Krauland², J. Peebles¹, J. Li¹, F. N. Beg¹, H. Reynolds², M. L. Hoppe Jr.², W. Theobald³, D. Haberberger³, E. Borwick³, C. Ren³, C. Stoeckl³, W. Seka³, R. Betti³, E. M. Campbell³, M. S. Wei²

¹Department of Mechanical and Aerospace Engineering, University of California, San Diego, La Jolla, CA, United States

²Inertial Fusion Technology, General Atomic, San Diego, CA, United States

³Laboratory for Laser Energetics, University of Rochester, Rochester, NY, United States

10:30 MO 1.2-3 A STUDY OF FLAME DYNAMICS INDUCED BY A DUAL-PULSE LASER IGNITION TECHNIQUE

C. Dumitrache, C. Limbach, A. Yalin

Mechanical Engineering, Colorado State University, Fort Collins, CO, United States

10:45 MO 1.2-4 SHOCK WAVE GENERATION BY ULTRAVIOLET NANOSECOND LASER PULSES AT REDUCED PRESSURE

C. M. Limbach¹, C. Dumitrache², A. P. Yalin²

¹Aerospace Engineering, Texas A&M University, College Station, TX, United States

²Mechanical Engineering, Colorado State University, Fort Collins, CO, United States

11:00 MO 1.2-5 LASER-PLASMA MODELING USING PERSEUS EXTENDED-MHD SIMULATION CODE FOR HED PLASMAS

N. D. Hamlin, C. E. Seyler

Cornell University, Ithaca, NY, United States

Session MO 1.3: Intense Beam Microwave Generation I

Monday, May 22 10:00-10:45, Wildwood 12

Session Chair: Timothy P Fleming, Air Force Research Lab

10:00 MO 1.3-1 COMPUTER SIMULATIONS OF A MEGAWATT-CLASS S-BAND COAXIAL MAGNETRON

A. D. Andreev¹, C. Walker²

¹Booz Allen Hamilton, Inc., Albuquerque, NM

²Communications & Power Industries, LLC, Beverly, MA

10:15 MO 1.3-2 (invited) EXPERIMENTAL HOT TEST RESULTS FROM A COMPACT METAMATERIAL SLOW WAVE STRUCTURE

S. Prasad, S. Yurt, K. Shipman, D. Andreev, D. Reass, M. Fuks, E. Schamiloglu

Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States

Session MO 1.4: Intense Electron and Ion Beams

Monday, May 22 10:00-11:45, Wildwood 13

Session Chairs: Sophia Gershman, ARISE Inc. and PPPL

Yevgeny Raitses, PPPL

10:00 MO 1.4-1 DESIGNING AN ELECTRON GUN FOR A HIGH EFFICIENCY IOT CAPABLE OF IONOSPHERIC HEATING

J. Appanam Karakkad¹, B. Beaudoin¹, A. H. Narayan¹, G. Nusinovich¹, A. Ting², C. Turner¹, T. Antonsen¹

¹Institute for Research in Electronics and Applied Physics, University of Maryland, Maryland, United States

²U.S. Naval Research Laboratory, Washington, DC, United States

10:15 MO 1.4-2 (invited) AMPLIFICATION DUE TO THE TWO-STREAM INSTABILITY OF SELF-ELECTRIC AND MAGNETIC FIELDS OF AN ION OR ELECTRON BEAM PROPAGATING IN BACKGROUND PLASMA

I. D. Kaganovich, E. K. Tokluoglu, J. A. Carlsson, K. Hara, A. Powis

Princeton Plasma Physics Lab, Princeton, NJ, USA

10:45 MO 1.4-3 IRRADIATION OF MATERIALS USING SHORT, INTENSE ION BEAMS FROM AN INDUCTION ACCELERATOR

P. A. Seidl¹, Q. Ji¹, A. Persaud¹, E. Feinberg¹, X. Kong^{1,2}, C. Sierra¹, F. Treffert^{1,3}, W. L. Waldron¹, T. Schenkel¹, J. J. Barnard⁴, D. P. Grote⁴, A. Friedman⁴, E. P. Gilson⁵, I. Kaganovich⁵, A. Stepanov⁵

¹ATAP, Lawrence Berkeley National Laboratory, Berkeley, CA, United States

²Lanzhou University, Lanzhou, China

³TU Darmstadt, Darmstadt, Germany

⁴Lawrence Livermore National Laboratory, Livermore, CA, United States

⁵Princeton Plasma Physics Laboratory, Princeton, NJ, United States

11:00 MO 1.4-4 MODELING THE TRANSPORT OF INTENSE RELATIVISTIC ELECTRON BEAMS THROUGH NITROGEN GAS

I. M. Rittersdorf¹, S. B. Swanekamp¹, A. S. Richardson¹, B. V. Weber¹, D. D. Hinshelwood¹, S. L. Jackson¹, J. W. Schumer¹, R. J. Comisso¹, D. Mosher², P. F. Ottinger², J. R. Angus³

¹Naval Research Laboratory, Washington, DC, United States

²Syntek Technologies, Inc., Arlington, VA, United States

³Lawrence Livermore National Laboratory, Livermore, CA, United States

11:15 MO 1.4-5 A RELATIVISTIC SELF-CONSISTENT MODEL FOR STUDYING ENHANCEMENT OF CHILD-LANGMUIR LIMIT DUE TO COUNTER-STREAMING IONS

H. Y. Hsu¹, M. C. Lin², J. P. Verboncoeur³

¹Department of Mechanical Engineering, National Taipei University of Technology, Taipei, Taiwan

²Department of Electrical and Biomedical Engineering, Hanyang University, Seoul, South Korea

³Department of Electrical and Computer Engineering, Michigan State University, East Lansing, Michigan, USA

11:30 MO 1.4-6 COMMISSIONING OF THE DRAGON-II TRIPLE PULSE LINEAR INDUCTION ACCELERATOR

J. Deng

Institute of Fluid Physics, CAEP, Mianyang, Sichuan, 621900, China

Session MO 1.5: Nonequilibrium Plasma Applications I

Monday, May 22 10:00-11:45, Wildwood 14

Session Chair: Kevin Martus, William Paterson University

10:00 MO 1.5-1 (invited) PULSED DISCHARGES IN LIQUIDS: GENERATION AND APPLICATIONS

J. F. Kolb¹, C. Miron¹, R. Rataj¹, J. Kredl¹, T. Schulz¹, P. Lukes²

¹INP Greifswald, Greifswald, Germany

²Institute of Plasma Physics, Prague, Czech Republic

10:30 MO 1.5-2 DIRECT NATURAL GAS LIQUEFACTION VIA ATMOSPHERIC PRESSURE DBD

C. Liu^{1,2}, A. Fridman^{1,3}, A. Rabinovich¹, D. Dobrynin¹

¹Nyheim Plasma Institute, Camden, United States

²Electrical & Computer Engineering, Drexel University, Philadelphia, United States

³Mechanical Engineering, Drexel University, Philadelphia, United States

10:45 MO 1.5-3 DYNAMIC STALL CONTROL AT HIGH ANGLE OF ATTACK BY NS PULSED ACTUATOR

A. Starikovskiy, K. Meehan, R. Miles

Princeton University, Princeton, United States

11:00 MO 1.5-4 THE INFLUENCE OF CARRIER GAS ON NANOSECOND-PULSED PLASMA DISCHARGE GENERATED IN A WATER FILM PLASMA REACTOR

H. Wang, R. J. Wandell, B. R. Locke

Department of Chemical and Biomedical Engineering, Florida State University, Tallahassee, Florida, United States

11:15 MO 1.5-5 PLASMA ACTIVATED WATER FOR FRUITS AND VEGETABLES PRESERVATION

Y. Zheng¹, J. Zhang^{1,2}, J. Fang^{1,2}

¹College of Engineering, Peking University, Beijing, China

²Academy for Advanced Interdisciplinary Studies, Peking University, Beijing, China

11:30 MO 1.5-6 EFFECTS OF BUBBLE CONTROL ON SYNTHESIS AND CHARACTERIZATION OF CARBON NANOPARTICLE IN AC SOLUTION PLASMA

J. -G. Shin¹, H. -J. Kim¹, D. Kum¹, D. H. Kim¹, C. -S. Park¹, H. -S. Tae¹, J. H. Seo², B. J. Shin³

¹School of Electronics Engineering, College of IT Engineering, Kyungpook National University, Daegu, South Korea

²Department of Electronics Engineering, Incheon National University, Incheon, South Korea

³Department of Electronics Engineering, Sejong University, Seoul, South Korea

Session MO 1.6: Chemical production, modification, and destruction

Monday, May 22 10:00-12:00, Wildwood 15

Session Chair: Greg Fridman, Drexel University

10:00 MO 1.6-1 PURE AND EFFICIENT H₂ PRODUCTION FROM H₂O USING A LOW POWER AL/AL₂O₃ MICROPLASMA CHIP REACTOR

Z. S. Wiersma¹, Z. Dai², S. -J. Park², J. G. Eden²

¹Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL, United States

²Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States

10:15 MO 1.6-2 EXTRACTION OF METABOLITES FROM MICROALGAE WITH SPARK DISCHARGES

K. Zoicher¹, R. Banaschik¹, J. Volzke¹, K. Wende¹, M. Lalk², J. F. Kolb¹

¹Plasma Life Science, Leibniz Institute for Plasma Science and Technology, Greifswald, Germany

²Institute of Biochemistry, University of Greifswald, Greifswald, Germany

10:30 MO 1.6-3 PLASMA LIQUID CHEMISTRY OF PULSE DISCHARGES GENERATED IN WATER DEPENDING ON PULSE DURATION AND GROUND ELECTRODE MATERIALS

R. Banaschik¹, C. Miron¹, H. Jablonowski¹, A. Pipa¹, K. Fricke¹, J. Kredl¹, T. Schulz¹, K. -D. Weltmann¹, J. F. Kolb¹, P. Lukes², P. Bednarski³

¹Leibniz Institute for Plasma Science and Technology, Greifswald, Germany

²Institute of Plasma Physics, Prague, Czech Republic

³University of Greifswald, Greifswald, Germany

10:45 MO 1.6-4 THE KINETIC MECHANISMS OF DIFFUSE NANOSECOND PULSED DISCHARGE IN THE DEGRADATION OF HCHO

L. Zhang^{1,2}, D. Yang^{1,2}, S. Wang^{1,2}, J. Feng^{1,2}, W. Wang^{1,2}

¹Key Lab of Materials Modification, Ministry of Education, Dalian University of Technology, Dalian, China

²School of Physics, Dalian University of Technology, Dalian, China

11:00 MO 1.6-5 COMBINING CATALYSIS WITH PULSED PLASMA FOR VOLATILE ORGANIC COMPOUNDS ABATEMENT

Z. Xiao, C. Hao, J. Qiu, D. Xu, K. Liu

Dept. of Light Sources & Illuminating Engineering, Fudan University, Shanghai, China

11:15 MO 1.6-6 PLASMA GAS CLEANING PROCESS FOR THE CONVERSION OF BIOMASS TAR MODEL COMPOUNDS INTO SYNGAS

S. Liu, D. Mei, Y. Ma, X. Tu

Electrical Engineering and Electronics, University Liverpool, Liverpool, United Kingdom

11:30 MO 1.6-7 HYDROGEN PEROXIDE FORMATION AT PLASMA-WATER INTERFACE UNDER POSITIVE DC STREAMER AND PULSED CORONA DISCHARGE

Y. Zhao, T. Wang, S. MacGregor, M. Wilson, I. Timoshkin

Electronic And Electrical Engineering, University of Strathclyde, GLASGOW, United Kingdom

11:45 MO 1.6-8 THE ROLE OF NITROGEN AS A THIRD-BODY COLLIDER IN INDUSTRIAL OZONE GENERATION

D. E. Guerrero¹, A. Freilich¹, J. L. Lopez¹, L. Ramoino², S. Seyrling²

¹Physics, Seton Hall University, South Orange, NJ, USA

²Ozonia International Ozone, Degremont Technologies, Duebendorf, Switzerland

Session PL2: Plenary 2

Monday, May 22 13:30-14:30, Wildwood 3

Session Chair: Kurt Becker, NYU Tandon School of Engineering

13:30 PL2-1 (invited) PULSED DBD: PHYSICS AND NEW APPLICATIONS FROM NATURAL GAS LIQUEFACTION TO CANCER VACCINATION

A. Fridman

Drexel Plasma Institute, Drexel University, Philadelphia, PA, United States

Session MO Posters: MO P1

Poster Session

Monday, May 22 14:30-16:00, Poster Room

Session Chair: Ricky Tang, Sandia National Laboratories

MO Posters-1 QUANTUM SCALE GAS BREAKDOWN

A. M. Darr, A. M. Loveless, A. L. Garner

Purdue University, West Lafayette, IN, United States

MO Posters-2 SCALING LAWS FOR AC BREAKDOWN VOLTAGE IN MICRODISCHARGES

A. M. Loveless, A. L. Garner

Nuclear Engineering, Purdue University, West Lafayette, IN, United States

MO Posters-3 INVESTIGATING THE EFFECTS OF SECONDARY ELECTRON EMISSION ON STREAMER FORMATION NEAR DIELECTRIC PARTICLES USING A PIC-DSMC CODE

A. K. Jindal, C. H. Moore, R. E. Jorgenson

Sandia National Laboratories, Albuquerque, NM, United States

MO Posters-4 KINETIC SIMULATIONS OF BREAKDOWN AND SHEATH FORMATION IN A DENSE PLASMA FOCUS DEVICE

J. R. Angus, D. P. Higginson, A. J. Link, A. E. Schmidt

Lawrence Livermore National Laboratory, Livermore, CA, United States

MO Posters-5 FIRST PLASMA CHARACTERIZATION RESULTS IN A COMPACT PERMANENT RING MAGNET BASED HELICON PLASMA SOURCE

A. Pandey¹, M. Bandyopadhyay^{1,2}, D. Sudhir², A. Chakraborty²

¹*Institute for Plasma Research, Gujarat, India*

²*ITER-India, Gujarat, India*

MO Posters-6 STUDY OF PLASMA SERIES RESONANCE EFFECT IN DUAL FREQUENCY CAPACITIVE DISCHARGE

P. Saikia, H. Bhuyan, M. Favre, M. Escolona

Institute of Physics, Pontificia Universidad Catolica de Chile, Av. Vicuna Mackenna 4860, Santiago, Santiago, Chile

MO Posters-7 CHARACTERISTICS OF INDUCTIVELY COUPLED PLASMA IN DIFFERENT POWER AND PRESSURE

F. Lei, J. Zhang, X. T. Liu

Xidian University, Xi'an, China

MO Posters-8 NONLINEAR ELECTRON CYCLOTRON OSCILLATIONS AND CROSS-FIELD TRANSPORT IN EXB DISCHARGES

S. Janhunen¹, O. Chapurin¹, O. Koshkarov¹, I. Romadanov¹, A. Smolyakov¹, D. Sydorenko², I. Kaganovich³, Y. Raitses³

¹*Department of Physics and Engineering Physics, University of Saskatchewan, Saskatoon, Canada*

²*Centennial Centre for Interdisc Science, University of Alberta, Edmonton, Canada*

³*Theory, Princeton Plasma Physics Lab, Princeton, USA*

MO Posters-9 INVESTIGATION OF FILAMENTATION INSTABILITY IN QUANTUM MAGNETIZED PLASMA WITH THE PRESENCE OF HELICAL MAGNETIC FIELD

M. Alimohamadi

Department of Physics, Farhanigan University, Tehran, Iran, Tehran, Iran

MO Posters-10 RELATIVISTIC WAVE-BREAKING LIMIT OF ELECTROSTATIC WAVES IN COLD ELECTRON-POSITRON-ION PLASMAS

M. Karmakar¹, C. Maity², N. Chakrabarti¹, S. Sengupta³

¹*Plasma Physics, Saha Institute of Nuclear Physics, Kolkata, India*

²*Physics, Government General Degree College Singur, Singur, India*

³*Plasma Physics, Institute for Plasma Research, Gandhinagar, India*

MO Posters-11 MICRODISCHARGE SPECIES EVOLUTION IN A 2-DIMENSIONAL PACKED BED REACTOR

K. W. Engeling, J. Kruszelnicki, M. J. Kushner, J. E. Foster

University of Michigan, Ann Arbor, Michigan, United States

MO Posters-12 SPECTROSCOPIC INVESTIGATIONS OF VACUUM ARCS FROM DIFFUSE MODE TO ANODE SPOT MODE

Z. Wang

Electrical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi, China

MO Posters-13 SIMULTANEOUS PARTICLE IMAGE VELOCIMETRY (PIV)-SCHLIEREN PHOTOGRAPHY OF FLUID FLOW IN LIQUID INDUCED BY PLASMA-DRIVEN INTERFACIAL FORCES

J. C. Lai, J. E. Foster

Department of Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI, United States

MO Posters-14 PLASMA STABILIZED COMBUSTION OVER A LARGE RANGE OF THROUGHPUT WITH VARYING FUEL COMPOSITIONS

J. Pleis

Clearsign Combustion Corp., Seattle, WA, United States

Session MO Posters: MO P2

Poster Session

Monday, May 22 14:30-16:00, Poster Room

Session Chair: Juan Trelles, U Mass Lowell

MO Posters-15 THE ACCURATE COMPUTATIONAL ANALYSIS OF THE NON-LINEAR ELECTRON HEAT CONDUCTION WITH INVERSE-BREMSSTRAHLUNG ENERGY SOURCES IN HIGH-TEMPERATURE LASER FUSION PLASMAS

M. Oloumi, M. Habibi, H. Hosseinkhani

Plasma and Nuclear Fusion Research School, Nuclear Science and Technology Research Institute, AEOI, Tehran, Iran

MO Posters-16 THREE-DIMENSIONAL WEDGE SIMULATION OF AN IONIZATION WAVE IN NITROGEN/HELIUM GAS

A. S. Fierro, C. H. Moore, M. M. Hopkins

Sandia National Laboratories, Albuquerque, NM, United States

MO Posters-17 A PARALLELIZATION METHOD FOR TIME PERIODIC STEADY STATE IN SIMULATION OF RADIO FREQUENCY SHEATH DYNAMICS

D. -C. Kwon¹, S. -S. Shin², D. -H. Yu²

¹*National Fusion Research Institute, Gunsan, Jeonbuk, South Korea*

²*Kyoungwon Tech, Seongnam, Gyeonggi, South Korea*

MO Posters-18 OPTIMIZING FAST DISCHARGES FOR HIGH SPEED TIME VARYING PLASMA ANTENNA USING PARTICLE IN CELL SIMULATIONS*

R. M. Kingsley Shadi

Electrical Engineering, University of Colorado Denver, Denver, United States

MO Posters-19 BOLTZMAN EQUATION SOLVER COUPLED TO A KINETIC GLOBAL MODEL FRAMEWORK

J. Krek^{1,2}, G. Parsey², J. Verboncoeur¹

¹*Computational Mathematics, Science and Engineering (CMSE), Michigan State University, East Lansing, MI, United States*

²*Department of Physics and Astronomy, Electrical and Computational Engineering, Michigan State University, East Lansing, MI, United States*

MO Posters-20 UNCERTAINTY QUANTIFICATION IN GLOBAL MODELING OF PLASMA ASSISTED COMBUSTION

G. M. Parsey^{1,2}, J. Verboncoeur^{2,3}, A. Christlieb³

¹*Dept. of Physics and Astronomy, Michigan State University, East Lansing, MI, United States*

²*Dept. of Electrical and Computer Engineering, Michigan State University, East Lansing, MI, United States*

³*Dept. of Computational Mathematics, Science, and Engineering, Michigan State University, East Lansing, MI, United States*

MO Posters-21 ION-NEUTRAL ELASTIC SCATTERING CROSS SECTIONS FOR KINETIC PLASMA SIMULATIONS IN ALEPH

J. L. Pacheco, R. Hooper, J. J. Boerner, A. M. Grillet, T. P. Hughes

Sandia National Laboratories, NM, United States

Session MO Posters: MO P3

Poster Session

Monday, May 22 14:30-16:00, Poster Room

Session Chairs:

MO Posters-22 NONLINEAR PROPAGATION OF WHISTLER PULSE IN MAGNETIZED QUANTUM PLASMA

P. Kumar, S. Singh, N. Ahmad

Department of Physics, University of Lucknow, LUCKNOW, India

MO Posters-23 GENERATION AND CONTROL OF REACTIVE OXYGEN AND NITROGEN SPECIES IN COLD ATMOSPHERIC PRESSURE ARGON PLASMA JET: AN EMISSION SPECTROSCOPIC STUDY

S. Ghorui, N. Tiwari

Laser & Plasma Technology Division, Bhabha Atomic Research Centre, Mumbai, India

MO Posters-24 DUST ACOUSTIC WAVES IN Q-NONEXTENSIVE POSITIVE-NEGATIVE IONS DUSTY PLASMA

M. Alimohamadi

Department of Physics, Farhanigan University, Tehran, Iran

MO Posters-25 ION-TEMPERATURE EFFECT ON COLLISIONAL MAGNETIZED DUSTY PLASMA SHEATH

S. Bhandari

Central Department of Physics, Tribhuvan University, Kathmandu, Nepal., Kathmandu, Nepal

MO Posters-26 LUMINESCENCE FLASH AND TEMPERATURE DETERMINATION OF THE PULSED DISCHARGE INDUCED BUBBLE

L. Zhang, X. Zhu, H. Yan, Y. Huang, Z. Liu, K. Yan

Department of chemical and biological engineering Zhejiang University, Hangzhou, China, Hangzhou, None Selected

MO Posters-27 STUDY OF PLASMA CONDITIONS DURING BOW-SHOCK FORMATION IN COLLIDING JET EXPERIMENTS

G. W. Collins IV, J. C. Valenzuela, F. N. Beg

University of California San Diego, San Diego, CA, United States

MO Posters-28 VLASOV SIMULATIONS OF FAST STOCHASTIC ELECTRON HEATING NEAR THE UPPER HYBRID LAYER

D. C. Speirs¹, B. Eliasson¹, K. Ronald¹, L. K. S. Daldorff², A. Najmi²

¹*Department of Physics, University of Strathclyde, Glasgow, Scotland, United Kingdom*

²*Applied Physics Laboratory, The John Hopkins University, Laurel, Maryland, U.S.A*

MO Posters-29 SPACECRAFT-CHARGING MITIGATION OF A HIGH-POWER ELECTRON BEAM EMITTED BY A MAGNETOSPHERIC SPACECRAFT

F. Lucco Castello¹, G. L. Delzanno¹, J. E. Borovsky², O. Leon³, G. Miars³, B. E. Gilchrist³

¹*Los Alamos National Laboratory, Los Alamos, NM, United States*

²*Space Science Institute, Boulder, CO, United States*

³*University of Michigan, Ann Arbor, MI, United States*

Session MO Posters: MO P9

Poster Session

Monday, May 22 14:30-16:00, Poster Room

Session Chair: Xin Tu, University Liverpool

MO Posters-30 CONTRASTING CHARACTERISTICS OF AQUEOUS REACTIVE SPECIES INDUCED BY CROSS-FIELD AND LINEAR-FIELD PLASMA JETS

H. Xu¹, C. Chen¹, D. Liu¹, X. Wang¹, M. G. Kong²

¹*State Key Laboratory of Electrical Insulation and Power Equipment Power Equipment, Xi'an, Shaanxi, China*

²*Department of Electrical and Computer Engineering, Norfolk, Virginia, America*

MO Posters-31 EFFECT OF PROJECTILE CHARGE ON E-/E+ IMPACT SINGLE IONIZATION CROSS SECTION OF PLASMA RELEVANT MOLECULE TARGETS

P. Singh

Physics, Sir Padampat Singhania University, Udaipur, Rajasthan, India, India

MO Posters-32 NEW DATA FOR MODELING HYPERSONIC RE-ENTRY INTO EARTH'S ATMOSPHERE: ELECTRON-IMPACT IONIZATION OF ATOMIC NITROGEN

C. Ciccarino¹, D. W. Savin²

¹Seton Hall University, South Orange, NJ, United States

²Columbia University, New York, NY, United States

MO Posters-33 COLLISIONAL DEACTIVATION OF N₂(C³P_u) AND N₂+(B²S+U) BY HYDROCARBON MOLECULES IN AFTERGLOW OF THE PICOSECOND DISCHARGE

A. Starikovskiy

Princeton University, Princeton, United States

MO Posters-34 A STUDY ON THE EFFECT OF ATMOSPHERIC-PRESSURE PLASMA TREATMENT ON THE HYDROPHILICITY OF POLYAMIDE-IMIDE FABRIC MATS

H. S. Cho, K. Y. Rhee

Department of Mechanical Engineering, Kyunghee University, Yongin-si, South Korea

MO Posters-35 EFFECT OF AIR IMPURITY ON SIMILARITY LAW IN HELIUM GLOW DISCHARGE AT LOW PRESSURE

X. Zou, X. Yang, Y. Fu, H. Luo, S. Yang, X. Wang

Department of Electrical Engineering, Tsinghua University, Beijing, China

MO Posters-36 SPECIES DYNAMICS IN PROMPT CYCLICAL HYDROGEN DISCHARGES

R. E. Terry

Independent Research Professional LLC, Columbia, MD, United States

MO Posters-37 CO₂ HYDROGENATION IN A TEMPERATURE CONTROLLED PLASMA-CATALYTIC REACTOR

Y. Zeng, L. Wang, A. Bryony, X. Tu

University Liverpool, Liverpool, United Kingdom

MO Posters-38 PLASMA-CATALYST COUPLING FOR ENHANCED OXIDATION OF ETHYL ACETATE OVER V₂O₅/TiO₂ NANOFIBER CATALYST

X. Zhu¹, X. Gao¹, X. Tu²

¹State Key Laboratory of Clean Energy Utilization, Zhejiang University, Hangzhou, China

²Department of Electrical Engineering and Electronics, University Liverpool, Liverpool, United Kingdom

MO Posters-39 CHARACTERISTICS OF A HIGH-PRESSURE PULSED ARC DISCHARGE ENVIRONMENT

R. Tang, E. Barnat, A. Fierro, M. Hopkins

Sandia National Laboratories, Albuquerque, United States

Session MO Posters: MO P6

Poster Session

Monday, May 22 14:30-16:00, Poster Room

Session Chair: Ming Xu, Xi'an University of Technology

MO Posters-40 INFLUENCE OF MAGNETIC ARC BLOW ON CONTACT EROSION IN VACUUM INTERRUPTERS

G. Ge, M. Liao, X. Duan, G. Lu, J. Zou

school of electrical engineering, dalian university of technology, dalian, China

MO Posters-41 TRANSIENT MODELING OF FAST VACUUM ARC IN SMALL-SIZE TRIGATRON

Z. Yang, L. Wang, X. Zhang, S. Jia

Xi'an Jiaotong University, Xi'an, Shaanxi, China

MO Posters-42 OUTPUT CHARACTERISTICS OF HIGH-POWER GAAS PHOTOCONDUCTIVE SEMICONDUCTOR SWITCHES UNDER THE CAPACITIVE AND TRANSMISSION LINE ENERGY STORAGE MODES

C. Ma, Y. Ji, H. Liu, W. Shi, M. Xu, L. Hou

Xi'an University of Technology, Xi'an, Shaanxi

MO Posters-43 FAST RISING EDGE BILATERAL SYMMETRY OUTPUT USING GAAS PHOTOCONDUCTIVE SWITCH

L. Hong, W. M. Lin, G. H. Meng, L. Z. Wu, T. J. Hong, S. Wei, M. Cheng, X. Ming, H. Lei

Applied Physics Department, Xi'an Uniecersity of Technology, Xi'an Shaanxi, China

MO Posters-44 KINETIC SIMULATION OF BREAKDOWN TIME VARIATION FOR GAPS FILLED WITH DIELECTRIC PARTICLES

C. H. Moore, A. S. Fierro, R. E. Jorgenson, H. P. Hjalmarson, A. K. Jindal, M. M. Hopkins, P. G. Clem, L. B. Biedermann
Sandia National Labs, Albuquerque, NM, United States

MO Posters-45 RESEARCH ON THE MATCHING PRINCIPLE OF PSEDUOSPARK SWITCH AND MAGNETIC SWITCH

J. Yan, S. Shen, R. Han, L. Cheng, Y. Wang, K. Qian, W. Ding
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, Shannxi, China*

MO Posters-46 INVESTIGATION OF THE EFFECT ON THE BLOCKING POTENTIAL ELECTRODE IN A PSEUDOSPARK SWITCH

J. Yan, S. Shen, L. Cheng, Y. Wang, R. Han, K. Qian, W. Ding
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, Shannxi, China*

Session MO Posters: MO P5

Poster Session

Monday, May 22 14:30-16:00, Poster Room

Session Chair: Cheng Zhang, Institute of Electrical Engineering, Chinese Academy of Sciences

MO Posters-47 OPTICAL PROPERTIES OF TIXCYOZ COMPOSITE NANOPOWDER OBTAINED BY PULSED PLASMA CHEMICAL METHOD

G. E. Kholodnaya, R. V. Sazonov, D. V. Ponomarev, F. V. Konusov
High Technology Physics Institute, Tomsk Polytechnic University, Tomsk, Russian Federation

MO Posters-48 ELEMENTARY STUDY OF THE PULSE DISCHARGE BETWEEN TWO ELECTRODES WITH AN INTERFACE BETWEEN AIR AND WATER

R. Han, J. Wu, K. Qian, H. Zhou, J. Yan, W. Ding
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China

MO Posters-49 LIGHT EMISSION CHARACTERISTICS AT DIFFERENT STAGES OF WIRE EXPLOSION PROCESS IN AIR

R. Han, J. Wu, K. Qian, J. Yan, W. Ding
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China

MO Posters-50 UNDERWATER SHOCK WAVE CHARACTERISTICS PRODUCED BY VAPORIZATION PROCESS OF DIFFERENT METAL WIRES

R. Han, H. Zhou, J. Wu, K. Qian, W. Ding
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China

MO Posters-51 NANOSECOND BREAKDOWN IN POROUS ALUMINA CERAMICS SATURATED WITH PERFLUORINATED LIQUIDS

I. F. Punanov¹, R. V. Emlin¹, P. A. Morozov¹, S. O. Cholakh²
¹*Institute of Electrophysics of the Ural Division of the Russian Academy of Sciences, Yekaterinburg, Russian Federation*
²*Ural Federal University, Yekaterinburg, Russian Federation*

MO Posters-52 SUPPRESSION OF SURFACE CHARGE ACCUMULATION ON EPOXY RESIN BY ATMOSPHERIC-PRESSURE PLASMA

C. Cui, S. Zhang, B. Hai, C. Zhang, T. Shao
Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China

MO Posters-53 LIQUID DIELECTRIC BREAKDOWN STUDY UNDER SUB MICROSECOND PULSE CONDITIONS USING TESLA BASED PULSE GENERATOR

V. P. Gajula
Pulsed power division, Institute for Plasma Reseach, Gandhinagar, India

MO Posters-54 RESEARCH ON CALCULATION AND CHARACTERISTICS OF SURFACE CHARGE ON EPOXY COMPOSITE INSULATION UNDER DC VOLTAGE

J. -Y. Xue, H. Wang, Y. -B. Wang, G. -Q. Su, H. -B. Mu, J. -B. Deng, G. -J. Zhang
Xi'an Jiaotong University, Xi'an, Shaanxi, China

MO Posters-55 RESEARCH AND PREDICTION OF THE LIFETIME FOR HIGH VOLTAGE CERAMIC CAPACITORS UNDER REPETITIVE PULSES

J. Yan, K. Qian, L. Cheng, Y. Wang, R. Han, Z. Li, W. Ding

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, Shannxi*, China

MO Posters-56 THE INFLUENCE OF METAL PARTICLES ON THE INSULATING PROPERTIES OF SF6 GAS

N. Kartalovic¹, K. Stankovic², D. Brajovic³

¹Institute of Electrical Engineering "Nikola Tesla", Belgrade, Serbia

²Faculty of Electrical Engineering, University of Belgrade, Serbia, Belgrade, Serbia

³High School of Technical Sciences $\frac{1}{2}$ Čačak $\frac{1}{2}$, Čačak, Serbia

MO Posters-57 DEGRADATION OF OIL IMPREGNATED CELLULOSE BOARD DUE TO SURFACE DISCHARGES: EXPERIMENTAL RESULTS WITH SOME THEORETICAL CONSIDERATIONS

C. Thirumurugan¹, G. B. Kumbhar², R. Oruganti¹

¹School of Computing and Electrical Engineering, Indian Institute of Technology Mandi, Mandi, Himachal Pradesh-175005, India

²Department of Electrical Engineering, Indian Institute of Technology Roorkee, Roorkee, Uttarakhand-247667, India

MO Posters-58 DEVELOPING PROCESS OF SURFACE FLASHOVER ALONG SOLID INSULATING MATERIALS UNDER REPETITIVE NANOSECOND PULSES IN NITROGEN

J. Li, Z. Zhao, M. Zheng, H. Cao

School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China

Session MO Posters: MO P4

Poster Session

Monday, May 22 14:30-16:00, Poster Room

Session Chair: Dong Dai, South China University of Technology

MO Posters-59 A NOVEL ARBITRARY BI-POLAR CURRENT SOURCE FOR HIGH DYNAMIC LOADS IN PLASMA, FUSION AND ACCELERATOR APPLICATIONS

M. Frei, R. Schneider, G. Bloesch

Ampegon, Turgi, AG, Switzerland

MO Posters-60 CONTINUOUS TRIBOLUMINESCENCE X-RAY SOURCE BY CONTACTING AND ROTATING TWO CIRCULAR DISCS

S. Furuya

Saitama Institute of Technology, Fukaya, Japan

MO Posters-61 INFLUENCE OF DUTY CYCLE ON PULSE MODULATED RF CAPACITIVELY-COUPLED ARGON DISCHARGE

L. Chang¹, X. Lu¹, S. Yang², X. Liu³, W. Jiang²

¹State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, China

²School of Physics, Huazhong University of Science and Technology, Wuhan, China

³School of Science, Qiqihar University, Qiqihar, China

MO Posters-62 CURRENT HANDLING CAPABILITY AND BOND DEGRADATION OF BOND WIRES UNDER PULSED CONDITIONS

R. I. Rodriguez-Molina

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

MO Posters-63 HIGH FREQUENCY 30 KV PULSED-DC GENERATOR WITH USER ADJUSTABLE PULSE WIDTH

T. Ziemba, K. E. Miller, J. Prager

Eagle Harbor Technologies, Inc., Seattle, WA, United States

Session MO Posters: MO P7

Poster Session

Monday, May 22 14:30-16:00, Poster Room

Session Chairs:

MO Posters-64 EXPERIMENTAL INVESTIGATION ON PLASMA PROPERTIES OF DISCHARGE CHANNEL FOR PULSED PLASMA THRUSTER BASED ON SPECTROSCOPIC EMISSION MEASUREMENT

X. Liu, G. Zuo, Y. Zhou, Z. Wu, K. Xie, N. Wang

School of Aerospace Engineering, Beijing Institute of Technology, Beijing, China

MO Posters-65 MEASUREMENTS OF GAS TEMPERATURE IN MICROWAVE PLASMA AT ATMOSPHERIC PRESSURE BY MOLECULAR EMISSION SPECTROMETRY

L. Deng, G. Zhang, C. Liu, H. Xie

Department of Electrical Engineering, Tsinghua University, Beijing, China

MO Posters-66 ELECTRON DENSITY MEASUREMENT IN A LASER INDUCED PLASMA FILAMENT BY RAYLEIGH MICROWAVE SCATTERING

A. Sharma¹, A. Shashurin¹, M. Slipchenko², K. A. Rahman², M. N. Schneider³

¹*School of Aeronautics and Astronautics, Purdue University, West Lafayette, IN, USA*

²*School of Mechanical Engineering, Purdue University, West Lafayette, IN, USA*

³*Princeton Plasma Physics Laboratory, Princeton University, Princeton, NJ, USA*

MO Posters-67 CHARACTERIZATION OF SPARK DISCHARGES AT HIGH PRESSURE CONDITIONS BY SPECTRAL LINE BROADENING

S. Groeger, M. Hamme, E. Iglesias, P. Awakowicz

Institute of Electrical Engineering and Plasma Technology, Ruhr University Bochum, Bochum, NRW, Germany

MO Posters-68 OPERATION AND MEASUREMENT OF PENNING DISCHARGES FOR BEAM PLASMA EXPERIMENTS

K. Ronald¹, M. King¹, T. Heelis¹, D. C. Speirs¹, S. L. McConville¹, A. D. Phelps¹, C. W. Robertson¹, A. W. Cross¹, M. E. Koepke^{2,1}

¹*SUPA and Department of Physics, University of Strathclyde, Glasgow, United Kingdom*

²*Department of Physics, West Virginia University, Morgantown, United States*

MO Posters-69 STREAKED THOMSON SCATTERING TO MEASURE HEATING OF LABORATORY PLASMA JETS BY THE PROBE LASER

J. T. Banasek, T. Byvank, B. R. Kusse, D. A. Hammer

Cornell University, Ithaca, NY, United States

MO Posters-70 MEASUREMENT OF RESONANT AND METASTABLE DENSITIES IN A LOW PRESSURE, MICROWAVE DRIVEN, MICRO ARGON PLASMA BY OPTICAL EMISSION SPECTROSCOPY

P. Hermanns, B. Hillebrand, M. Fiebrandt, P. Awakowicz

Institute of Electrical Engineering and Plasma Technology, Ruhr University Bochum, Bochum, Germany

MO Posters-71 MICROPLASMA SOURCE OF HIGH ENERGY ELECTRONS

S. Gershman, Y. Raitses

Princeton Plasma Physics Laboratory, Princeton, NJ, USA

MO Posters-72 WHAT IS EFFECTIVE AREA OF THE FLAT PROBE DURING MEASUREMENTS?

A. Mustafaev¹, O. Murillio¹, V. Soukhomlinov², I. Kaganovich³

¹*St. Petersburg Mining University, St. Petersburg, Russian Federation*

²*St. Petersburg State University, St. Petersburg, Russian Federation*

³*Princeton Plasma Physics Laboratory, Princeton, USA*

MO Posters-73 PLASMA PARTICLE INTERACTION IN RADIO FREQUENCY THERMAL PLASMA DEVICES

G. D. Dhamale¹, N. Tiwari², V. L. Mathe¹, S. V. Bhoraskar¹, S. Ghorui²

¹*Department of Physics, Savitribai Phule Pune University, Pune, Maharashtra, India*

²*Laser and Plasma Technology Division, Bhabha Atomic Research Center, Mumbai, Maharashtra, India*

Session MO Posters: MO P8

Poster Session

Monday, May 22 14:30-16:00, Poster Room

Session Chairs:

MO Posters-74 ACCURACY ENHANCEMENT IN PROBE REGISTRATION OF ANISOTROPIC CHARGED PARTICLES DISTRIBUTION FUNCTIONS IN PLASMA: ANALYSIS OF SYSTEMATIC ERRORS

V. Soukhomlinov¹, A. Mustafaev², A. Strahova², Y. Filiasova², A. Grabovskiy²

¹St. Petersburg State University, St.Petersburg, Russian Federation

²St.Petersburg Mining University, St.Petersburg, Russian Federation

MO Posters-75 DESIGN OF AN ELECTRON ENERGY ANALYZER FOR DC AND LASER ACTIVATED EMISSION FROM A CARBON FIBER CATHODE USING ELECTRON OPTICS

R. L. Miner¹, S. D. Kovaleski¹, J. A. Elle²

¹EECS, University of Missouri, Columbia, MO, United States

²RDHP, Air Force Research Labs, Albuquerque, NM, United States

MO Posters-76 MICRO ION GAUGE FOR NSTX-U

R. Raman

Aeronautics and Astronautics, University of Washington, Seattle, WA, United States

MO Posters-77 IMPROVEMENT IN THE FLAT PROBE DIAGNOSTICS FOR ARBITRARY DEGREE OF ANISOTROPY

V. Soukhomlinov¹, A. Mustafaev², A. Strahova², I. D. Kaganovich³

¹St. Petersburg State University, St. Petersburg, Russia

²St.Petersburg Mining University, St. Petersburg, Russia

³Princeton Plasma Physics Lab, Princeton, NJ, USA

MO Posters-78 IMPROVEMENT IN THE FLAT PROBE DIAGNOSTICS FOR ARBITRARY DEGREE OF ANISOTROPY

V. Soukhomlinov¹, A. Mustafaev², A. Strahova², I. Kaganovich³

¹St. Petersburg State University, St. Petersburg, Russian Federation

²St.Petersburg Mining University, St. Petersburg, Russian Federation

³Princeton Plasma Physics Laboratory, Princeton, USA

MO Posters-79 EVALUATION OF ION FLUX IN AR AND SF6 ASYMMETRIC CAPACITIVE COUPLED PLASMAS THROUGH INVASIVE AND NON-INVASIVE METHODS

J. S. B. Lima¹, A. C. O. C. Doria¹, R. S. Pessoa¹, H. S. Maciel², G. Petraconi²

¹Laboratory of Biotechnology and Electric Plasmas, University of Vale do Paraiba, Sao Jose dos Campos, Sao Paulo

²Plasmas and Processes Laboratory, Instituto Tecnológico de Aeronautica, Sao Jose dos Campos, Sao Paulo

MO Posters-80 PULSE ANALYSIS OF THE MERCURY INDUCTIVE VOLTAGE ADDER CELLS

E. G. Nachtigall, C. W. Peters

Electrical and Computer Engineering, Drexel University, Philadelphia, PA, United States

MO Posters-81 TIME-RESOLVED ELECTRON DENSITY MEASUREMENTS OF THE RISE CYCLE IN A PULSED INDUCTIVELY COUPLED PLASMA

K. Ford¹, J. Brandon¹, D. Peterson¹, S. Shannon¹, S. K. Nam², S. Lee²

¹Nuclear Engineering, North Carolina State University, Raleigh, NC, United States

²Research, Samsung Electronics Co., Gyeonggi-do, Republic of Korea

MO Posters-82 ANALYSIS OF STRAY CAPACITANCE ON OUTPUT VOLTAGE OF MARX GENERATOR

M. Mishra¹, K. Kanakgiri¹, S. Mitra², V. Sharma², A. Roy², A. Sharma²

¹Electrical Department, Veermata Jijabai Technological Institute, Mumbai, Maharashtra, India

²Accelerator and Pulse Power Division, Bhabha Atomic Research Center, Mumbai, Maharashtra, India

Session MO 2.1: Computational Physics and Techniques I

Monday, May 22 16:00-18:00, Wildwood 9

Session Chair: matthew t bettencourt, Sandia National Labs

16:00 MO 2.1-1 PARAMETRIC STUDY OF THE CHARACTERISTICS OF TRICHEL PULSES FROM NEGATIVE NEEDLE TO PLANE CORONAS

Y. Zheng, L. Wang, D. Wang, S. Jia

Xi'an Jiaotong University, Xi'an, China

16:15 MO 2.1-2 INFLUENCE OF EXTERNAL ELECTRIC FIELD BOUNDARY CONDITIONS ON ELECTROSPRAY EMISSIONS

N. A. Mehta, D. A. Levin

Aerospace Engineering, The University of Illinois at Urbana - Champaign, Urbana, Illinois, United States

16:30 MO 2.1-3 (invited) PARTICLE-IN-CELL ALGORITHM ON UNSTRUCTURED TETRAHEDRAL MESHES

S. N. Averkin, N. A. Gatsonis

Worcester Polytechnic Institute, Worcester, MA, United States

17:00 MO 2.1-4 TWO-DIMENSIONAL ELECTROMAGNETIC PLASMA SIMULATIONS WITH DIFFERENT COLLISION MODELS USING IPIC

W. S. Koh¹, S. -H. Chen²

¹*A*STAR Institute of High Performance Computing, Singapore, Singapore, Singapore*

²*Department of Physics, National Central University, Jung-Li, Taiwan*

17:15 MO 2.1-5 NUMERICAL MODELING OF HIGH SPEED TIME VARYING PLASMA ANTENNA USING ELECTROMAGNETIC 2D PARTICLE-IN-CELL SIMULATION

H. Y. Kim¹, R. Kingsley-Shadi¹, M. Golkowski¹, M. B. Cohen², M. L. R. Walker³

¹*Department of Electrical Engineering, University of Colorado Denver, DENVER, CO, USA*

²*School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, USA*

³*School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA, USA*

17:30 MO 2.1-6 3-D PARTICLE IN CELL NUMERICAL SIMULATION OF UNDER-VOLTAGED PRESSURIZED SPARK GAP

A. Elshafiey, S. Portillo

UNM, Albuquerque, NM, United States

17:45 MO 2.1-7 ADVANCED PIC-MCC SIMULATION FOR AN INTERMEDIATE-PRESSURE CAPACITIVELY COUPLED PLASMA FOR DEPOSITION PROCESS

J. S. Kim¹, H. J. Kim², H. J. Lee¹

¹*Electric computer engineering, Pusan National University, Busan, South Korea*

²*Memory Thin Film Technology Team, Samsung electronics, Suwon, South Korea*

Session MO 2.2: Z Pinches, Foils, Liners, and Plasma Foci

Monday, May 22 16:00-17:45, Wildwood 10

Session Chair: Nicholas Quart, NRL

16:00 MO 2.2-1 MATERIAL EFFECTS ON LABORATORY PLASMA JETS WITH APPLIED MAGNETIC FIELDS

T. Byvank, N. Hamlin, L. Atoyan, C. E. Seyler, B. R. Kusse

Cornell University, Ithaca, NY, United States

16:15 MO 2.2-2 EXPERIMENTAL INVESTIGATION OF THE EFFECTS OF DIELECTRIC COATINGS ON CYLINDRICAL METAL LINERS DRIVEN BY A 1 MA PULSED POWER GENERATOR

L. Atoyan, D. A. Hammer, J. T. Banasek, T. Byvank, J. B. Greenly, B. R. Kusse, S. V. Rocco

Cornell University, Ithaca, NY, United States

16:30 MO 2.2-3 PREIONIZATION STUDIES OF A LINER-ON-TARGET CONFIGURATION FOR STAGED Z-PINCHES

F. Conti¹, J. C. Valenzuela¹, M. P. Ross¹, J. Narkis¹, N. Aybar¹, I. Krashenninnikov¹, F. N. Beg¹, F. J. Wessel², E. Ruskov², H. U. Rahman², P. Ney², T. Darling³

¹*Center for Energy Research, University of California, San Diego, La Jolla, CA, United States*

²*Magneto-Inertial Fusion Technologies, Inc., Tustin, CA, United States*

³*Nevada Terawatt Facility, University of Nevada, Reno, Reno, NV, United States*

16:45 MO 2.2-4 DEVELOPMENT OF DENSE PLASMA FOCI AS ADVANCED NEUTRON SOURCES AT LLNL

A. P. Povilus, Y. Podpaly, C. Cooper, B. Shaw, S. Chapman, E. Koh, S. Falabella, A. Schmidt

Lawrence Livermore National Lab, Livermore, CA, United States

17:00 MO 2.2-5 SIMULATIONS OF A DENSE PLASMA FOCUS ON A HIGH IMPEDANCE GENERATOR

A. Beresnyak, J. Giuliani, S. Richardson, S. Jackson, S. Swanekamp, J. Schumer, R. Comisso, D. Mosher, B. Weber

Naval Research Laboratory, Washington, DC, United States

17:15 MO 2.2-6 TUNGSTEN PLANAR WIRE ARRAYS ON MICHIGAN LTD GENERATOR

A. S. Safronova¹, V. L. Kantsyrev¹, V. V. Shlyaptseva¹, I. K. Shrestha¹, M. T. Schmidt-Petersen¹, C. J. Butcher¹, A. Stafford¹,

K. A. Schultz¹, M. C. Cooper¹, P. C. Campbell², A. M. Steiner², D. A. Yager-Elorriaga², N. M. Jordan², R. McBride²,

R. M. Gilgenbach², J. L. Giuliani³, A. L. Velikovich³, A. S. Chuvatin⁴

¹University of Nevada, Reno, Reno, NV, United States

²University of Michigan, Ann Arbor, MI, United States

³Naval Research Laboratory, Washington, DC, United States

⁴Ecole Polytechnique, Palaiseau, France

17:30 MO 2.2-7 (invited) PRECONDITIONED WIRE ARRAY Z-PINCH ON A DOUBLE-PULSE CURRENT GENERATOR

J. Wu, Y. Lu, D. Zhang, X. Li, S. Jia, A. Qiu

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, Shaanxi, China

Session MO 2.3: Codes and Modeling I

Monday, May 22 16:00-17:45, Wildwood 12

Session Chair: Peter Mardahl, Air Force Research Laboratory

16:00 MO 2.3-1 EFFICIENT ABSORBING BOUNDARY CONDITIONS FOR ELECTROMAGNETIC PIC SIMULATION

S. J. Cooke

Electronics Science And Technology Division, Naval Research Laboratory, Washington, DC, United States

16:15 MO 2.3-2 (invited) A HIGH-PERFORMANCE PARALLEL COMPUTING FRAMEWORK FOR UNCERTAINTY QUANTIFICATION ANALYSIS OF RF DEVICES

G. M. Stantchev¹, S. J. Cooke¹, K. W. Elliott², J. J. Petillo²

¹Naval Research Laboratory, Washington, DC, United States

²Leidos, Inc, Billerica, MA, United States

16:45 MO 2.3-3 LARGE SCALE OPTIMIZATION OF RF DEVICES

A. Jensen¹, J. Petillo¹, S. Ovtchinnikov¹, A. Burke¹, D. Panagos¹, C. Kostas¹, G. Statchev², S. Cooke²

¹Leidos, Billerica, MA, United States

²US Naval Research Laboratory, Washington, DC, United States

17:00 MO 2.3-4 ADVANCES IN BEAM OPTICS ANALYZER

T. Bui, R. L. Ives, M. Read

Calabazas Creek Research, Inc., Mountain View, CA, USA

17:15 MO 2.3-5 DEVELOPMENTS OF THE MICHELLE CODE FOR HIGH PERFORMANCE COMPUTING

J. J. Petillo¹, S. Ovtchinnikov¹, C. Kostas¹, D. N. Panagos¹, A. Jensen¹, A. Burke¹, E. Nelson¹, G. Stantchev², S. Cooke², B. Held³, A. Nichols³, S. Ayala³

¹Center for Electromagnetics, Leidos Corp, Billerica, MA, United States

²Vacuum Electronics, US Naval Research Laboratory, Washington, DC, United States

³AWR - National Instruments, Mequon, WI, United States

17:30 MO 2.3-6 A MODEL OF PHOTOEMISSION DELAY MECHANISMS AND ITS APPLICATION TO BEAM OPTICS CODES

K. L. Jensen¹, J. J. Petillo², D. N. Panagos³, S. Ovtchinnikov², N. A. Moody⁴, A. J. Jensen²

¹Code 6362, MSTD, Naval Research Laboratory, Washington, DC, United States

²Directed Energy, Optics, and Space Technology, Leidos Corp, Billerica, MA, United States

³Gnosys Inc., Providence, RI, United States

⁴MS H851, Los Alamos National Laboratory, Los Alamos, NM, United States

Session MO 2.4: Insulation and Dielectric Breakdown

Monday, May 22 16:00-17:30, Wildwood 13

Session Chair: Ruixue Wang, Institute of Electrical Engineering, Chinese Academy of Sciences

16:00 MO 2.4-1 (invited) PROPAGATION OF SURFACE IONIZATION WAVE IN NS-PULSE DIELECTRIC BARRIER DISCHARGE IN ATMOSPHERIC PRESSURE AIR

C. Zhang^{1,2}, J. Qiu^{1,2}, S. Zhang¹, R. Wang¹, P. Yan^{1,2}, T. Shao^{1,2}

¹Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China

²University of Chinese Academy of Sciences, Beijing, China

16:30 MO 2.4-2 TEA CO₂ LASER PULSE CLIPPER USING A HV PULSE-BASED PRE-IONIZING GAS BREAKDOWN TECHNIQUE NEEDED FOR HIGH RESOLUTION ATMOSPHERIC MONITORING

T. Gasmi Cherifi

Division of Sciences & Engineering, Saint Louis University-Madrid Campus, Madrid, Spain

16:45 MO 2.4-3 (invited) PASCHEN CURVE FOR HELIUM IN 100-1000 KV RANGE

A. V. Khrabrov¹, L. Xu², I. D. Kaganovich¹, T. J. Sommerer³

¹PPPL, Princeton, NJ, United States

²CAS Key Laboratory of Geospace Environment, USTC, Hefei, China

³General Electric Global Research, Niskayuna, NY, United States

17:00 MO 2.4-4 ELECTRIC FIELD BREAKDOWN VERSUS FREQUENCY SIMULATED UNDER ATMOSPHERIC CONDITIONS FOR LARGE GAPS

H. Nguyen, A. Chowdhury, J. C. Dickens, R. P. Joshi, A. A. Neuber

Electrical and Computer Engineering, Texas Tech University, Lubbock, TX, United States

17:15 MO 2.4-5 SURFACE DISCHARGE PHENOMENA ON SYNTHETIC ESTER-PRESSBOARD INTERFACE: EFFECT OF MOISTURE

C. Thirumurugan

School of Computing and Electrical Engineering, Indian Institute of Technology Mandi, Mandi, Himachal Pradesh, India

Session MO 2.5: Plasma Diagnostic I

Monday, May 22 16:00-17:30, Wildwood 14

Session Chair: Holger Kersten, University Kiel, Germany

16:00 MO 2.5-1 DEVELOPMENT OF LASER-COLLISION INDUCED FLUORESCENCE FOR ATMOSPHERIC PRESSURE PLASMA GENERATED IN HELIUM ATMOSPHERES

E. Barnat, A. Fierro

Sandia National Laboratories, Albuquerque, NM, United States

16:15 MO 2.5-2 EVOLUTION PROCESSES OF NANOSECOND PULSED DIELECTRIC BARRIER DISCHARGE BY SPATIOTEMPORAL RESOLVED SPECTRA IN NEEDLE-PLATE ELECTRODE CONFIGURATION

D. Yang^{1,2}, L. Zhang^{1,2}, S. Tao³, S. Zhang³, F. Jing^{1,2}

¹Key Lab of Materials Modification, Ministry of Education, Dalian University of Technology, Dalian, China

²School of Physics, Dalian University of Technology, Dalian, China

³Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China

16:30 MO 2.5-3 CHARACTERISTICS OF DC MICRODISCHARGE UNDER LOW PRESSURE

Q. Xiong, S. Ji, L. Zhu, W. Lu, S. Chen

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China

16:45 MO 2.5-4 A HIGH TEMPORAL AND SPATIAL RESOLUTION ELECTRON DENSITY DIAGNOSTIC BASED ON STARK BROADENING

A. Zafar¹, E. Martin², S. Shannon¹

¹Nuclear Engineering, North Carolina State University, Raleigh, 27695, United States

²Fusion Energy, Oak Ridge National Laboratory, Oak Ridge, 37830, United States

17:00 MO 2.5-5 STUDY ON DISCHARGE CHARACTERISTICS OF ONE-DIMENSION ATMOSPHERIC PLASMA JET ARRAY

B. Zhang, M. Wang, F. Liu, Z. Fang

College of Electrical Engineering and Control Science, Nanjing Tech University, Nanjing, Jiangsu, China

17:15 MO 2.5-6 RAYLEIGH MICROWAVE SCATTERING FOR DIAGNOSTICS OF ATMOSPHERIC-PRESSURE MICROPLASMAS

A. Shashurin

Purdue University, West Lafayette, IN, United States

Session MO 2.6: Plasma, Ion, and Electron Sources

Monday, May 22 16:00-18:00, Wildwood 15

Session Chair: Scott Kovaleski, U Missouri

16:00 MO 2.6-1 MODELING ION BEAM NEUTRALIZATION WITH 3D PARTICLE-IN-CELL SIMULATIONS

D. Han, N. A. Gatsonis

Worcester Polytechnic Institute, Worcester, MA, United States

16:15 MO 2.6-2 HIGH POWER OPERATION OF CONTROLLED POROSITY RESERVOIR CATHODES

L. Ives, L. Falce, D. Marsden, G. Collins, M. Read

Calabazas Creek Research, Inc., San Mateo, CA, United States

16:30 MO 2.6-3 THE TWO-STREAM INSTABILITY IN A FINITE LENGTH PLASMA

D. Sydorenko¹, I. D. Kaganovich²

¹University of Alberta, Edmonton, Edmonton, Alberta, Canada

²Princeton Plasma Physics Lab, Princeton, NJ, United States

16:45 MO 2.6-4 (invited) DYNAMICS OF ION BEAM CHARGE NEUTRALIZATION BY FERROELECTRIC PLASMA SOURCES

A. D. Stepanov¹, E. P. Gilson¹, L. R. Grisham¹, I. D. Kaganovich¹, Q. Ji², A. Persaud², P. A. Seidl², T. Schenkel²

¹Princeton Plasma Physics Laboratory, Princeton, NJ, United States

²Lawrence Berkeley National Laboratory, Berkeley, CA, United States

17:15 MO 2.6-5 INVESTIGATION OF PLASMA ELECTRON SOURCES USING OPTICAL EMISSION SPECTROSCOPY AND CORRELATION WITH EXTRACTED ELECTRON CURRENT

S. del Pozo¹, C. N. Ribton¹, D. R. Smith²

¹Electron Beam Section, TWI Ltd., Cambridge, United Kingdom

²College of Engineering, Design and Physical Sciences, Brunel University London, London, United Kingdom

17:30 MO 2.6-6 ELECTRON ACCELERATION DUE TO THE INTERACTION BETWEEN A NEUTRALIZED ION BEAM AND BACKGROUND PLASMA

K. Hara¹, I. D. Kaganovich²

¹Department of Aerospace Engineering, Texas A&M University, College Station, TX, USA

²Princeton Plasma Physics Laboratory, Princeton, NJ, USA

17:45 MO 2.6-7 ION FILTERING OF VACUUM ARC ION SOURCE THROUGH EXTRACTION GRIDS

C. Lan

Institute of Fluid Physics, China Academy of Engineering Physics, Mianyang, China

Session PL3: Plenary 3

Tuesday, May 23 08:30-09:30, Wildwood 3

Session Chair: Sarita Prasad, Raytheon and Univ. of New Mexico

8:30 PL3-1 (invited) SIMULATION OF NANOSECOND SPARK DISCHARGES FOR PLASMA ASSISTED COMBUSTION APPLICATIONS

A. Bourdon

LPP, Ecole Polytechnique, France, Palaiseau, France

Session TU 1.1: Basic Plasma Phenomena II

Tuesday, May 23 10:00-12:00, Wildwood 9

Session Chair: Ricky Tang, Sandia National Laboratories

10:00 TU 1.1-1 SPONTANEOUS SELF-ORGANIZATION IN A HELICON PLASMA DEVICE: INSTABILITIES, BIFURCATION, HYSTERESIS AND PLASMA DETACHMENT

S. Chakraborty Thakur, R. Hong, K. Adriany, G. R. Tynan

University of California San Diego, La Jolla, United States

10:30 TU 1.1-2 STUDIES OF PLASMA DENSITY GRADIENT EFFECT ON DIRECT CONVERSION OF UPPER-HYBRID WAVES IN ELECTROMAGNETIC EMISSION FOR BEAM-PLASMA SYSTEM

A. V. Arzhannikov^{1,2}, V. V. Annenkov^{1,2}, A. V. Burdakov^{1,3}, V. S. Burmasov^{1,2}, I. A. Ivanov^{1,2}, A. A. Kasatov^{1,2}, S. A. Kuznetsov², M. A. Makarov¹, K. I. Mekler¹, S. V. Polosatkin^{1,2,3}, V. V. Postupaev^{1,2}, A. F. Rovenskikh¹, S. L. Sinitisky^{1,2}, V. F. Sklyarov^{1,2}, V. D. Stepanov^{1,2}, I. V. Timofeev^{1,2}

¹*Budker Institute of Nuclear Physics, Novosibirsk, Russian Federation*

²*Novosibirsk State University, Novosibirsk, Russian Federation*

³*Novosibirsk State Technical University, Novosibirsk, Russian Federation*

10:45 TU 1.1-3 EFFECT OF PARALLEL CONNECTION LENGTH ON FLOWS, FLUCTUATIONS AND QUASI-STATIONARY EQUILIBRIUM IN SIMPLE TOROIDAL DEVICE

U. Kumar¹, R. Ganesh¹, S. G. Thatipamula², Y. C. Saxena¹, D. Raju¹

¹*BETA, Institute for Plasma Research, Gandhinagar, Gujarat, India*

²*Pohang University of Science and Technology, Pohang, South Korea*

11:00 TU 1.1-4 MODELING OF CAPACITIVELY COUPLED RF DISCHARGE WITH NON-SINUSOIDAL CURRENT WAVEFORM

G. Shivkumar¹, S. S. Tholeti¹, S. O. Macheret¹, M. A. Alrefae², T. S. Fisher², A. A. Alexeenko¹

¹*School of Aeronautics and Astronautics, Purdue University, West Lafayette, IN, United States*

²*School of Mechanical Engineering, Purdue University, West Lafayette, IN, United States*

11:15 TU 1.1-5 EFFECT OF RADIATIVE HEAT TRANSFER ON INDUCTIVELY COUPLED PLASMA SIMULATION

M. Yu

Faculty of Mechanical and Precision Instrument Engineering, Xi'an University of Technology, Xi'an, China

11:30 TU 1.1-6 A LONG HELIUM PLASMA COLUMN GENERATED AT 13.56 MHZ UP TO ATMOSPHERIC PRESSURE

J. -S. Boisvert¹, J. Margot²

¹*Institut National de la Recherche Scientifique (INRS), 1602 blvd. Lionel Boulet, Quebec, J3X 1S2, Canada, Varenne, Canada*

²*Departement de physique, Universite de Montreal, Montreal, H3T 1J4, Canada, Montreal, Canada*

11:45 TU 1.1-7 MODULATION INSTABILITY AND ENVELOPE EXCITATION IN PARTIALLY STRIPPED MAGNETIZED QUANTUM PLASMA

P. Kumar, N. S. Rathore

Department of Physics, University of Lucknow, LUCKNOW, India

Session TU 1.2: Computational Physics and Techniques II

Tuesday, May 23 10:00-12:00, Wildwood 10

Session Chairs: Nikolaos A. Gatsonis, WPI

Juan Trelles, U Mass Lowell

10:00 TU 1.2-1 3D SIMULATION ON VACUUM ARC CONTROLLED BY THREE KINDS OF AMF CONTACTS

J. Deng, L. Wang, X. Zhang, S. Jia

Xi'an Jiaotong University, Xi'an, Shaanxi, China

10:15 TU 1.2-2 VARIATIONAL MULTISCALE FINITE ELEMENT SIMULATION OF A NONEQUILIBRIUM ATMOSPHERIC-PRESSURE ARC IN CROSSFLOW

V. G. Bhigamudre, J. P. Trelles

Mechanical Engineering, University of Massachusetts Lowell, Lowell, MA, United States

10:30 TU 1.2-3 MODELING OF ION THRUSTER PLUME AND BACKFLOW USING PIC-DSMC APPROACH WITH MULTIPLE GPUS.

R. Jambunathan, D. A. Levin

Aerospace Engineering, University of Illinois, Urbana-Champaign, IL, United States

10:45 TU 1.2-4 (invited) PERFORMANCE PORTABLE MULTI-SPECIES PLASMA CODE

M. T. Bettencourt, J. C. Bennett, R. M. Kramer, A. H. Markosyan, C. H. Moore, R. P. Pawlowski, E. G. Phillips, A. Robinson, J. Shadid

1352, Sandia National Labs, Albuquerque, United States

11:15 TU 1.2-5 VALIDATION AND VERIFICATION OF A KINETIC HEAVY PARTICLE TRANSPORT MODEL

J. Trieschmann¹, F. Schmidt¹, D. Krueger¹, R. P. Brinkmann¹, T. Mussenbrock²

¹*Ruhr University Bochum, Bochum, Germany*

²*Brandenburg University of Technology, Cottbus, Germany*

11:30 TU 1.2-6 MULTIPHYSICS MODELING AND SIMULATION OF ELECTRICAL BREAKDOWN IN LIQUID MEDIUM

A. Charchi Aghdam, T. Farouk

Department of Mechanical Engineering, University of South Carolina, Columbia, SC, United States

11:45 TU 1.2-7 ADVANCED MAGNETO-GAS-KINETIC SCHEME FOR MHD: ANALYSIS AND COMPARISON TO EXISTING MODELS

S. Anderson, K. Hara, S. Girimaji

Aerospace Engineering, Texas A&M University, College Station, TX, United States

Session TU 1.3: Fast- and slow-wave devices

Tuesday, May 23 10:00-11:45, Wildwood 12

Session Chair: Adrian Cross, Strathclyde University

10:00 TU 1.3-1 (invited) TESTING OF A DUAL-FREQUENCY 104/140 GHZ MEGAWATT-CLASS GYROTRON FOR FUSION PLASMA HEATING

S. Cauffman, M. Blank, P. Borchard, K. Felch

CPI, Palo Alto, CA, United States

10:30 TU 1.3-2 HEADING FROM W7-X GYROTRONS TOWARDS GYROTRONS FOR DEMO: RESEARCH STRATEGY AND RECENT DEVELOPMENTS AT KIT

J. Jelonnek¹, G. Aiello², K. Avramidis¹, J. Franck¹, G. Gantenbein¹, S. Illy¹, Z. C. Ioannidis¹, J. Jin¹, P. Kalaria¹, I. G. Pagonakis¹, T. Rzesnicki¹, S. Ruess¹, T. Scherer², D. Strauss², M. Thumm¹, C. Wu¹

¹*IHM, Karlsruhe Institute of Technology (KIT), Germany, Karlsruhe, Germany*

²*IAM-AWP, Karlsruhe Institute of Technology (KIT), Germany, Karlsruhe, Germany*

10:45 TU 1.3-3 PROGRESS OF THE EXPERIMENTS WITH THE EUROPEAN 1MW, 170GHZ INDUSTRIAL CW PROTOTYPE GYROTRON FOR ITER

Z. C. Ioannidis¹, T. Rzesnicki¹, K. Avramidis¹, G. Gantenbein¹, S. Illy¹, J. Jin¹, T. Kobarg¹, I. Pagonakis¹, M. Schmid¹, M. Thumm¹, A. Zein¹, J. Jelonnek¹, S. Alberti², F. Braunmueller², J. -P. Hogge², C. Schlatter², J. Genoud², M. Q. Tran², W. Kasperek³, C. Lechte³, J. Chelis⁴, G. Latsas⁴, A. Zisis⁴, I. Tigelis⁴, A. Bruschi⁵, W. Bin⁵, M. Lontano⁵, V. Hermann⁶, Y. Rozier⁶, F. Legrand⁶, F. Albajar⁷, T. Bonicelli⁷, P. -E. Frigot⁷

¹*Institute for Pulsed Power and Microwave Technology (IHM), Karlsruhe Institute of Technology, Karlsruhe, Germany*

²*Swiss Plasma Center, Ecole polytechnique federale de Lausanne, Lausanne, Switzerland*

³*IGVP, University of Stuttgart, Stuttgart, Germany*

⁴*Faculty of Physics, National and Kapodistrian University of Athens, Athens, Greece*

⁵*IFP, CNR, Milano, Italy*

⁶*Thales Electron Devices, Velizy-Villacoublay, France*

⁷*Fusion for Energy, Barcelona, Spain*

11:00 TU 1.3-4 AMPLITUDE AND PHASE CONTROLLED MAGNETRON-BASED, RF SOURCE

L. Ives¹, M. Read¹, B. Chase², C. Walker³, G. Collins¹, D. Marsden¹, R. Pasquinelli², T. Bui¹, J. Conant³

¹*Calabazas Creek Research, Inc., San Mateo, CA, United States*

²*Fermi National Laboratory, Batavia, IL, United States*

³*Communications & Power Industries, LLC, Beverley, MA, United States*

11:15 TU 1.3-5 MULTI-BEAM MTM HIGH POWER MICROWAVE SOURCE

A. Elfrgani, H. Seidfaraji, E. Schamiloglu

Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States

11:30 TU 1.3-6 W-BAND GYROTRON TRAVELLING WAVE AMPLIFIER EXPERIMENT BASED ON A HELICALLY CORRUGATED WAVEGUIDE

W. He, C. R. Donaldson, L. Zhang, P. McElhinney, K. Ronald, A. W. Cross, A. D. R. Phelps

Department of Physics, SUPA, Strathclyde University, Glasgow G40NG, United Kingdom

Session TU 1.4: Plasma Medicine and Biological Effects I

Tuesday, May 23 10:00-12:00, Wildwood 13

Session Chair: Surya B Karki, University of Toledo

10:00 TU 1.4-1 (invited) APPLICATION OF A MICRO-COLD ATMOSPHERIC PLASMA DEVICE (CAP) IN VITRO AND VIVO FOR BRAIN CANCER THERAPY

Z. Chen¹, E. Gjika¹, L. Lin¹, X. Cheng¹, H. Simonyan², C. Young², M. Keidar¹

¹Mechanical and Aerospace Engineering, The George Washington University, Washington, DC, United States

²Pharmacology and Physiology, The George Washington University, DC, United States

10:30 TU 1.4-2 CANCER INHIBITING PROPERTIES FROM SELF-ORGANIZED PLASMA-LIQUID INTERFACE: IN VITRO DEMONSTRATION

Z. Chen¹, S. Shiqiang Zhang¹, I. Levchenko², I. Beilis³, M. Keidar¹

¹The George Washington University, Washington, DC, United States

²Queensland University of Technology, Brisbane QLD, Australia

³Tel Aviv University, Ramat Aviv, Israel

10:45 TU 1.4-3 AN INVESTIGATION OF THE IMMEDIATE EFFECT OF COLD ATMOSPHERIC PLASMA ON CANCER CELLS

E. Gjika, M. Kirschner, X. Cheng, Z. Chen, M. Keidar

Mechanical and Aerospace Engineering, George Washington University, Washington, DC, United States

11:00 TU 1.4-4 OPTIMIZATION OF COLD ATMOSPHERIC PLASMA AND ELECTROPORATION FOR CANCER CELLS

P. K. Diwakar¹, A. M. Avellan², L. A. Krause³, R. Jain⁴, C. A. Savran⁴, T. Sizyuk¹, A. Hassanein¹

¹Center for Materials Under Extreme Environment (CMUXE), School of Nuclear Engineering, Purdue University, West Lafayette, United States

²Department of Materials Science and Engineering, University of Maryland, College Park, College Park, United States

³Weldon School of Biomedical Engineering, Purdue University, West Lafayette, United States

⁴Department of Mechanical Engineering, Purdue University, West Lafayette, United States

11:15 TU 1.4-5 NSPEFS PROMOTING THE PROLIFERATION OF PIEC CELLS: AN IN VITRO STUDY

F. Dong¹, Z. Liu¹, J. Zhang^{1,2}, J. Fang^{1,2}, J. Guo², Y. Zhang³

¹Academy for Advanced Interdisciplinary Studies, Peking University, Beijing, China

²College of Engineering, Peking University, Beijing, China

³Department of Cardiology, Beijing Anzhen Hospital, Capital Medical University, Beijing, China

11:30 TU 1.4-6 STRONG H2O2 GENERATION BY CANCER CELLS DURING THE COLD PLASMA TREATMENT

D. Yan¹, J. H. Sherman², M. Keidar¹

¹Department of Mechanical and Aerospace Engineering, The George Washington University, Washington, DC, United States

²Neurological Surgery, The George Washington University, Washington, DC, United States

11:45 TU 1.4-7 NUTRITIONAL ELEMENT DETECTION IN HUMAN NAILS USING MICROPLASMA INDUCED BREAKDOWN SPECTROSCOPY

M. Burnette¹, X. Tang¹, D. Staack¹, C. Frederickson²

¹Texas A&M University, College Station, TX, United States

²NeuroBioTex, Inc., Galveston, TX, United States

Session TU 1.5: Plasma Diagnostics II

Tuesday, May 23 10:00-11:30, Wildwood 14

Session Chair: Vladislav Vekselman, Princeton Plasma Physics Laboratory

10:00 TU 1.5-1 TIME EVOLUTION OF REACTIVE OXYGEN NITROGEN SPECIES IN PLASMA-ACTIVATED ESSENTIAL MEDIA AND WATER

T. R. Brubaker, K. Ishikawa, K. Takeda, H. Hashizume, H. Tanaka, H. Kondo, M. Sekine, M. Hori

Graduate School of Engineering, Nagoya University, Nagoya-shi, Aichi-ken, Japan

10:15 TU 1.5-2 Chromium Vapor Density Measurement by Optical Absorption Spectroscopy at Current-zero of Vacuum Arcs in Vacuum Interrupters

H. Wang, Z. Wang, J. Liu, Z. Liu, Y. Geng, J. Wang

Electrical Engineering, Xi'an Jiaotong University, Xi'an, China

10:30 TU 1.5-3 HIGH RESOLUTION FLUORESCENCE SPECTROSCOPY OF LASER-INDUCED PLASMAS

S. S. Harilal¹, K. Hartig¹, I. Jovanovic², M. C. Phillips¹

¹Pacific Northwest National Laboratory, Richland, United States

²University of Michigan, Ann Arbor, United States

10:45 TU 1.5-4 VISIBLE SPECTROSCOPY AND MAGNETIC FIELD PROFILE MEASUREMENTS OF PULSED POWER DIODES

S. G. Patel¹, M. D. Johnston¹, T. J. Webb¹, R. E. Falcon¹, D. E. Bliss¹, G. R. Laity¹, M. R. Gomez¹, N. L. Bennett¹, D. R. Welch¹, M. L. Kiefer¹, M. E. Cuneo¹, Y. Maron², R. M. Gilgenbach³

¹Sandia National Labs, Albuquerque, NM, USA

²Weizmann Institute of Science, Rehovot, Israel

³University of Michigan, Ann Arbor, MI, USA

11:00 TU 1.5-5 DEVELOPMENT OF A TWO-COLOR THOMSON AND RAYLEIGH SCATTERING DIAGNOSTIC FOR ELECTRON DENSITY MEASUREMENTS

C. M. Limbach¹, A. P. Yalin²

¹Texas A&M University, College Station, TX, United States

²Colorado State University, Fort Collins, CO, United States

11:15 TU 1.5-6 X-RAY LASER PLASMA INVESTIGATIONS

G. A. Pavlov, V. M. Treushnikov, V. V. Treushnikov

Institute of problems of chemical physics RAS, Chernogolovka, Moscow region, Russian Federation

Session TU 1.6: Nonequilibrium Plasma Applications II

Tuesday, May 23 10:00-11:30, Wildwood 15

Session Chair: Jon Tomas Gudmundsson, University of Iceland

10:00 TU 1.6-1 PLASMA SURFACE MODIFICATION OF ELECTROSPUN POLYMERIC SCAFFOLDS INTENDED FOR TISSUE ENGINEERING

R. Ghobeira¹, P. Wieringa², N. De Geyter¹, L. Moroni², R. Morent¹

¹Research Unit Plasma Technology (RUPT), Ghent University, Ghent, Belgium

²Department of Complex Tissue Regeneration, MERLN institute, Maastricht University, Maastricht, The Netherlands

10:15 TU 1.6-2 EFFECT OF CHEMICAL AND PLASMA FUNCTIONALIZATION ON THE PERFORMANCE OF MICROWAVE RESONATORS

E. H. Lock¹, P. Xu², T. Kohler², Y. Rosen², A. Ramanayaka², K. D. Osborn²

¹Materials Science and Technology Division, Naval Research Laboratory, Washington, DC, United States

²Laboratory of Physical Sciences, College Park, MD, United States

10:30 TU 1.6-3 EXPLORING THE KINETIC CONTRIBUTION OF CATALYST-PLASMA INTERACTIONS TO ACTIVATE C-H BONDS

J. Kim¹, M. S. Abbott¹, D. B. Go², J. C. Hicks¹

¹Department of Chemical and Biomolecular Engineering, University of Notre Dame, Notre Dame, IN, United States

²Department of Aerospace and Mechanical Engineering, University of Notre Dame, Notre Dame, IN, United States

10:45 TU 1.6-4 SELF-INITIATED MICROWAVE PLASMA FORMATION AND INTERACTION WITHIN A 2D PHOTONIC CRYSTAL

S. Parsons, J. Gregorio, J. Hopwood

ECE, Tufts University, Medford, MA, United States

11:00 TU 1.6-5 SURFACE MODIFICATION OF PET, PS, PE POLYMERS BY SINGLE RF PLASMA DISCHARGE

D. Mansuroglu^{1,2}, I. U. Uzun-Kaymak¹

¹Physics Department, Middle East Technical University, Ankara, Turkey

²Physics Department, Canakkale Onsekiz Mart University, Canakkale, Turkey

11:15 TU 1.6-6 ULTRAFAST SPRAY OF TiO₂ SELF-CLEANING FILMS IN TUBULAR SUBSTRATES

L. Zhang¹, S. Yu¹, K. Wang¹, J. Zhang^{1,2}, J. Fang^{1,2}

¹Academy for Advanced Interdisciplinary Studies, Peking University, Beijing, China

²College of Engineering, Peking University, Beijing, China

Session PL4: Plenary 4

Tuesday, May 23 13:30-14:30, Wildwood 3

Session Chair: Alan D R Phelps, University of Strathclyde

13:30 PL4-1 (invited) EFFICIENT GENERATION OF HIGH POWER MICROWAVES USING THE DEGENERATE BAND EDGE OSCILLATORS

M. A. K. Othman¹, A. Figotin², F. Capolino¹

¹Department of Electrical Engineering and Computer Science, University of California, Irvine, Irvine, CA, United States

²Department of Mathematics, University of California, Irvine, Irvine, CA, United States

Session TU Posters: TU P4

Poster Session

Tuesday, May 23 14:30-16:00, Poster Room

Session Chairs:

TU Posters-1 EXPERIMENTAL STUDY OF A HIGH POWER NLTL-MODULATED ELECTRON BEAM DRIVER

B. W. Hoff¹, P. D. Lepell², T. B. Montoya³, D. H. Simon¹

¹Air Force Research Laboratory, Kirtland AFB, NM, United States

²Leidos, Albuquerque, NM, United States

³Voss Scientific, Albuquerque, NM, United States

TU Posters-2 CHANGE IN GUIDING CENTER POSITION AS A FUNCTION OF INCIDENT AND SCATTERING ANGLE IN CROSS-FIELD DIODE

B. S. Stutzman¹, J. P. Verboncoeur²

¹US Coast Guard Academy, New London, CT, United States

²Michigan State University, East Lansing, MI, United States

Session TU Posters: TU P2

Poster Session

Tuesday, May 23 14:30-16:00, Poster Room

Session Chairs:

TU Posters-3 EXPERIMENTAL STUDIES ON TWO TYPES OF MAGNETIC POTENTIAL WELLS

I. G. Pagonakis, H. Buchelet, G. Gantenbein, S. Illy, Z. Ioannidis, T. Rzesnicki, M. Thumm, A. Zein, J. Jelonnek

Karlsruhe Institute of Technology (KIT), Institute for Pulsed Power and Microwave Technology (IHM), Karlsruhe, Germany

Session TU Posters: TU P10

Poster Session

Tuesday, May 23 14:30-16:00, Poster Room

Session Chairs:

TU Posters-4 RECENT RESEARCH ON THE MULTI-FREQUENCY RECIRCULATING PLANAR MAGNETRON

G. B. Greening, N. M. Jordan, D. A. Packard, S. C. Exelby, K. A. Schneider, P. Y. Wong, Y. Y. Lau, R. M. Gilgenbach

NERS, University of Michigan, Ann Arbor, United States

TU Posters-5 BACKWARD WAVE OSCILLATION THRESHOLDS IN A TRAVELING-WAVE TUBE

A. Jassem, P. Y. Wong, F. Antoulinakis, Y. Y. Lau

University of Michigan, Ann Arbor, MI, United States

TU Posters-6 ABSOLUTE INSTABILITY AT THE LOWER BAND EDGE IN A TRAVELING WAVE TUBE

F. Antoulinakis, Y. Y. Lau, P. Y. Wong, A. Jassem

University of Michigan, Ann Arbor, MI, United States

TU Posters-7 INVESTIGATING A LOWER LIMIT FOR THE MAGNETIC FIELD IN A TWT

N. Haytural¹, L. Oksuz^{1,2}, A. Gulec³, F. Bozduman¹, H. Yesiltepe¹
¹Plasma Research Laboratory, Suleyman Demirel University, Isparta, Turkey
²Plazmatek, Suleyman Demirel University, Isparta, Turkey
³Biomedical Engineering, Suleyman Demirel University, Isparta, Turkey

TU Posters-8 ABOUT THE INVESTIGATION OF ELECTRON-WAVE MICROWAVE AMPLIFIERS AT HIGH VALUES OF INHOMOGENEITY PARAMETER

Y. A. Kalinin, A. V. Starodubov
Department of Physics of nonlinear systems, Saratov State University, Saratov, Russian Federation

TU Posters-9 SIMULATION RESULTS OF A LINEAR FORMAT CFA USING A MODULATED CATHODE

M. Pearlman, J. Browning
Electrical Engineering, Boise State University, Boise, ID, United States

TU Posters-10 BEAM PROFILE AND POSITION INSTABILITY OF A POST-ACCELERATED PSEUDOSPARK-SOURCED ELECTRON BEAM FOR AN EXTENDED INTERACTION OSCILLATOR

A. W. Cross¹, H. Yin¹, L. Zhang¹, W. He¹, G. Shu¹, J. Zhao², Y. Yin³
¹Department of Physics, SUPA, Strathclyde University, Glasgow G40NG, United Kingdom
²High Voltage Division, School of Electrical Engineering, Xi'an Jiaotong University, Xi'an 710049, China
³School of Physical Electronics, University of Electronic Science & Technology of China, Chengdu 610054, China

Session TU Posters: TU P1

Poster Session

Tuesday, May 23 14:30-16:00, Poster Room

Session Chair: Peter Mardahl, Air Force Research Laboratory

TU Posters-11 TEMPORAL AND SPATIAL ANALYSIS OF INDUCTIVELY COUPLED ATMOSPHERIC PRESSURE PLASMA

A. Gulec¹, F. Bozduman², L. Oksuz², A. M. Hala³
¹Technology Faculty/Biomedical Engineering, Suleyman Demirel University, Isparta, Turkey
²Science and Literature Faculty/Physics, Suleyman Demirel University, Isparta, Turkey
³The National Center for Applied Physics, Material Science Research Institute, King Abdul Aziz City for Science and Technology, Riyadh, Saudi Arabia

TU Posters-12 MODELING PLASMA EXPANSION INTO VACUUM WITH SPEED-LIMITED PARTICLE-IN-CELL (SLPIC) SIMULATION

T. G. Jenkins¹, P. H. Stoltz¹, J. R. Cary¹, G. R. Werner²
¹Tech-X Corporation, Boulder, CO, United States
²University of Colorado, Boulder, CO, United States

TU Posters-13 OPERATION OF A W-BAND MILLIMETER-WAVE SOURCE MANUFACTURED BY 3D PRINTING

A. R. Phipps, A. J. MacLachlan, C. W. Robertson, K. Ronald, A. W. Cross, A. D. R. Phelps
Dept of Physics, University of Strathclyde, Glasgow, United Kingdom

TU Posters-14 TIME EVOLUTION OF DISTRIBUTION FUNCTION OF PLASMA ELECTRON UNDER THE ACTION OF PULSED ELECTRON BEAM

N. E. Aktaev, G. E. Remnev
National Research Tomsk Polytechnic University, Tomsk, Russian Federation

TU Posters-15 TIME DOMAIN ANALYSIS OF HIGHER ORDER MODE PROPERTIES IN AN OPEN CAVITY RETAINING AXIAL SYMMETRY

S. Y. Lin¹, M. C. Lin²
¹STEM, Fairview High School, Boulder, CO, USA
²Department of Electrical and Biomedical Engineering, Hanyang University, Seoul, South Korea

TU Posters-16 EFFICIENT SIMULATIONS OF BEAM LOADING IN RF CAVITIES WITH MULTIPLE HIGH-ORDER MODES

S. D. Webb, N. M. Cook, D. T. Abell
RadiaSoft, LLC, Boulder, CO, United States

Session TU Posters: TU P5

Poster Session

Tuesday, May 23 14:30-16:00, Poster Room

Session Chairs:

TU Posters-17 REDUCTION OF NOX EMISSIONS BY MICROWAVE PLASMA IGNITION IN INTERNAL COMBUSTION ENGINE

C. Liu, G. Zhang, H. Xie, L. Deng

Department of Electrical Engineering, Tsinghua University, Beijing, Beijing

TU Posters-18 MEASUREMENTS OF MULTIPACTOR AND DARK CURRENT IN A 17 GHZ STANDING WAVE ACCELERATOR STRUCTURE

H. Xu, M. A. Shapiro, R. J. Temkin

Plasma Science and Fusion Center, Massachusetts Institute of Technology, Cambridge, MA, United States

TU Posters-19 RESONANT CHARACTERISTICS IN 7X7 MICROWAVE DISCHARGE ARRAY BASED ON MICROSTRIP SPLIT RING RESONATOR

H. Kim, S. G. Parsons, J. A. Hopwood

Electrical and Computer Engineering, Tufts University, medford, United States

TU Posters-20 STATIONARY STATISTICAL THEORY FOR COAXIAL MULTIPACTOR

S. Lin, Y. Li, H. Wang, C. Liu

Xi'an Jiaotong University, Xi'an, China

TU Posters-21 TWT SUPPORT ROAD COATING BY MPCVD

F. Bozduman¹, N. Haytural², A. Gulec³, O. N. Asan⁴, L. Oksuz⁵

¹Physics, Ferhat Bozduman, Isparta, Turkey

²Physics, Necati Haytural, Isparta, Turkey

³Biomedical, Ali Gulec, Isparta, Turkey

⁴Physics, Orkun Nuri Asan, Isparta, Turkey

⁵Physics, Lutfi Oksuz, Isparta, Turkey

TU Posters-22 DIAGNOSTICS OF CAPACITIVE COUPLED PLASMA BY SPECTROSCOPY AND MICROWAVE

X. He¹, C. Liu¹, Y. Zhang², J. Chen³, Y. Chen³, X. Zeng³, B. Chen¹

¹College of science, Hohai university, Nanjing, China

²College of science, Nanjing University of Science & Technology, Nanjing, China

³Beijing Aeronautical Technology Research Center, Beijing, China

TU Posters-23 INTERACTION MECHANISM OF MICRO-PLASMA AND TERAHERTZ WAVES

L. Hou¹, W. Shi¹, M. Xu¹, C. Ma¹, H. Liu¹, X. Sun²

¹Applied Physics Department, Xi'an University of Technology, Xi'an, China

²Northwest Engineering Corporation Limited, Xi'an, China

TU Posters-24 ELECTRIC FIELD DISTRIBUTION OF A WEDGE SHAPE PLASMA PHOTONIC CRYSTAL

S. S. M. Chung

Institute of Biophotonics Engineering, National Yang Ming University, Taipei, Taiwan

Session TU Posters: TU P3

Poster Session

Tuesday, May 23 14:30-16:00, Poster Room

Session Chairs:

TU Posters-25 A STUDY ON FLEXIBLE SOLID STATE ELECTROCHROMIC DEVICES CONSISTING OF RF PLASMA MODIFIED WO3 HYBRID

E. Eren¹, C. Alver¹, G. Yurdabak Karaca¹, E. Uygun², L. Oksuz², A. Uygun Oksuz¹

¹Chemistry, Suleyman Demirel University, Isparta, Turkey

²Physics, Suleyman Demirel University, Isparta, Turkey

TU Posters-26 DESIGN OF ELECTROCHROMIC HYBRID POLY(3-METHYLTHIOPHENE)/WO₃ MATERIALS VIA ELECTROCHEMICAL ROUTE

C. Dulgerbaki, A. Uygun

Chemistry, Suleyman Demirel University, Isparta, Turkey

TU Posters-27 EXPERIMENTAL STUDY OF TIME DEPENDENCE ABLATION RATE IN ATMOSPHERIC PRESSURE DC CARBON ARC DISCHARGES

T. Huang, V. Vekselman, Y. Raitse

Princeton Plasma Physics Laboratory, Princeton, NJ, United States

TU Posters-28 UNIFIED ANALYTICAL TREATMENT OF NEAR-CATHODE LAYERS OF ARC DISCHARGES WITH APPLICATION TO SPOTLESS CATHODIC ATTACHMENT OF VACUUM ARCS

L. G. Benilova¹, M. S. Benilov^{1,2}

¹Departamento de Física, FCEE, Universidade da Madeira, Funchal, Portugal

²IST, Instituto de Plasmas e Fusão Nuclear, Universidade de Lisboa, Lisboa, Portugal

TU Posters-29 ELECTROMAGNETIC THERMAL FLUID SIMULATION OF VACUUM ARC CATHODE SPOT WITH VAPOR FROM OXIDE LAYER

S. Yamamoto, T. Iwao, Y. Ehara

Electrical and electronic engineering, Tokyo City University, Tokyo, Japan

TU Posters-30 EVAPORATION QUANTITY OF TROLLEY WIRE AFFECTED BY ARC CURRENT USING ELECTROMAGNETIC THERMAL FLUID SIMULATION

Y. Maeda¹, S. Iwata¹, S. Yamamoto¹, T. Iwao¹, T. Hayasaka²

¹Tokyo City University, Tokyo, Japan

²Railway Technical Research Institute, Tokyo, Japan

TU Posters-31 CONTRIBUTION OF ARC COLUMN FOR MOVING SPEED AFFECTED BY EXTERNAL MAGNETIC FIELD IN MAGNETIC DRIVEN ARC

T. Yamato, Y. Inuzuka, S. Yamamoto, T. Iwao

Electrical & Electronic Engineering, Tokyo City University, Setagaya-ku, Japan

TU Posters-32 DISTRIBUTION OF VAPOR DENSITY AFFECTED BY CATHODE SPOT AREA OF VACUUM ARC

S. Iwata, S. Yamamoto, T. Iwao

Electrical & Electronic Engineering, Tokyo City University, Setagaya-ku, Japan

TU Posters-33 LAMP EFFICIENCY OF WALL-STABILIZED ARGON PULSED ARC AFFECTED BY TRANSIENT CURRENT

Y. Asano, S. Yamamoto, T. Iwao

Electrical & Electronic Engineering, Tokyo City University, Setagaya-ku, Japan

TU Posters-34 CONDUCTANCE IN POST ARC DISCHARGE AFFECTED BY THE GAS BLUSTER ANGLE

Y. Ishikawa, K. Sato, S. Ono, S. Yamamoto, T. Iwao

Electrical & Electronic Engineering, Tokyo City University, Setagaya-ku, Japan

TU Posters-35 PROCESS OF ARC MOVING AFFECTED BY EXTERNAL MAGNETIC FIELD IN MAGNETIC DRIVEN ARC

Y. Inuzuka, T. Yamato, S. Yamamoto, T. Iwao

Tokyo City University, Tokyo, Japan

Session TU Posters: TU P8

Poster Session

Tuesday, May 23 14:30-16:00, Poster Room

Session Chair: Ken Hara, Texas A&M University

TU Posters-36 HIGH-THRUST ELECTRO-JET ENGINE USING HELICALLY CORRUGATED MAGNETIC FIELD

A. V. Arzhannikov^{1,2}, A. D. Beklemishev^{1,2}

¹Plasma physics department, Novosibirsk State University, Novosibirsk, Russian Federation

²Plasma Physics Department, Budker Institute of Nuclear Physics, Novosibirsk, Russian Federation

TU Posters-37 MICROPLASMA JET DEVICE FOR PLASMA THRUSTER

H. Seo¹, D. H. Kim¹, G. T. Bae¹, H. -S. Tae¹, C. -S. Park¹, W. H. Kim², B. J. Shin³, S. -O. Kim⁴

¹School of Electronics Engineering, Kyungpook National University, Daegu, South Korea

²School of Mechanical Engineering, Kyungpook National University, Daegu, South Korea

³Department of Electronics Engineering, Sejong University, Seoul, South Korea

⁴Department of Electrical and Computer Engineering, New York Institute of Technology, Old Westbury, USA

TU Posters-38 TRANSITION OF THERMODYNAMIC PROPERTY OF ELECTRON IN A MAGNETICALLY EXPANDING PLASMA

K. S. Chung, J. Y. Kim, K. -J. Chung, Y. S. Hwang

Nuclear Engineering, Seoul National University, Seoul, South Korea

TU Posters-39 AN APPROACH TO IMPROVE OVERALL EFFICIENCY OF PULSED PLASMA THRUSTER UTILIZING CAPILLARY STRUCTURE AND COAXIAL ACCELERATING RAIL

Y. Wang, L. Cheng, J. Yan, K. Qian, Z. Li, W. Ding

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China

TU Posters-40 ANALYSIS OF PROCESSES IN INDUCTOR LOADED BY A PLASMA OF RF THRUSTER DISCHARGE

G. G. Shishkin¹, A. G. Shishkin², A. P. Plokhikh³

¹Moscow Aviation Institute, Moscow, Russian Federation

²Moscow State University, Dept. of Computational Mathematics & Cybernetics, Moscow, Russian Federation

³RIAME of Moscow Aviation Institute, Moscow, Russian Federation

TU Posters-41 PRELIMINARY STUDY ON PLUME CHARACTERISTICS OF A NOVEL PULSED PLASMA THRUSTER

Y. Wang, L. Cheng, J. Yan, K. Qian, Z. Li, W. Ding

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China

TU Posters-42 STUDY ON THE CHARACTERISTIC OF DEPOSITED ENERGY IN A CAPILLARY DISCHARGE BASED PULSED PLASMA THRUSTER

L. Cheng, Y. Wang, J. Yan, Z. Li, K. Qian, W. Ding

Xi'an Jiaotong University, Xi'an, China

TU Posters-43 EXPERIMENTAL RESEARCH ON ABLATION CHARACTERISTICS IN A LOW ENERGY CAPILLARY DISCHARGE BASED PULSED PLASMA THRUSTER

L. Cheng, Y. Wang, J. Yan, Z. Li, K. Qian, W. Ding

Xi'an Jiaotong University, Xi'an, China

TU Posters-44 THREE-DIMENSIONAL AND SHEATH BOUNDARY EFFECTS ON THE INSTABILITIES IN EXB PLASMA DISCHARGES

V. Morin¹, O. Koshkarov¹, A. Smolyakov¹, Y. Raitses², I. Kaganovich²

¹Physics and Engineering Physics, University of Saskatchewan, Saskatoon, Saskatchewan, SK, Canada

²Princeton Plasma Physics Laboratory, Princeton, NY, USA

Session TU Posters: TU P7

Poster Session

Tuesday, May 23 14:30-16:00, Poster Room

Session Chairs:

TU Posters-45 OXIDATIVE STRESS OF MELANOMA CANER CELLS INDUCED BY ATMOSPHERIC PRESSURE COLD PLASMA

G. -M. Xu¹, J. -R. Liu², S. -L. Chen¹, X. -M. Shi², G. -J. Zhang¹

¹State Key Lab of Electrical Insulation & Power Equipment, Xi'an Jiaotong University, Xi'an, Shaanxi, China

²Environment and Genes Related to Diseases Key Laboratory of Education Ministry, Xi'an, Shaanxi, China

TU Posters-46 THE SELECTIVE EFFECT OF PLASMA ACTIVATED MEDIA ON CELLS

S. Mohades¹, N. Barekzi^{1,2}, V. Maruthamuthu³, H. Razavi¹, M. Laroussi¹

¹Plasma Engineering & Medicine Institute, Old Dominion University, Norfolk, VA, United States

²Department of Biological Sciences, Old Dominion University, Norfolk, VA, United States

³Mechanical & Aerospace Engineering Dept, Old Dominion University, Norfolk, VA, United States

TU Posters-47 SYNERGISTIC EFFECTS OF COLD ATMOSPHERIC PLASMA AND ELECTRIC PULSES ON JURKAT CELLS

M. V. Lauria, P. Dieffenbach, A. Vadlamani, J. Firehammer, A. Shashurin, A. L. Garner
Nuclear Engineering, Purdue University, West Lafayette, IN, USA

TU Posters-48 MODELLING SYNERGISTIC EFFECTS OF COLD ATMOSPHERIC PLASMA AND PULSED ELECTRIC FIELD TREATMENTS IN PORE CREATION

C. Meert, N. Allen, A. L. Garner, J. N. Brooks
Nuclear Engineering, Purdue University, West Lafayette, IN, United States

TU Posters-49 REACTIVE MOLECULAR DYNAMICS SIMULATION ON PLASMA-INDUCED DESTRUCTION OF FUNGAL CELL WALL COMPONENTS

L. Shi, T. Zhao, Y. T. Zhang, L. Zou, L. Zhang
School of Electrical Engineering, Shandong University, Ji'nan, Shandong Province, China

TU Posters-50 THE EFFECT OF THE TYPE OF GAS ON UNDERWATER DISCHARGE

K. Kim, J. Y. Huh, S. H. Ma, Y. C. Hong
Plasma Technology Research Center, National Fusion Research Institute, Gunsan, South Korea

TU Posters-51 3D PRINTED MINI PLASMA JET: APPLICATION TO HEMOSTATIC TREATMENT FOR ENDOSCOPE

Y. Hayashi¹, H. Kawano¹, Y. Nomura², T. Takamatsu², H. Miyahara¹, S. Ota³, T. Azuma², A. Okino¹
¹Tokyo Institute of Technology, Yokohama, Japan
²Kobe University, Kobe, Japan
³Kobe Design University, Kobe, Japan

TU Posters-52 CHARACTERIZATION OF A PLASMA SOURCE USED TO ACCELERATE WOUND HEALING OF THE TADPOLE XENOPUS LAEVIS

K. Martus, J. Menon
William Paterson University, Wayne, NJ, United States

TU Posters-53 TREATMENT ON NEUROBLASTOMA CANCER CELLS USING ATMOSPHERIC COLD PLASMA

M. T. Rajan, K. Patel, S. Vemulapalli, N. Pokala
Plasma Engineering Research Lab (PERL), Texas A&M University - Corpus Christi, Corpus Christi, TX, United States

TU Posters-54 ATMOSPHERIC PRESSURE COLD PLASMA APPLICATION FOR HOSPITAL STERILIZATION

M. T. Rajan, A. Wilkins, B. Phung
Plasma Engineering Research Lab (PERL), Texas A&M University - Corpus Christi, Corpus Christi, TX, United States

TU Posters-55 DISINFECTION OF REVERSE OSMOSIS WATER BY ATMOSPHERIC PLASMA RICH IN OH RADICAL

A. C. O. C. Doria, G. S. Liberato, F. R. Figueira, C. A. Carvalho, J. B. S. Lima, R. S. Pessoa, S. Khouri
Laboratory of Biotechnology and Electric Plasma, University of Vale do Paraiba, Sao Jose dos Campos, Sao Paulo, Brazil

TU Posters-56 ARGON/AIR AND HELIUM/AIR ATMOSPHERIC PLASMA JET INACTIVATION OF CANDIDA ALBICANS BIOFILM FORMED FROM CLINICAL STRAINS

F. R. Figueira, A. C. O. C. Doria, J. S. B. Lima, S. Khouri, R. S. Pessoa
Laboratory of Biotechnology and Electric Plasma, University of Vale do Paraiba, Sao Jose dos Campos, Sao Paulo, Brazil

TU Posters-57 INTRALUMINAL DISINFECTION OF CATHETER CONTAMINATED WITH STAPHYLOCOCCUS AUREUS BIOFILM USING ATMOSPHERIC PLASMA

A. C. O. C. Doria, R. R. N. R. Cruz, F. R. Figueira, A. C. Oliveira, J. B. S. Lima, R. S. Pessoa, S. Khouri
Laboratory of Biotechnology and Electric Plasma, University of Vale do Paraiba, Sao Jose dos Campos, Sao Paulo, Brazil

Session TU Posters: TU P6

Poster Session

Tuesday, May 23 14:30-16:00, Poster Room

Session Chairs:

TU Posters-58 NUMERICAL INVESTIGATION OF A HELIUM ATMOSPHERIC PRESSURE JET WITH VARIOUS AMOUNTS OF N2 ADMIXTURE

Y. Zheng, L. Wang, D. Wang, S. Jia

Xi'an Jiaotong University, Xi'an, China

TU Posters-59 NUMERICAL MODELLING OF IONIC WIND GENERATION BY NEGATIVE CORONA DISCHARGE IN AMBIENT AIR WITH EXPERIMENTAL VALIDATION

S. Chen^{1,2}, S. Nijdam¹

¹Department of Applied Physics, Eindhoven University of Technology, 5600 MB Eindhoven, Netherlands

²Department of Electrical and Information Engineering, Hunan University, 410082 Changsha, China

TU Posters-60 NUMERICAL SIMULATION OF MULTI-PEAK DISCHARGE AND ITS RADIAL STRUCTURES IN ATMOSPHERIC PRESSURE HELIUM DIELECTRIC BARRIER DISCHARGES

D. Dai, Y. Zhang, W. Ning, Q. Zhang

school of electric power, South China University of technology, Guangzhou, Guangdong, China

TU Posters-61 SIMULATION OF CH₄ DRY REFORMING BY NANOSECOND PULSE PLASMA-CATALYSIS

H. Cheng^{1,2}, X. Lu^{1,2}, D. Liu^{1,2,3}

¹State Key Lab of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, Hubei, China

²IFSA Collaborative Innovation Center, Shanghai Jiao Tong University, Shanghai, China

³State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, Shaanxi, China

TU Posters-62 MICROWAVE PLASMA-ASSISTED IGNITION AND FLAMEHOLDING IN PREMIXED ETHYLENE/AIR MIXTURES

C. A. Fuh, W. Wu, C. Wang

Department of Physics and Astronomy, Mississippi State University, Starkville, Ms, United States

TU Posters-63 FLASHOVER CHARACTERISTICS OF EPOXY RESIN WITH HE₂/CF₄ ATMOSPHERIC PRESSURE PLASMA JET TREATMENT

S. -L. Chen, G. -M. Xu, C. -W. Yao, Z. -S. Chang, G. -J. Zhang

State Key Lab of Electrical Insulation & Power Equipment, School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi, China

TU Posters-64 A MODEL CONSIDERING VOLTAGE BREAKDOWN PROCESS TO SIMULATE CURRENT PAUSE PHENOMENA IN ELECTRICAL WIRE EXPLOSION

G. Yin, X. Li, J. Wu, S. Jia, A. Qiu

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, Shaanxi, China

TU Posters-65 STRUCTURAL CHARACTERISTICS OF ALUMINUM NANOPARTICLES PRODUCED BY ELECTRICAL EXPLOSION IN ARGON

X. Li, Y. Wang, J. Wu, X. Li, A. Qiu

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, Shaanxi, China

TU Posters-66 RF MAGNETRON SPUTTERED MAGNETIC NANOWIRE

G. Yurdabak Karaca¹, E. Uygur², A. Uygur Oksuz¹, L. Oksuz^{2,3}

¹Chemistry, Suleyman Demirel University, Isparta, Turkey

²Technopark, Plazmatek, Isparta, Turkey

³Physics, Suleyman Demirel University, Isparta, Turkey

TU Posters-67 ELECTROCHROMIC CHARACTERISTICS AS A FUNCTION OF ELECTROLYTE ON PERFORMANCE OF ELECTROCHROMIC FILMS INCLUDING PLASMA MODIFIED V₂O₅ HYBRIDS

E. Eren¹, G. Cogal², A. Yildiz³

¹Chemistry, Suleyman Demirel University, Isparta, Turkey

²Material Technology Engineering, Mehmet Akif Ersoy University, Burdur, Turkey

³Chemistry, Mehmet Akif Ersoy University, Burdur, Turkey

TU Posters-68 EFFECT OF NANOPOROUS DIELECTRIC ON DISCHARGE MODE TRANSITION IN A RF DIELECTRIC BARRIER DISCHARGE AND ITS APPLICATION IN METHANE REFORMING

H. Mu¹, A. Rouso², C. Yu¹, P. Li¹, G. Zhang¹, Y. Ju²

¹State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, Shaanxi, China

²Department of Mechanical and Aerospace Engineering, Princeton University, Princeton, NJ, USA

TU Posters-69 MODELING OF AN ELECTRON-BEAM PUMPED ARF EXCIMER LASER

T. B. Petrova, G. M. Petrov, M. F. Wolford, A. J. Schmitt, J. L. Giuliani, S. P. Obenschain

Plasma Physics Division, NRL, Washington, DC, United States

TU Posters-70 ATMOSPHERIC PRESSURE COLD PLASMA APPLICATION FOR FOOD SAFETY

M. T. Rajan, J. Turner, L. Pinnell, J. Tallman, E. Moreno

Plasma Engineering Research Lab (PERL), Texas A&M University - Corpus Christi, Corpus Christi, TX, United States

TU Posters-71 OVERVIEW OF EXPERIMENTAL STUDIES OF PLASMA IN LIQUID WATER AT THE UNIVERSITY OF MICHIGAN AND PROGRESS TOWARDS A PRACTICAL PLASMA WATER REACTOR

J. E. Foster¹, J. Lai¹, S. Mujovic¹, J. Groele¹, Y. Kovach¹, M. C. Garcia²

¹University of Michigan, Ann Arbor, MI, United States

²Grupo De Espectroscopia de Plasmas, Universidad de Cordoba, Cordoba, Spain

TU Posters-72 THE EFFECT OF SEED ELECTRONS ON THE REPEATABILITY OF APPJ PROPAGATION

X. Lu, L. Nie, J. Chang, Y. Xian

Huazhong University of Science and Technology, China, Wuhan, China

TU Posters-73 CONTROLLABLE VOLTAGE STABILIZATION BY MEANS OF LIGHT INERT GASES

E. Lomakina, A. Egorova, A. Mustafaev

St. Petersburg Mining University, St. Petersburg, Russian Federation

TU Posters-74 ATMOSPHERIC PRESSURE PLASMA SOURCES FOR PLASMA POLYMERIZATION AND LARGE AREA TREATMENT

D. H. Kim¹, C. -S. Park¹, D. Kim¹, H. -S. Tae¹, B. J. Shin², J. H. Seo³

¹School of Electrical Engineering, College of IT Engineering, Kyungpook National University, Daegu, South Korea

²Department of Electronics Engineering, Sejong University, Seoul, South Korea

³Department of Electronics Engineering, Incheon National University, Incheon, South Korea

TU Posters-75 PLASMA-ENHANCED ATOMIC LAYER DEPOSITION OF AL₂O₃ THIN FILM ON TiO₂ NANOTUBES

R. C. Goncalves, A. C. O. C. Doria, J. S. B. Lima, R. S. Pessoa, H. S. Maciel

Laboratory of Biotechnology and Electric Plasma, University of Vale do Paraiba, Sao Jose dos Campos, Sao Paulo, Brazil

TU Posters-76 CHARACTERIZATION OF THE OPERATIONAL MODES OF A NON-THERMAL ATMOSPHERIC PRESSURE PLASMA JET

M. A. Demetillo, J. L. Lopez

Department of Physics, Seton Hall University, South Orange, NJ, United States

TU Posters-77 THE STANDARDIZATION AND REPRODUCIBILITY OF DIELECTRIC BARRIER DISCHARGE REACTORS

I. Lowenthal¹, M. Feurer², J. Lopez²

¹Columbia High School, New Jersey, United States

²Seton Hall University, New Jersey, United States

TU Posters-78 NUMERICAL STUDIES ON THE NONLINEAR COUPLING IN ATMOSPHERIC DUAL RADIO-FREQUENCY DIELECTRIC BARRIER DISCHARGE

Z. Zhang, Q. Nie, Z. Wang, B. Jiang

Harbin Institute of Technology, Harbin, China

TU Posters-79 NEGATIVE DC CORONA DISCHARGE FOR NITRIC OXIDE REMOVAL IN PIN-TO-WATER ELECTRODE CONFIGURATION

L. Zhou, T. Wang, S. Macgregor, M. Wilson, I. Timoshkin, M. Given

Electronic & Electrical Engineering, University of Strathclyde, Glasgow, United Kingdom

TU Posters-80 POSITIVE STREAMER MECHANISM IN GASES

A. El-Zein, M. Talaat, A. Samir

Electrical Power & Machines, Zagazig University, Zagazig, Egypt

Session TU Posters: TU P9

Poster Session

Tuesday, May 23 14:30-16:00, Poster Room

Session Chair: Scott Kovaleski, U Missouri

TU Posters-81 Laser effects on the stopping power for ion traveling through plasmas

G. Wang, H. Yi, Y. Wang, D. Liu

Dalian Maritime University, Dalian, Liaoning, China

TU Posters-82 EXPERIMENTAL MEASUREMENTS OF POWER EXTRACTION CIRCUITS FOR MOBILE IONOSPHERIC HEATING

B. L. Beaudoin, A. Ting, S. Gold, J. A. Karakkad, A. H. Narayan, G. S. Nusinovich, C. Turner, T. M. Antonsen Jr.
IREAP, University of Maryland, College Park, MD, USA

TU Posters-83 SIMULATIONS OF POWER EXTRACTION CIRCUITS FOR MOBILE IONOSPHERIC HEATING

A. H. Narayan, B. L. Beaudoin, A. Ting, S. Gold, J. A. Karakkad, G. S. Nusinovich, C. Turner, T. M. Antonsen Jr.
IREAP, University of Maryland, College Park, United States

TU Posters-84 DC AND PULSED BORON PLASMA AND ION BEAM GENERATION BY PLANAR MAGNETRON DISCHARGE

A. V. Vizir¹, M. V. Shandrikov¹, G. Y. Yushkov¹, E. M. Oks^{1,2}

¹*Plasma Sources Laboratory, High Current Electronics Institute, Tomsk, Russian Federation*

²*Physics Department, Tomsk State University of Control System and Radioelectronics, Tomsk, Russian Federation*

TU Posters-85 POTENTIAL DISTRIBUTION OVER A DIELECTRIC SURFACE IRRADIATED BY AN ELECTRON BEAM AT FOREVACUUM PRESSURES

Y. G. Yushkov¹, D. B. Zolotukhin¹, A. V. Tyunkov¹, E. M. Oks^{1,2}

¹*Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russian Federation*

²*Institute of High Current Electronics, SB RAS, Tomsk, Russian Federation*

TU Posters-86 DISCHARGE CHARACTERISTICS OF THREE BRUSH-SHAPED PLASMA PLUME OPERATED IN ATMOSPHERIC PRESSURE ARGON

X. Li, P. Jia, J. Chu, L. Dong

College of Physics Science and Technology, Hebei University, Baoding, Hebei province, China

TU Posters-87 VACUUM ARC PLASMA PRODUCED WITH COPPER-CHROMIUM CATHODES IN A MAGNETIC FIELD

E. M. Oks^{1,2}, A. G. Nikolaev¹, V. P. Frolova¹, G. Y. Yushkov¹, I. N. Poluyanova³

¹*High Current Electronics Institute, SB RAS, Tomsk, Russian Federation*

²*Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russian Federation*

³*Tavrida Electric, Moscow, Russian Federation*

TU Posters-88 GENERATION OF DEUTERIUM ION BEAMS BY VACUUM ARC ION SOURCE WITH DEUTERIUM-SATURATED ZIRCONIUM CATHODE

E. M. Oks^{1,2}, A. G. Nikolaev¹, V. P. Frolova¹, G. Y. Yushkov¹

¹*High Current Electronics Institute, SB RAS, Tomsk, Russian Federation*

²*Tomsk State University of Control System and Radioelectronics, Tomsk, Russian Federation*

TU Posters-89 EXPERIMENTAL INVESTIGATION OF HIGH EFFICIENT INDUCTIVELY COUPLED PLASMA BY SPLITTING EXTERNAL ANTENNA COIL

H. S. Rhee, D. H. Kim, S. Nawaz, S. J. Yoon

R&D Center, PSK Inc., Hwaseong-si, South Korea

TU Posters-90 INVESTIGATION OF VARYING END-CAPACITANCE IN EXTERNAL ANTENNA FOR INDUCTIVELY COUPLED PLASMA

D. H. Kim, H. S. Rhee, S. Nawaz, S. J. Yoon

R&D Center, PSK inc., Hwaseong, South Korea

TU Posters-91 EXPERIMENTAL MEASUREMENT OF E TO H MODE TRANSITION IN O₂, N₂ AND O₂-N₂ GASES IN CYLINDRICAL ICP SOURCE FOR PHOTORESIST DRY-STRIP APPLICATIONS

S. Nawaz, H. S. Rhee, D. H. Kim, S. J. Yoon

R&D Center, PSK-Inc, hwaseong, South Korea

TU Posters-92 SPECIFIC FEATURES OF A PULSED VACUUM ARC WITH A BORON CATHODE

E. M. Oks¹, A. S. Bugaev², V. I. Gushenets²

¹*Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russian Federation*

²*Institute of High Current Electronics SB RAS, Tomsk, Russian Federation*

TU Posters-93 EXTENDING THE VOLUME AND PROCESSING AREA OF ATMOSPHERIC PRESSURE PLASMA JETS

S. G. Walton, E. D. Gillman, D. R. Boris, M. H. Helle, S. C. Hernandez, T. B. Petrova, G. M. Petrov

Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

TU Posters-94 MOLECULAR DYNAMICS BASED INVESTIGATION OF CONTRIBUTION OF DISCRETE PARTICLE EFFECTS NEAR CATHODE TO BEAM EMITTANCE.

A. Valfells¹, K. Torfason¹, A. Manolescu¹, A. Jassem²

¹*School of Science and Engineering, Reykjavík University, Reykjavik, Iceland*

²*Department of Nuclear Engineering and Radiological Sciences, University of Michigan, Ann, MI, USA*

TU Posters-95 PLASMA INDUCED BY A CARBON NANOTUBE (CNT) GENERATED ELECTRON BEAM

N. Masoud¹, K. Martus², D. Murnick³

¹Milwaukee School of Engineering, Milwaukee, WI, United States

²William Paterson University, Wayne, NJ, United States

³Rutgers University - Newark, Newark, NJ, United States

TU Posters-96 ARC SUPPRESSION IN ELECTRON GUNS

L. Ives¹, L. Falce², M. Read¹, G. Collins¹

¹Calabazas Creek Research, Inc., San Mateo, CA, United States

²Consultant, Surprise, AZ, United States

TU Posters-97 SPECTROSCOPIC MEASUREMENT OF A PIEZOELECTRIC TRANSFORMER DRIVEN ATMOSPHERIC PRESSURE PLASMA

S. D. Kovalski, P. Norgard

Electrical Engineering and Computer Science, University of Missouri-Columbia, Columbia, MO, United States

Session TU 2.1: Plasma Chemistry

Tuesday, May 23 16:00-18:00, Wildwood 9

Session Chair: Xin Tu, University Liverpool

16:00 TU 2.1-1 (invited) GLIDING ARC PLASMA-BASED CO₂ CONVERSION: INSIGHTS FROM NUMERICAL MODELLING

W. Wang¹, A. Bogaerts¹, D. Mei², X. Tu²

¹Department of Chemistry, research group PLASMANT, University of Antwerp, Antwerp, Belgium

²Department of Electrical Engineering and Electronics, The University of Liverpool, Liverpool, United Kingdom

16:30 TU 2.1-2 MECHANISM OF PLASMA-ASSISTED IGNITION FOR H₂ AND C₁-C₅ HYDROCARBONS

A. Starikovskiy¹, N. Aleksandrov²

¹Princeton University, Princeton, United States

²Moscow Institute of Physics and Technology, Dolgoprudny, Russia

16:45 TU 2.1-3 COMPARISON OF PULSED DBD AND SPARK DISCHARGE FOR DIRECT METHANE CONVERSION

H. Sun, Y. Gao, R. Wang, S. Zhang, T. Shao

Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China

17:00 TU 2.1-4 PLASMA-CATALYTIC CONVERSION OF BIOGAS INTO HYDROGEN OVER NI-BASED BIMETALLIC CATALYSTS

D. Mei, X. Tu

Electrical Engineering and Electronics, University Liverpool, Liverpool, United Kingdom

17:15 TU 2.1-5 A PRELIMINARY STUDY FOR METHANE CONVERSION TO ACETYLENE ASSISTED BY AC ROTATING-GLIDING ARC PLASMA DISCHARGED IN PURELY HYDROGEN

D. K. Dinh^{1,2}, D. H. Lee^{1,2}, Y. H. Song^{1,2}

¹University of Science and Technology (UST), Daejeon, South Korea

²Korea Institute of Machinery and Materials (KIMM), Daejeon, South Korea

17:30 TU 2.1-6 ELECTRON ENERGY DISTRIBUTION FUNCTION AND RATE COEFFICIENTS IN FIELD EMISSION-DRIVEN TOWNSEND DISCHARGE REGIME

X. Tan, D. B. Go

University of Notre Dame, Notre Dame, IN, US

17:45 TU 2.1-7 PLASMA PHYSICS FOR HIGH THROUGHPUT WATER REUSE

S. Mujovic, J. E. Foster

Nuclear Engineering & Radiological Sciences, University of Michigan, Ann Arbor, MI, United States

Session TU 2.2: Dusty and strongly coupled plasmas

Tuesday, May 23 15:00-16:30, Wildwood 10

Session Chair: Juan Trelles, U Mass Lowell

15:00 TU 2.2-1 PLASMA OSCILLATIONS AND EXPANSION OF ULTRA-COLD PLASMA IN MAGNETIC FIELD

Y. Choi¹, A. Christlieb², J. P. Verboncoeur²

¹*Institute for Cyber-Enabled Research, Michigan State University, East Lansing, MI, United States*

²*Computational Mathematics, Science and Engineering Department, Michigan State University, East Lansing, MI, United States*

15:30 TU 2.2-2 NON-LINEAR PROPERTIES OF DENSE PLASMA

G. A. Pavlov

Institute of problems of chemical physics RAS, Chernogolovka, Moscow region, Russian Federation

15:45 TU 2.2-3 COLLISIONAL PLASMA WAKES OF SMALL PARTICLES

S. Sundar, H. Kaehlert, I. Schnell, J. -P. Joost, P. Ludwig, M. Bonitz

ITAP, Christian-Albrechts-Universitaet zu Kiel, Kiel, Germany

16:00 TU 2.2-4 EFFECT ON COLLISIONAL PHASE SHIFT OF TWO DUST ACOUSTIC SOLITARY WAVES IN A DUSTY PLASMA

N. S. Saini, K. Singh

Department of Physics, Guru Nanak Dev University, Amritsar, Punjab, India

16:15 TU 2.2-5 FOUNDATIONS OF QUANTUM HYDRODYNAMICS FOR DENSE PLASMAS

Z. Moldabekov^{1,2}, M. Bonitz¹, T. Ramazanov²

¹*Institut fuer Theoretische Physik und Astrophysik, Christian-Albrechts-Universitaet zu Kiel, Kiel, Germany*

²*Institute for Experimental and Theoretical Physics, Al-Farabi Kazakh National University, Almaty, Kazakhstan*

Session TU 2.3: High Pressure and Thermal Plasma Processing

Tuesday, May 23 16:00-17:45, Wildwood 12

Session Chair: Michael Keidar, GWU

16:00 TU 2.3-1 (invited) COMPLEX STRUCTURE OF THE CARBON ARC DISCHARGE FOR NANOMATERIAL SYNTHESIS

V. Vekselman, B. Stratton, Y. Raitses

Princeton Plasma Physics Laboratory, Princeton, NJ, United States

16:30 TU 2.3-2 THERMO- AND PHOTO-OXIDATION IN A LIQUID TREATMENT SYSTEM USING SUBMERGED PLASMA

D. Milelli, F. Lemont, M. Marchand

DEN/DTCD/SCDV/LPIC, CEA Marcoule, Bagnols sur Ceze, France

16:45 TU 2.3-3 NUMERICAL SIMULATION OF RF RESONANT ANTENNA-PLASMA INDUCTIVE COUPLING IN PLANAR GEOMETRY

A. D'Angola^{1,2}, I. Furno³, A. A. Howling³, R. Jacquier³, G. Plyushchev³, P. Guittienne⁴, N. Panarese⁵, R. Zaffina¹

¹*Scuola di Ingegneria, Universita della Basilicata, Potenza, Italy*

²*PLASMI Lab at NANOTEC, Consiglio Nazionale delle Ricerche (CNR), Bari, Italy*

³*SPC, Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland*

⁴*Helyssen, Belmont-sur-Lausanne, Switzerland*

⁵*Politecnico di Torino, Torino, Italy*

17:00 TU 2.3-4 SIMULATING IGNITION AND DEVELOPMENT OF CATHODE SPOTS IN VACUUM ARCS

H. T. C. Kaufmann^{1,2}, M. D. Cunha^{1,2}, M. S. Benilov^{1,2}, W. Hartmann³, N. Wenzel³

¹*Departamento de Física, FCEE, Universidade da Madeira, Funchal, Portugal*

²*IST, Instituto de Plasmas e Fusão Nuclear, Universidade de Lisboa, Lisboa, Portugal*

³*Corporate Technology, Siemens AG, Erlangen, Germany*

17:15 TU 2.3-5 MODELING OF METAL POWER SYNTHESIS USING A PARTICLE TRAJECTORY METHOD IN AN INDUCTIVELY COUPLED PLASMA TORCH

M. Y. Hur¹, D. G. Lee², S. Yang³, H. J. Lee¹

¹*Department of Electric Engineering, Pusan National University, Busan, South Korea*

²*Department of Mechanical Engineering, Pusan National University, Busan, South Korea*

³*Powder Technology Department, Korea Institute of Materials Science, Changwon, South Korea*

17:30 TU 2.3-6 PLASMA GASIFICATION OF BIOMEDICAL WASTE

A. B. Ustimenko¹, V. E. Messerle¹, A. L. Mosse², G. Paskalov³

¹Research Institute of Experimental and Theoretical Physics of Kazakhstan National University, Almaty, Kazakhstan

²A.V. Luikov Heat and Mass Transfer Institute, Minsk, Belarus

³Three Hats LLC, Nevada, USA

Session TU 2.4: Opening and Closing Switches

Tuesday, May 23 16:00-18:00, Wildwood 13

Session Chair: Kefu Liu, Fudan University, China

16:00 TU 2.4-1 (invited) QUENCHED HIGH GAIN OPERATION OF GAAS PHOTOCONDUCTIVE SEMICONDUCTOR SWITCH AT NANO-JOULES EXCITATION

M. Xu, H. Liu, C. Ma, L. Hou, W. Shi

Applied Physics, Xi'an University of Technology, Xi'an, China

16:30 TU 2.4-2 MECHANISM OF THE POST-ARC DYNAMIC VOLTAGE DISTRIBUTION FOR SERIES-CONNECTED VACUUM GAPS IN MULTI-BREAK VACUUM CIRCUIT BREAKERS

M. Liao, G. Ge, X. Duan, G. Lu, J. Zou

school of electrical engineering, dalian university of technology, dalian, China

16:45 TU 2.4-3 MODELING AND SIMULATION OF THE INTERACTION BETWEEN HIGH-CURRENT VACUUM ARC AND ANODE VAPOR

L. Wang, X. Zhang, Z. Yang, R. Lin, S. Jia

Xi'an Jiaotong University, Xi'an, Shaanxi, China

17:00 TU 2.4-4 STUDY OF THE INITIAL TRANSITION PROCESS OF HIGH CURRENT VACUUM ARC IN TRANSVERSE MAGNETIC FIELD (TMF)

S. Xiu, D. Feng, T. Wang, Z. Liu, J. Yang

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China

17:15 TU 2.4-5 SECOND GENERATION HIGH-VOLTAGE, ULTRA-FAST, HIGH RELIABILITY SOLID STATE THYRATRON REPLACEMENTS

J. Waldron

Silicon Power Corporation, Malvern, PA, United States

17:30 TU 2.4-6 MICROWAVE PULSE COMPRESSION EXPERIMENTS USING RF BREAKDOWN TRIGGERED SWITCH UNDER REPETITIVE OPERATIONAL CONDITIONS

S. P. Savaidis, N. A. Stathopoulos, S. A. Mitilineos, Z. C. Ioannidis

Electronics Engineering, Piraeus University of Applied Sciences, Athens, Greece

17:45 TU 2.4-7 RESEARCH ON A NOVEL HIGH-POWER SEMI-INSULATING GAAS PHOTOCONDUCTIVE SEMICONDUCTOR SWITCH

J. Xiao, C. Luan, X. Ma, H. Li

China Academy of Engineering Physics, Mianyang, Sichuan, China

Session TU 2.5: Industrial, Lighting, and Biological Applications

Tuesday, May 23 15:00-16:45, Wildwood 14

Session Chair: Danil Dobrynin, Drexel University

15:00 TU 2.5-1 CONTACT EDGE ROUGHNESS IN THE ETCHING OF HIGH ASPECT RATIO CONTACTS IN SiO₂

S. Huang¹, C. Huard¹, M. J. Kushner¹, S. Shim², S. Lee², I. -C. Song², S. Lu²

¹University of Michigan, Ann Arbor, MI, United States

²Samsung Electronics Co, Hwaseong-si, Republic of Korea

15:15 TU 2.5-2 PLASMA SPECIES VARIATION AS A FUNCTION OF VOLTAGE FOR HIGH VOLTAGE COLD ATMOSPHERIC PRESSURE PLASMAS IN SEALED BAGS

R. S. Brayfield II, A. J. Fairbanks, A. L. Garner

Nuclear Engineering, Purdue University, West Lafayette, United States

15:30 TU 2.5-3 AN EXPERIMENTAL APPROACH TO PERIOD DOUBLING BIFURCATION IN PLASMAS

I. U. Uzun-Kaymak¹, D. Mansuroglu^{1,2}

¹Physics, Middle East Technical University, Ankara, Turkey

²Physics, Canakkale Onsekiz Mart University, Canakkale, Turkey

15:45 TU 2.5-4 EFFECT OF COLD PLASMA PROCESSING ON SWEET BASIL AND THE BIOCHEMISTRY OF ITS ESSENTIAL OILS

G. J. Buonopane¹, C. Antonacci¹, J. L. Lopez²

¹Department of Chemistry and Biochemistry, Seton Hall University, South Orange, New Jersey

²Department of Physics, Seton Hall University, South Orange, New Jersey

16:00 TU 2.5-5 SYNERGISTIC EFFECTS OF PLANT HORMONES AND NON-THERMAL PLASMA ON EARLY GERMINATION OF ARABIDOPSIS THALIANA SEEDS

D. Cui, R. Ma, Z. Jiao

Henan Key Laboratory of Ion-beam Bioengineering, Zhengzhou University, Zhengzhou, China

16:15 TU 2.5-6 ULTRA-COMPACT PHOTOIONIZATION ANALYZER. SMART APPROACH FOR ECOLOGICAL MONITORING AT HAZARDOUS PRODUCTION FACILITIES

A. Mustafaev¹, I. Rastvorova¹, S. Podenko¹, E. Maksimova²

¹Department of General and Applied Physics, Saint-Petersburg Mining University, Saint Petersburg, Russian Federation

²Petroleum Learning Centre Heriot-Watt Approved Learning Partner at TPU, National Research Tomsk Polytechnic University, Tomsk, Russian Federation

16:30 TU 2.5-7 DYNAMIC 3D MICROPLASMA PHOTONIC CRYSTAL BY 3D PRINTING

P. P. Sun^{1,2}, R. Zhang³, S. Zhong², W. Chen⁴, P. V. Braun³, J. G. Eden²

¹Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States

²Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States

³Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States

⁴Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States

Session TU 2.6: Microwave Plasma Interaction

Tuesday, May 23 16:00-18:00, Wildwood 15

Session Chair: Peter Duselis, Raytheon

16:00 TU 2.6-1 IONOSPHERIC MODIFICATION TESTS OF ARTIFICIAL IONIZATION AND WAVE GENERATION

P. A. Bernhardt, B. Y. Rock, N. Pereira

Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

16:15 TU 2.6-2 (invited) MICROWAVE INTERACTIONS WITH INTENSE LASER PRODUCED AIR-PLASMAS

B. Y. Rock¹, M. Helle¹, J. Palastro¹, J. Penano¹, R. Fischer¹, S. Melis²

¹Plasma Physics Division, The U.S. Naval Research Laboratory, Washington, DC, United States

²Physics Department, Georgetown University, Washington, DC, United States

16:45 TU 2.6-3 STUDIES ON THE PLASMA-ADDED INTENSIFICATION OF GIGAHERTZ RADIO FREQUENCY SIGNALS

F. Kong¹, Q. Nie¹, Y. Sun¹, Z. Zhang¹, X. Wang², B. Jiang¹

¹School of Electrical Engineering and Automation, Harbin Insititute of Technology, Harbin, China

²Physics Department, Harbin Insititute of Technology, Harbin, China

17:00 TU 2.6-4 SYNTHETIZATION OF SIGNALS BY THE TRANSMISSION AND SUPERPOSITION OF BIPOLAR IMPULSES IN FREE SPACE

Z. Shaw, W. Feilner, J. C. Dickens, A. A. Neuber

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

17:15 TU 2.6-5 MICROWAVE ABSORPTION IN WARM STEALTH PLASMA

M. S. Bawaaneh¹, Y. -C. Ghim², A. Al-Khateeb¹

¹Dept. of Physics, Yarmouk University, Irbid, Jordan

²Dept. of Nuclear Engineering, KAIST, Daejeon, Korea

17:30 TU 2.6-6 HIGH-POWER MICROWAVE SWITCHING UTILIZING LOW-TEMPERATURE GAS DISCHARGE TUBE

A. Semnani¹, S. O. Macheret², D. Peroulis¹

¹School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, United States

²School of Aeronautics and Astronautics, Purdue University, West Lafayette, IN, United States

17:45 TU 2.6-7 A REVIEW OF TURBULENCE PHENOMENA IN MICROWAVE ELECTRONICS (THEORETICAL APPROACHES AND RESULTS OF EXPERIMENTS)

D. I. Trubetskov, Y. A. Kalinin, A. V. Starodubov

Department of Physics of nonlinear systems, Saratov State University, Saratov, Russian Federation

Session PL5: Plenary 5

Wednesday, May 24 08:30-09:30, Wildwood 3

Session Chair: Juergen Kolb, INP Greifswald

8:30 PL5-1 (invited) NON-CONVENTIONAL DIAGNOSTICS FOR PLASMA PROCESSING

H. Kersten, T. Trottenberg, A. Spethmann, S. Gauter, F. Haase, R. Wiese

IEAP, University Kiel, Germany, Kiel, Germany

Session WE 1.1: Fusion

Wednesday, May 24 10:00-12:00, Wildwood 9

Session Chair: Justin R Angus, Lawrence Livermore National Laboratory

10:00 WE 1.1-1 (invited) FORMATION AND CHARACTERIZATION OF A CONICAL SECTION OF A SPHERICALLY IMPLoding PLASMA LINER

S. C. Hsu¹, S. J. Langendorf¹, J. P. Dunn¹, K. C. Yates², M. A. Gilmore², F. D. Witherspoon³, S. Brockington³, A. Case³, E. Cruz³, J. Cassibry⁴, K. Schillo⁴, R. Samulyak⁵, W. Shih⁵, P. Stoltz⁶, K. Beckwith⁶

¹*Los Alamos National Laboratory, Los Alamos, NM, United States*

²*University of New Mexico, Albuquerque, NM, United States*

³*HyperV Technologies Corp., Chantilly, VA, United States*

⁴*University of Alabama in Huntsville, Huntsville, AL, United States*

⁵*Brookhaven National Laboratory, Upton, NY, United States*

⁶*Tech-X Corporation, Boulder, CO, United States*

10:30 WE 1.1-2 SIMULATION OF SPHERICALLY IMPLoding PLASMA LINERS FOR THE PLX-ALPHA PROJECT

R. Samulyak¹, W. Shih¹, J. Cassibry², S. Hsu³, S. Langendorf³

¹*Stony Brook University & Brookhaven National Laboratory, Stony Brook, United States*

²*University of Alabama in Huntsville, Huntsville, United States*

³*Los Alamos National Laboratory, Los Alamos, United States*

10:45 WE 1.1-3 APPLICATION OF A KDVB EQUATION TO SHOCK FORMATION IN THE STAGED Z-PINCH

J. Narkis¹, J. C. Vazquez¹, F. Conti¹, M. P. Ross¹, H. U. Rahman², E. Ruskov², F. J. Wessel², F. N. Beg¹

¹*Center for Energy Research, University of California, San Diego, San Diego, CA, United States*

²*Magneto-Inertial Fusion Technologies, Inc., Tustin, CA, United States*

11:00 WE 1.1-4 THE NEW SCHEME TO PROMOTE IGNITION BY COMPRESSING COLLISION-MERGING TARGET OF FIELD REVERSED CONFIGURATION

X. -J. Yang

First Dept., Institute of Applied Physics & Computational Physics, Beijing, China

11:15 WE 1.1-5 INCREASING LOAD CURRENT IN MAGNETIZED LINER INERTIAL FUSION EXPERIMENTS

M. R. Gomez, B. T. Hutsel, C. A. Jennings, M. R. Martin, M. E. Cuneo, M. H. Hess, G. R. Laity, D. C. Lamppa, K. J. Peterson,

G. A. Rochau, D. C. Rovang, D. B. Sinars, S. A. Slutz, W. A. Stygar

Sandia National Laboratories, Albuquerque, NM, United States

11:30 WE 1.1-6 MODIFYING MAGLIF STAGNATION CONDITIONS AND MORPHOLOGY BY CHANGING LINER INITIAL CONDITIONS

D. J. Ampleford, C. A. Jennings, M. R. Gomez, P. F. Knapp, E. C. Harding, K. Hahn, P. F. Schmitt, M. Weis, S. B. Hansen,

D. C. Lamppa, T. J. Awe, K. J. Peterson, G. A. Rochau

Sandia National Lab, Albuquerque, NM, United States

11:45 WE 1.1-7 STABILIZED LINER COMPRESSOR FOR LOW-COST CONTROLLED FUSION: PROGRESS AND ISSUES

P. J. Turchi¹, S. D. Frese², M. H. Frese³

¹NumerEx, Santa Fe, NM, United States

²NumerEx, Corrales, NM, United States

³NumerEx, Corrales, NM, United States

Session WE 1.2: Generator and Networks & Compact and Rep-rated Pulsed Power

Wednesday, May 24 10:00-12:00, Wildwood 10

Session Chair: Praveen Desiredy,

10:00 WE 1.2-1 (invited) COAXIAL-CONICAL TRANSITION IN MAGNETICALLY INSULATED TRANSMISSION LINES

W. Zou¹, B. Wei¹, F. Guo¹, B. Gong¹, L. Chen¹, M. Wang¹, L. Liu², D. Liu²

¹Key Laboratory of Pulsed Power, Institute of Fluid Physics, China Academy of Engineering Physics, Mianyang, Sichuan, China

²School of Physical Electronics, University of Electronic Science and Technology of China, Chengdu, Sichuan, China

10:30 WE 1.2-2 (invited) THEORETICAL INVESTIGATION OF A NOVEL HIGH CURRENT DIODE WITH MULTIPACTING CATHODE

Y. Dong

Institute of Applied Physics and Computational Mathematics, Beijing, China

11:00 WE 1.2-3 A REPETITIVE NANOSECOND PULSES GENERATOR BASED ON AVALANCHE TRANSISTOR MARK CIRCUITS AND TRANSMISSION LINE TRANSFORMER

J. Li, Z. Zhao, Y. Sun, Y. Liu, Z. Ren, J. He

School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China

11:15 WE 1.2-4 DEVELOPING A HIGH POWER, PULSED UV LED SYSTEM FOR PHOTOCONDUCTIVE SWITCHING APPLICATIONS

N. A. Wilson, D. L. Mauch, V. E. Meyers, J. C. Dickens, A. A. Neuber

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

11:30 WE 1.2-5 NS DIELECTRIC BARRIER DISCHARGE DEVELOPMENT AND THRUST GENERATION IN 4-ELECTRODE GEOMETRY

A. Starikovskiy, K. Meehan, R. Miles

Princeton University, Princeton, United States

11:45 WE 1.2-6 NOVEL DESIGN OF HIGH VOLTAGE PULSE SOURCE FOR EFFICIENT DBD PLASMA GENERATION BY USING SIDAC

H. T. Truong¹, M. Hayashi¹, Y. Uesugi¹, Y. Tanaka¹, T. Ishijima²

¹Electrical Engineering and Computer Science, Kanazawa University, Kanazawa, Ishikawa, Japan

²Research Center for Sustainable Energy and Technology, Kanazawa University, Kanazawa, Ishikawa, Japan

Session WE 1.3: Nonequilibrium Plasma Applications III

Wednesday, May 24 10:00-11:45, Wildwood 12

Session Chair: Sungo Kim, NYIT

10:00 WE 1.3-1 MICROWAVE PLASMA MULTI-POINT IGNITION PROCESS IN METHANE-AIR MIXTURES

C. Liu, G. Zhang, H. Xie, L. Deng

Department of Electrical Engineering, Tsinghua University, Beijing, Beijing

10:15 WE 1.3-2 ELECTRON BEAM TREATMENT OF DIELECTRICS BY FOREVACUUM PLASMA ELECTRON SOURCES

E. Oks^{1,2}

¹Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russian Federation

²High Current Electronics Institute, Tomsk, Russian Federation

10:30 WE 1.3-3 EXPERIMENTAL STUDY ON CHARACTERISTICS OF NANOSECOND SLIDING DISCHARGE

H. Lin^{1,2}, C. Zhang^{2,3}, Y. Wang^{1,2}, Q. Xie¹, P. Yan^{2,3}, T. Shao^{2,3}

¹North China Electric Power University, Baoding, China

²Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China

³University of Chinese Academy of Sciences, Beijing, China

10:45 WE 1.3-4 FORMATION OF HYDROGEN PEROXIDE IN DBD NON-THERMAL REACTOR WITH WATER MIST

D. Xu

Department of Physical Electronics, Institute of Light Sources & Illuminating Engineering, Fudan University, Shanghai, China

11:00 WE 1.3-5 CHARACTERIZATION OF A PULSE DRIVEN ARGON PLASMA JET ARRAY

R. Wang¹, S. Hao¹, S. Tian¹, P. Yan¹, W. Zhu², T. Shao¹

¹Institute of Electrical Engineering, Chinese Academy of Sciences, Beijing, China

²Department of Applied Science and Technology, Saint Peter's University, Jersey City, New Jersey, USA

11:15 WE 1.3-6 (invited) EXPERIMENTAL STUDY OF AN ULTRA-FAST ATMOSPHERIC PRESSURE AIR DISCHARGE IN A PIN-TO-PLATE GEOMETRY

J. -M. Pouvesle, S. Iseni, S. Dozias, E. Robert

CNRS/Universite d'Orleans, GREMI, Orleans, France

Session WE 1.4: Partially Ionized Plasmas

Wednesday, May 24 10:00-12:00, Wildwood 13

Session Chair: Vladislav Vekselman, PPPL

10:00 WE 1.4-1 (invited) ON ELECTRON HEATING IN MAGNETRON SPUTTERING DISCHARGES

J. T. Gudmundsson^{1,2}, D. Lundin³, M. A. Raadu¹, C. Huo¹, T. M. Minea³, N. Brenning^{1,4}

¹Department of Space and Plasma Physics, KTH-Royal Institute of Technology, Stockholm, Sweden

²Science Institute, University of Iceland, Reykjavik, Iceland

³Laboratoire de Physique des Gaz et Plasmas - LPGP, Universite Paris-Sud, Orsay, France

⁴Plasma and Coatings Physics Division, Linkoping University, Linkoping, Sweden

10:30 WE 1.4-2 MATCHING PLASMAS AND ELECTRODES IN NUMERICAL SIMULATION OF HIGH-PRESSURE ARC DISCHARGES: A SUMMARY

M. S. Benilov

FCEE, Departamento de Fisica, Universidade da Madeira, Funchal, Portugal

10:45 WE 1.4-3 SELF-CONSISTENT NUMERICAL SIMULATION OF CARBON ARC FOR NANOPARTICLE SYNTHESIS

A. Khrabry¹, A. Khodak¹, I. Kaganovich¹, V. Vekselman¹, V. Nemchinsky²

¹Princeton Plasma Physics Laboratory, Princeton, NJ, United States

²Keiser University, Fort Lauderdale, United States

11:00 WE 1.4-4 INTERACTION OF ATMOSPHERIC PRESSURE PLASMA JET WITH HELIUM FLOW

V. Samara, S. Ptasinska

Radiation Laboratory, University of Notre Dame, Notre Dame, IN, US

11:15 WE 1.4-5 REMOTE GENERATION OF LARGE-VOLUME ELECTROPOSITIVE PLASMA AT REDUCED PRESSURE BY MEANS OF GUIDED FAST IONIZATION WAVES FROM A PLASMA JET AS A POWER SOURCE

H. Razavi, S. Mohades, M. Laroussi

Electrical and Computer Engineering, Old Dominion University, Norfolk, VA, United States

11:30 WE 1.4-6 ON PEAK CURRENT DENSITY IN ATMOSPHERIC PULSE-MODULATED RF DISCHARGES WITH VERY HIGH FREQUENCY

Y. Zhang¹, Y. Wang²

¹School of Electrical Eng., Shandong University, Jinan, China

²School of Physics and Optoelectronic Engineering, Dalian University of Tech., Dalian, China

11:45 WE 1.4-7 METHODS FOR DIRECT SOLUTION OF THE BOLTZMANN EQUATION FOR GAS DISCHARGES

S. B. Swanekamp, A. S. Richardson, B. Srinivasan

Plasma Physics Division, Naval Research Laboratory, Washington, DC

Session WE 1.5: Plasma Diagnostics III

Wednesday, May 24 10:00-11:15, Wildwood 14

Session Chair: Juergen Kolb, INP Greifswald

10:00 WE 1.5-1 WHAT IS EFFECTIVE AREA OF THE FLAT PROBE DURING MEASUREMENTS?

A. Mustafaev¹, O. Murillio¹, V. Soukhomlinov², I. D. Kaganovich³

¹St. Petersburg Mining University, St. Petersburg, Russia

²St. Petersburg State University, St. Petersburg, Russia

³Princeton Plasma Physics Lab, Princeton, NJ, USA

10:15 WE 1.5-2 RETARDING FIELD ENERGY ANALYZER OPTIMIZATION AND SPACE CHARGE EFFECTS

M. L. Talley¹, S. Shannon¹, L. Chen², J. P. Verboncoeur³

¹Nuclear Engineering, North Carolina State University, Raleigh, NC, United States

²System Etch, Tokyo Electron Limited, Inc, Austin, TX, United States

³Electrical and Computer Engineering, Michigan State University, East Lansing, MI, United States

10:30 WE 1.5-3 THE INTERACTION OF COLD ATMOSPHERIC PLASMA JET AND A CAPACITIVE TARGET WITH DC FIELD: THE REFLECTION AND ABSORPTION OF GUIDED IONIZATION WAVE

L. Lin, M. Keidar

Mechanical and Aerospace Engineering, The George Washington University, Washington, DC, United States

10:45 WE 1.5-4 DESIGN AND PERFORMANCE OF B-DOT MONITORS FOR DIAGNOSING CATHODE CURRENT IN THE MAGNETICALLY INSULATED TRANSMISSION LINE

F. Guo, B. Gong, B. Wei, W. Zou, L. Chen, M. Wang, W. Xie

Institute of Fluid Physics, China Academy of Engineering Physics, Mianyang, Sichuan Province, China

11:00 WE 1.5-5 ELECTRON NEUTRAL ELASTIC COLLISION FREQUENCY MEASUREMENT WITH THE HAIRPIN RESONATOR PROBE

D. J. Peterson¹, P. Kraus², T. C. Chua², S. C. Shannon¹

¹Nuclear Engineering, North Carolina State University, Raleigh, NC, United States

²Applied Materials Inc., Santa Clara, CA, United States

Session WE 1.6: Microwave and Plasma Interactions, Vacuum Microelectronics and THz Devices and Slow Wave Devices

Wednesday, May 24 10:00-11:30, Wildwood 15

Session Chair: Rebecca Seviour, Huddersfield University

10:00 WE 1.6-1 RESEARCH PROGRESS ON LINEAR AVALANCHE MULTIPLICATION GAAS TERAHERTZ EMITTER

S. Wei, L. Hong, W. Ling

Applied Physics Department, Xi'an Uniecersity of Technology, Xi'an Shaanxi, China

10:15 WE 1.6-2 EFFECTS OF THZ TRANSMISSION ON THE NARROW GAP DC GLOW DISCHARGE PLASMAS

N. Alasgarzade¹, H. Altan¹, D. Mansuroglu^{1,2}, A. B. Sahin³, I. U. Uzun-Kaymak¹

¹Physics Department, Middle East Technical University, Ankara, Turkey

²Canakkale Onsekiz Mart University, Canakkale, Turkey

³Ankara Yildirim Beyazit University, Ankara, Turkey

10:30 WE 1.6-3 NEXT GENERATION IONOSPHERIC HEATER ARRAY

B. Esser, J. C. Dickens, J. J. Mankowski, A. A. Neuber

Center for Pulsed Power and Power Electronics, Texas Tech University, Lubbock, TX, United States

10:45 WE 1.6-4 STUDYING PERMITTIVITY AND ELECTRIC FIELD FOR PLASMA GENERATION BY DIELECTRIC RESONATOR ARRAYS

S. Dennison, J. Hopwood, A. Chapman

Electrical and Computer Engineering, Tufts University, Medford, MA, United States

11:00 WE 1.6-5 DESIGN OF OVERSIZED TWTS WITH PHOTONIC BAND-GAP STRUCTURES

G. Rosenzweig, J. C. Stephens, M. A. Shapiro, R. J. Temkin

Plasma Science and Fusion Center, Massachusetts Institute of Technology, Cambridge, MA, United States

11:15 WE 1.6-6 A 140 GHZ GYRO-AMPLIFIER USING A DIELECTRIC-LOADED, SEVER-LESS CONFOCAL WAVEGUIDE

A. Soane, M. A. Shapiro, R. J. Temkin
MIT, Cambridge, MA, United States

Session PL6: Plenary 6

Wednesday, May 24 13:30-14:30, Wildwood 3

Session Chair: Mikhail Benilov, Universidade da Madeira

13:30 PL6-1 (invited) LOW TEMPERATURE PLASMAS AND THEIR APPLICATIONS IN NANOTECHNOLOGY

M. Meyyappan
NASA Ames Research Center, Moffett Field, CA, United States

Session WE Posters: WE P1

Poster Session

Wednesday, May 24 15:00-15:45, Poster Room

Session Chair: Yevgeny Raitses, PPPL

WE Posters-1 REVISITING THE PROPAGATION AND FOCUSSING OF A HIGH INTENSITY ELECTRON BEAM IN A LOW-PRESSURE GAS CELL

J. Gardelle, B. Birel, B. Cadilhon, C. Fourment, A. Galtier^{1/2}, D. Hertzberg, F. Lavaud-Davi, F. Malaise, P. Maury, E. Pasini
CEA/CESTA, Le Barp, France

WE Posters-2 INTENSE RELATIVISTIC ELECTRON BEAM INTERACTION WITH A TWO-PULSE RADIOGRAPHY CONVERTER

C. Fourment, D. Hebert
CEA CESTA, Le Barp, France

WE Posters-3 ION B-DOT AND FARADAY CUP RESULTS LOCATED INSIDE THE CATHODE KNOB OF THE SELF MAGNETIC PINCH (SMP) DIODE

M. G. Mazarakis, M. L. Kiefer, J. J. Leckbee, D. S. Nielsen, D. Ziska
1656, Sandia National Laboratories, Albuquerque, NM, United States

Session WE Posters: WE P2

Poster Session

Wednesday, May 24 15:00-15:45, Poster Room

Session Chairs:

WE Posters-4 BROMATE FREE DISINFECTION OF DRINKING WATER USING A HIGH VOLTAGE IMPULSE (HVI) TECHNIQUE

I. -S. Chang¹, J. -H. Lee², H. -R. Kim¹, C. H. Cho¹
¹Environmental Engineering, Hoseo University, Asan, South Korea
²Electrical Engineering, Hoseo University, Asan, south Korea

WE Posters-5 OUTER CIRCULAR RING-SHAPED RF MAGNETIZED PLASMA FOR SPECIFIC AREA TARGET UTILIZATION BY MAGNETIC MONOPOLE ARRANGEMENT

M. A. Hossain, Y. Ohtsu
Graduate School of Science and Engineering, Saga University, 1 Honjo-machi, Saga, 840-8502, Japan

WE Posters-6 ORGANIC WASTE PROCESSING IN PLASMA REACTOR

V. Sauchyn, I. Khvedchyn

Arc Plasma Department, A.Luikov Heat and Mass Transfer Institute, Minsk, Belarus

WE Posters-7 NEXT GENERATION HIGH-CURRENT SWITCHING DEVICES FOR COSMIC CURRENT SOURCE CONVERTER

A. Mustafaev¹, A. Grabovskiy¹, V. Soukhomlinov², V. Kuznetsov³, V. Babanin³, A. Pashchina⁴

¹*St.Petersburg Mining University, St. Petersburg, Russian Federation*

²*St. Petersburg State University, St. Petersburg, Russian Federation*

³*Ioffe Institute RAS, St. Petersburg, Russian Federation*

⁴*JIHT RAS, Moscow, Russian Federation*

WE Posters-8 PRELIMINARY STUDY ON PLASMA-CATALYST COMBINATION FOR CF₄ REMOVAL

K. -T. Kim, S. Jo, D. Lee, Y. -H. Song

Department of Plasma Engineering, Korea Institute of Machinery & Materials, Daejeon, South Korea

WE Posters-9 ABATEMENT CHARACTERISTICS OF TiCl₄ IN A LOW-PRESSURE PLASMA REACTOR

J. O. Lee, J. Y. Lee, W. S. Kang, M. Hur, Y. -H. Song

Plasma engineering laboratory, Korea Institute of Machinery and Materials, Daejeon, South Korea

WE Posters-10 TECHNOLOGIES FOR CLEANING WATER MEDIUMS WITH STRONG ELECTROPULSE FIELDS

E. J. Gurbanov, F. F. Yusifov

Scientific research and international relations, "Azersu" OJSC, Baku, Azerbaijan

WE Posters-11 YIELD CHARACTERISTIC AND ENERGY CONSTRAINT OF ACTIVE SPECIES WITH DISCHARGE IN WATER-GAS MIXTURE

B. Chen¹, Y. Gan¹, P. Fang¹, C. Zhu¹, J. Fei¹, Y. Jiang¹, L. Wan², J. Bian², J. Wan²

¹*Department of Mathematics and Physics, Hohai University, Changzhou, Jiangsu, China*

²*Nanjing Suman Plasma Techology Co., Ltd, Nanjing, Jiangsu, China*

WE Posters-12 DENIM BLEACHING BY CNC CONTROLLED PLASMA JET METHOD

E. Uygun¹, F. Bozduman², G. Karaca³, A. Uygun Oksuz³, L. Oksuz^{1,2}

¹*Plazmatek, Technopark, Suleyman Demirel University, Isparta, Turkey*

²*Physics, Suleyman Demirel University, Isparta, Turkey*

³*Chemistry, Suleyman Demirel University, Isparta, Turkey*

WE Posters-13 RECTANGLE PULSED ATMOSPHERIC DBD PLASMA FOR SURFACE MODIFICATION

K. Zerbe, M. Iberler, J. Jacoby, C. Wagner

Institut for Applied Science, Goethe-University Frankfurt, Frankfurt, Germany

WE Posters-14 SELF-OSCILLATORY OPERATION MODE OF ATMOSPHERIC-PRESSURE PLASMA JET

X. Wang, A. Shashurin

School of Aeronautics and Astronautics, Purdue University, West Lafayette, IN, United States

WE Posters-15 REMOVAL OF MICROCYSTIN-LR VIA ADVANCED OXIDATION PROCESSES USING A BUBBLING PLASMA JET

J. C. Lai, J. E. Foster

Department of Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI, United States

WE Posters-16 HYDROPHOBIC COATING OF GLASS SURFACE USING ATMOSPHERIC PRESSURE DIELECTRIC BARRIER DISCHARGE PLASMA

Q. H. Trinh, M. M. Hossain, Y. S. Mok

Jeju National University, Jeju, South Korea

WE Posters-17 ATMOSPHERIC PLASMA JET FOR SPACECRAFT SURFACE STERILIZATION FOR PLANETARY PROTECTION

J. Prager¹, T. Ziemba¹, J. Miller²

¹*Eagle Harbor Technologies, Inc., Seattle, WA, United States*

²*Edmonds Community College, Lynnwood, WA, United States*

WE Posters-18 PLASMA-LIQUID INTERACTION FOR TREATMENT OF HYDRAULIC FRACTURING WASTEWATER

J. R. Groele¹, J. E. Foster²

¹*Mechanical Engineering, University of Michigan, Ann Arbor, MI, United States*

²*Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI, United States*

WE Posters-19 EFFECTS OF PLASMA TREATMENT ON THE GERMINATION AND DEVELOPMENT OF SOYBEANS

K. W. Engeling, V. C. Fritz, J. E. Foster, C. MacAlister

University of Michigan, Ann Arbor, Michigan, United States

WE Posters-20 PREPARATION OF GRAPHENE OXIDE/CONDUCTING POLYMER NANOCOMPOSITES BY RF-PLASMA POLYMERIZATION

S. Cogal¹, G. Celik Cogal², A. Oksuz²

¹Polymer Engineering, Mehmet Akif Ersoy University, Burdur, Turkey

²Chemistry, Suleyman Demirel University, Isparta, Turkey

WE Posters-21 DESIGN AND CONTROL OF PLASMA ACTUATED UNMANNED AERIAL VEHICLES (UAV)

M. T. Rajan, H. Xu, C. Avalos, A. Matheson, E. Swinny

Plasma Engineering Research Lab (PERL), Texas A&M University - Corpus Christi, Corpus Christi, TX, United States

WE Posters-22 THE EFFECT OF VOLTAGE ON FILM PROPERTIES DLC:CAMPHOR FILMS DEPOSITED ON POLYURETHANE SUBSTRATES BY PECVD

T. B. Santos¹, P. A. Radi^{1,2}, R. S. Pessoa^{1,2}, L. Vieira^{1,2}

¹Grupo Nanotecplasma, Universidade do Vale do Para  ba, S  o Jos   dos Campos/SP, Brasil

²Laborat  rio de Processamento a Plasma, Instituto Tecnol  gico de Aeron  utica, S  o Jos   dos Campos/SP S  o Jos   dos Campos/SP S  o Jos   dos Campos/SP, Brasil

WE Posters-23 DOUBLE-COOLED ELECTRODE TEMPERATURE EFFECTS IN OZONE GENERATORS

M. Feurer, J. Lopez, D. Guerrero

Seton Hall University, New Jersey, United States

WE Posters-24 INVESTIGATING THE GROWTH MODIFICATION OF VARIOUS PLANT SPECIES VIA ATMOSPHERIC PRESSURE PLASMA JETS

A. N. McFarlane¹, D. Piatek¹, I. C. Guevara¹, D. Guerrero¹, J. L. Lopez¹, C. Antonacci², G. J. Buonopane²

¹Physics, Seton Hall University, South Orange, NJ, United States

²Chemistry and Biochemistry, Seton Hall University, South Orange, NJ, United States

WE Posters-25 GENERATION OF MICROPLASMA IN A REVERSE-BIASED SILICON CARBIDE SCHOTTKY DIODE

O. A. Sonoiki, J. G. Eden

Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States

WE Posters-26 SURFACE MODIFICATION OF CEMENT FIBER ADDITIVES USING ATMOSPHERIC PRESSURE PLASMA JETS

T. J. McVeigh, W. P. Davis, D. Guerrero, J. L. Lopez

Physics Dept., Seton Hall University, South Orange, New Jersey, United States

WE Posters-27 CHARACTERISTICS OF POROUS CERAMICS DIELECTRIC BARRIER DISCHARGE IN AR/CH₄ METHANE MIXTURE AT ATMOSPHERIC PRESSURE

C. Y. Yu, H. B. Mu, P. Li, C. W. Yao, S. L. Chen, G. M. Xu, G. J. Zhang

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, No.28, Xianning West Road, Xi'an, Shaanxi, 710049, P.R. China

WE Posters-28 LIGHT SOURCES FOR WATER STERILISATION

M. Hamady

Physics Department, Faculty of sciences, Beirut Arab University, Debbieh, Lebanon

Session WE Posters: WE P3

Poster Session

Wednesday, May 24 15:00-15:45, Poster Room

Session Chair: Peter Stoltz, Tech-X Corp.

WE Posters-29 GAIN ESTIMATIONS FOR A FUSION TARGET COMPRESSED BY A SPHERICALLY IMPLoding PLASMA LINER

P. Stoltz¹, K. Beckwith¹, S. Langendorf², S. Hsu²

¹Tech-X Corp., Boulder, CO, United States

²LANL, Los Alamos, NM, United States

WE Posters-30 ENHANCING UNDERSTANDING OF HIGH ENERGY DENSITY PLASMAS USING FLUID MODELING WITH KINETIC CLOSURES

R. Masti¹, B. Srinivasan¹, J. King², P. Stoltz², D. Hansen³, E. Held³

¹Aerospace & Ocean Engineering, Virginia Tech, Blacksburg, VA, United States

²Tech-X Corporation, Boulder, CO, United States

³Utah State University, Logan, UT, United States

WE Posters-31 DENSITY AND TEMPERATURE UNIFORMITY OF A CONICAL SECTION OF A SPHERICALLY IMPLoding PLASMA LINER

K. C. Yates¹, M. A. Gilmore¹, S. C. Hsu², S. J. Langendorf², J. P. Dunn², J. Cassibry³, K. Schillo³, R. Samulyak⁴, W. Shih⁵

¹University of New Mexico, Albuquerque, New Mexico, United States

²Los Alamos National Laboratory, Los Alamos, New Mexico, United States

³University of Alabama in Huntsville, Huntsville, Alabama, United States

⁴Brookhaven National Laboratory, Upton, New York, United States

⁵Stony Brook University, Stony Brook, New York, United States

WE Posters-32 SPECTROSCOPIC MEASUREMENTS OF THE FORMATION OF A CONICAL SECTION OF SPHERICALLY IMPLoding PLASMA LINERS

S. J. Langendorf¹, S. C. Hsu¹, J. P. Dunn¹, J. Cassibry², K. Schillo², R. Samulyak³, W. Shih⁴, K. C. Yates⁵, M. A. Gilmore⁵

¹P-24, Los Alamos National Laboratory, Los Alamos, NM, United States

²Mechanical & Aerospace Engineering, University of Alabama in Huntsville, Huntsville, AL, United States

³Computational Science Center, Brookhaven National Laboratory, Upton, NY, United States

⁴Stony Brook University, Stony Brook, NY, United States

⁵Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States

WE Posters-33 DT NEUTRON YIELD MODELING FOR STAGED Z-PINCH EXPERIMENTS ON THE 1MA ZEBRA MACHINE

E. Ruskov¹, H. U. Rahman¹, F. J. Wessel¹, P. Ney¹, A. Qerushi²

¹Experimental Physics, Magneto-Inertial Fusion Technologies, Inc., Tustin, CA, United States

²Lockheed Martin, Palmdale, CA, United States

WE Posters-34 STAGED Z-PINCH EXPERIMENTS ON THE MEGA-AMPERE CURRENT DRIVER ZEBRA

F. J. Wessel¹, E. Ruskov¹, T. W. Darling², F. Conti³, M. P. Ross³, J. C. Valenzuela³, N. Aybar³, F. N. Beg³, J. Narkis³, H. U. Rahman¹, P. Ney¹

¹Experimental Physics, Magneto-Inertial Fusion Technologies, Inc., Irvine, CA, United States

²Nevada Terawatt Facility, University of Nevada, Reno, NV, United States

³Center for Energy Research, University of California, San Diego, CA, United States

WE Posters-35 EXPERIMENTAL INVESTIGATION OF MAGNETIZED LINER IMPLOSIONS ON A 1-MA LINEAR TRANSFORMER DRIVER

P. C. Campbell, D. A. Yager-Elorriaga, N. M. Jordan, R. D. McBride, Y. Y. Lau, R. M. Gilgenbach

Nuclear Engineering and Radiological Sciences Department, University of Michigan, Ann Arbor, MI, United States

WE Posters-36 DESIGN OF A PULSED POWER DRIVER FOR STUDY OF PLANAR PLASMA SHOCKS

M. P. Ross¹, F. J. Wessel², J. C. Valenzuela¹, F. Conti¹, N. Aybar¹, F. N. Beg¹

¹Center for Energy Research, University of California, San Diego, CA, United States

²Experimental Physics, Magneto-Inertial Fusion Technologies, Inc., Tustin, CA, United States

WE Posters-37 SIMULATION FOR THE MAGNETIZED PLASMA COMPRESSION STUDY

S. V. Ryzhkov¹, V. V. Kuzenov²

¹Bauman Moscow State Technical University (BMSTU), Thermal Physics Department (E6), Moscow, Russian Federation

²VNIAA of SC "ROSATOM", Moscow, Russian Federation

WE Posters-38 Excitations of half integer up shifted decay channel and turbulent virtual modes in plasma edge for high power EBW heating scenario

M. Abbasi, M. Ali Asgarian

Department of Advanced Sciences and Technologies, University of Isfahan, Isfahan, Iran, Islamic Republic Of

WE Posters-39 MITIGATION OF THE MAGNETO-RAYLEIGH-TAYLOR INSTABILITY IN THE STAGED Z-PINCH WITH AN AXIAL MAGNETIC FIELD

H. U. Rahman¹, E. Ruskov¹, F. J. Wessel¹, P. Ney¹, J. Narkis², F. Conti², J. C. Valenzuela², M. P. Ross², F. N. Beg²

¹Magneto-Inertial Fusion Technologies, Inc., Tustin, CA, United States

²Center for Energy Research, University of California, San Diego, San Diego, CA, United States

WE Posters-40 VERIFICATION OF RUNAWAY RATE SCALING FOR RELATIVISTIC ELECTRONS

A. V. Khrabrov, E. A. Startsev, I. D. Kaganovich

PPPL, Princeton, NJ, United States

WE Posters-41 ELECTROTHERMAL INSTABILITY STUDIES ON A SMALL PULSED POWER DEVICE

S. M. Miller, A. M. Steiner, R. D. McBride, D. A. Yager-Elorriaga, N. M. Jordan, Y. Y. Lau, R. M. Gilgenbach

Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, United States

WE Posters-42 COMPUTER SIMULATION OF DENSE PLASMA PROPERTIES FOR INERTIAL CONFINEMENT FUSION

M. K. Issanova, S. K. Kodanova, T. S. Ramazanov, Z. A. Moldabekov

Institute of Experimental and Theoretical Physics, Al-Farabi Kazakh National University, Almaty, Kazakstan

WE Posters-43 VARIABLE DENSITY, UNIFORM HYDROGEN PLASMA SOURCE FOR PLASMA-BASED ACCELERATORS

J. Williams, M. Gundersen

Electrical Engineering-Electrophysics, University of Southern California, Los Angeles, United States

Session WE Posters: WE P4

Poster Session

Wednesday, May 24 15:00-15:45, Poster Room

Session Chair: Mingsheng Wei, General Atomics

WE Posters-44 SHOCK FRONT FIELD STRUCTURE IN LOW-DENSITY SYSTEMS

R. Hua¹, H. Sio², S. Wilks³, C. McGuffey¹, F. Beg¹, B. Heeter³, R. Collins³, Y. Ping³

¹MAE, UCSD, San Diego, United States

²Physics, MIT, Massachusetts, United States

³LLNL, Livermore, United States

WE Posters-45 PARTICLE-IN-CELL SIMULATIONS OF ION ACCELERATION IN HIGH CONTRAST, HIGH INTENSITY LASER-SOLID TARGET INTERACTIONS AT INTENSITIES $> 10^{20}$ W/CM²

J. Li¹, P. F. Colleoni¹, C. McGuffey¹, F. Beg¹, A. Arefiev², S. Bulanov³

¹Center for Energy Research, University of California, San Diego, San Diego, CA, United States

²Center for High Energy Density Science, University of Texas, Austin, United States

³Lawrence Berkeley National Laboratory, Berkeley, United States

WE Posters-46 BREMSSTRAHLUNG RADIATION FROM THE INTERACTION OF SHORT LASER PULSES WITH DIELECTRICS

G. M. Petrov, J. P. Palastro, J. Penano

Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

WE Posters-47 DIAGNOSTICS OF LASER INDUCED PLASMA DYNAMICS IN GASES AND LIQUIDS

M. T. Rajan, A. Rhoden

Plasma Engineering Research Lab (PERL), Texas A&M University - Corpus Christi, Corpus Christi, Texas

WE Posters-48 REACTIVATION OF LASER-INDUCED PLASMAS USING TIME-DELAYED HIGH-VOLTAGE PULSES

A. Robledo-Martinez¹, A. Garcia-Villarreal¹, H. Sobral²

¹Ciencias B sicas, Universidad Aut noma Metropolitana, Mexico City, Mexico

²CCADET, Universidad Nacional Aut noma de M xico, Mexico City, Mexico

WE Posters-49 BEAM EVOLUTION PROPAGATED THROUGH THE RELATIVISTIC WARM MAGNETO PLASMA

M. R. Jafari Milani¹, S. Rezaei², M. J. Jafari³

¹Plasma Physics Research School, NSTRI, Tehran, Iran

²Plasma Physics Research School, NSTRI, Tehran, Iran

³Plasma Physics Research School, NSTRI, Tehran, Iran

WE Posters-50 STUDY OF THERMAL EFFECT ON THE SELF-FOCUSING MECHANISM IN THE COLLISIONAL MAGNETIZED PLASMA

M. J. Jafari¹, M. R. Jafari Milani², S. Rezaei³

¹Plasma Physics Research School, NSTRI, Tehran, Iran

²Plasma Physics Research School, NSTRI, Tehran, Iran

³Plasma Physics Research School, NSTRI, Tehran, Iran

Session WE Posters: WE P5

Poster Session

Wednesday, May 24 15:00-15:45, Poster Room

Session Chairs:

WE Posters-51 EFFECT OF THE ION BACKGROUND ON THE CHARACTERISTICS OF THE OUTPUT SIGNAL FROM THE OSCILLATOR WITH THE TURBULENT ELECTRON BEAM

Y. A. Kalinin, A. V. Starodubov

Department of Physics of nonlinear systems, Saratov State University, Saratov, Russian Federation

WE Posters-52 EXPERIMENTAL COMPARISON OF ELECTRONIC CYLOTRONIC RESONANCE AND COLLISIONAL TYPE COAXIAL PLASMAS SOURCES

J. Lo¹, A. Kaiz¹, L. Therese¹, B. Caillier¹, P. Guillot¹, L. Latrasse²

¹*Laboratoire Diagnostics des Plasmas Hors Equilibre (DPHE), Universite de Toulouse, INU Champollion, Albi, France*

²*Sairem S.A., Neyron, France*

Session WE Posters: We P6

Poster Session

Wednesday, May 24 15:00-15:45, Poster Room

Session Chair: Hyyong Suk, Gwangju Institute of Science and Technology, Korea

WE Posters-53 HEAVY IONS ACCELERATED BY A HIGH INTENSITY, HIGH CONTRAST LASER PULSE FROM SUB-MICROMETER METAL TARGETS

P. Forestier-Colleoni¹, J. Li¹, C. McGuffey¹, J. Peebles¹, C. Krauland¹, F. N. Beg¹, D. C. Gautier², J. C. Fernandez²,

S. Palaniyappan², R. P. Johnson², E. D'Humieres³, A. Hussein⁴, T. Batson⁴

¹*CER, University of California San Diego, La Jolla, CA, United States*

²*Los Alamos National Laboratory, MN, United States*

³*CELIA, Talence, France*

⁴*University of Michigan, Ann Arbor, MI, United States*

Session WE Posters: WE P7

Poster Session

Wednesday, May 24 15:00-15:45, Poster Room

Session Chair: Tatyana Sizyuk, Purdue University

WE Posters-54 STUDY ON SOLID BY-PRODUCTS OF METAL-ELECTRODES/SF6 REACTIONS UNDER POWER ARC

K. Qian, J. Yan, L. Cheng, Y. Wang, Y. Wang

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China

WE Posters-55 Observation of inorganic layer contamination by impurities originated from organic layers during multi-layer PEALD process for flexible electronics encapsulation

J. Y. Lee, W. S. Kang, M. Hur, J. O. Lee, Y. -H. Song

Plasma engineering laboratory, Korea Institute of Machinery and Materials, Daejeon, South Korea

WE Posters-56 INVESTIGATION OF DECOMPOSITION CHARACTERISTICS OF SF6 UNDER ARC DISCHARGE

Z. Li, Y. Wang, K. Qian, J. Yan, L. Cheng, W. Ding

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an, China

WE Posters-57 SECONDARY ELECTRON EMISSION FROM CARBON VELVET

C. Jin, Y. Raitses

Princeton Plasma Physics Laboratory, Princeton, New Jersey, USA

WE Posters-58 IS THE SHEATH POTENTIAL POSITIVE OR NEGATIVE AT STRONGLY EMITTING SURFACES?

M. D. Campanell, M. V. Umansky

Fusion Energy Sciences Program, Lawrence Livermore National Laboratory, Livermore, CA, United States

WE Posters-59 SURFACE CHARACTERIZATION OF THE PLASMA-IONIC LIQUID INTERFACE USING X-RAY PHOTOELECTRON SPECTROSCOPY

A. M. Capece, K. Miner

Physics, The College of New Jersey, Ewing, NJ, United States

WE Posters-60 MODELING OF REDUCED EFFECTIVE SECONDARY ELECTRON EMISSION YIELD FROM VELVET AND FOAM SURFACES

C. Swanson, I. D. Kaganovich

Princeton Plasma Physics Laboratory, Princeton, NJ, United States

WE Posters-61 NON-THERMAL PLASMA-INDUCED WETTABILITY CHANGES ON MARINA WOOL VIA ATMOSPHERIC DIELECTRIC BARRIER DISCHARGES

A. Diaz, D. Staack

Mechanical Engineering, Texas A&M University, College Station, Texas, United States

WE Posters-62 INTEGRATION OF MICROPLASMA WITH SEMICONDUCTOR: PLASMA BIPOLAR JUNCTION TRANSISTOR

J. Ni, Y. Huang, S. Zhong, S. -J. Park, J. Eden

University of Illinois, Urbana, IL, United States

WE Posters-63 STUDY OF PLASMA-POLYMERIZED SiOXNY THIN FILMS STRUCTURAL PROPERTIES USING TEOS/O₂/N₂ MIXTURE

M. Shahpanah, M. Abbasi-Firouzjah, B. Shokri

Laser & plasma research institute, Shahid Beheshti university, Tehran, Iran, Tehran, Iran

WE Posters-64 SYNTHESISING NANOFLUIDS USING LASER INDUCED PLASMA

M. T. Rajan

Plasma Engineering Research Lab (PERL), Texas A&M University - Corpus Christi, Corpus Christi, Texas, United States

WE Posters-65 EXPERIMENTAL STUDY OF THE INTERACTION OF AN HELIUM PLASMA JET AND A CONDUCTIVE TARGET

A. Kone, B. Caillier, C. Muja, F. Sainct, P. Guillot

Diagnostics des Plasmas Hors Equilibre, Universite de Toulouse, INU Champollion, Albi, France

WE Posters-66 COMPARATIVE STUDY OF THE INTERACTIONS OF AN HELIUM AND NEON PLASMA JET WITH A CONDUCTIVE TARGET

A. Kone, B. Caillier, C. Muja, F. P. Sainct, P. Guillot

Laboratoire Diagnostics des Plasmas Hors Equilibre, Universite de Toulouse, INU Champollion,, Albi, France

WE Posters-67 SURFACE MODIFICATION OF CORN STARCH AND TiO₂ WITH A COAXIAL DBD REACTOR AND WITH THE AID OF A FLUIDIZED-BED.

E. A. Garcia-Guerrero¹, M. Tirado-Guerrero¹, G. Lopez-Echevarria², M. J. Nieto-Perez¹, J. A. Huerta-Ruelas¹, G. Mendez-Montealvo², G. Velazquez-delaCruz²

¹*Alternative Energies, CICATA-IPN Queretaro, Queretaro, Mexico*

²*Biotechnology, CICATA-IPN Queretaro, Queretaro, Mexico*

WE Posters-68 PLATFORMS FOR GHZ MICROPLASMA-MATERIAL STUDIES

Z. Cohick¹, S. Antonsson¹, S. Perini², D. Wolfe^{1,3}, M. Lanagan^{1,2}

¹*Department of Engineering Science and Mechanics, The Pennsylvania State University, University Park, PA, United States*

²*Materials Research Institute, The Pennsylvania State University, University Park, Pa, United States*

³*Applied Research Laboratory, The Pennsylvania State University, University Park, PA, United States*

Session WE Posters: WE P8

Poster Session

Wednesday, May 24 15:00-15:45, Poster Room

Session Chair: Nicholas Quart, NRL

WE Posters-69 CREATING AND DIAGNOSING A UNIFORM HOT, DENSE PLASMA WITH THE PLASMA-FILLED ROD PINCH

N. R. Pereira

Ecopulse, Inc., Springfield, Va, United States

WE Posters-70 X-RAY SPECTROSCOPIC DIAGNOSTICS OF ICF IMPLOSIONS ON NIF USING KR DOPANT

A. Dasgupta¹, N. D. Ouart¹, J. L. Giuliani¹, R. W. Clark¹, M. B. Schneider², H. A. Scott²

¹*Plasma Physics, Naval Research Laboratory, Washington, DC, United States*

²*Lawrence Livermore National Laboratory, Livermore, CA, United States*

WE Posters-71 NON-LTE MODELING OF MOLYBDENUM L-SHELL RADIATION PRODUCED USING THE NIKE LASER

N. Ouart¹, Y. Aglitskiy¹, J. Weaver¹, A. Dasgupta¹, Y. Ralchenko²

¹*Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States*

²*National Institute of Standards and Technology, Gaithersburg, MD, United States*

WE Posters-72 SIMULATIONS OF GAS PUFF Z-PINCH IMPLOSIONS WITH A XE DOPANT

V. Tangri¹, J. L. Giuliani², A. L. Velikovich², N. D. Ouart², A. Dasgupta², J. P. Apruzese³, A. J. Harvey-Thompson⁴, C. A. Jennings⁴, B. Jones⁴

¹*Berkeley Research Associates, Beltsville, MD, United States*

²*Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States*

³*Syntek Technologies, Arlington VA, United States*

⁴*Sandia National Laboratories, Albuquerque, NM, United States*

Session WE Posters: WE P9

Poster Session

Wednesday, May 24 15:00-15:45, Poster Room

Session Chairs:

WE Posters-73 DESIGN OF A 250 GHZ PHOTONIC BANDGAP EXTENDED INTERACTION KLYSTRON

J. C. Stephens, M. A. Shapiro, R. J. Temkin

Plasma Science and Fusion Center, Massachusetts Institute of Technology, Cambridge, Massachusetts

WE Posters-74 MODELING AND STUDY OF THE ELECTRON OPTICAL SYSTEM WITH COMPRESSION OF AN ELECTRON SHEET BEAM

A. A. Burtsev¹, A. V. Danilushkin¹, K. V. Shumikhin¹, Y. G. Gamayunov², Y. A. Grigoriev³

¹*Saratov State Technical University, Saratov, Russian Federation*

²*Saratov State University, Saratov, Russian Federation*

³*The Kotelnikov Institute of Radio-engineering and Electronics of RAS, Saratov, Russian Federation*

WE Posters-75 STUDY OF PARTIAL-IN-CELL SIMULATION FOR THE GRAPHENE SURFACE PLASMON POLARITONS EXCITATION

L. Liu

School of Physical Electronics, University of Electronic Science and Technology of China, Chengdu, China

Session WE Posters: WE P10

Poster Session

Wednesday, May 24 15:00-15:45, Poster Room

Session Chair: John Giuliani, Naval Research Laboratory

WE Posters-76 THE MULTI-PHASE EQUATION OF STATE FOR COMPUTATIONAL INVESTIGATION ON EXPLODING ALUMINUM WIRE

K. Wang¹, D. Zhang¹, Z. Shi², Y. Shi²

¹*Hebei University of Technology, Tianjin, China*

²*Xian Jiaotong University, Xian, China*

WE Posters-77 ON THE STABILITY OF THE MAGNETIZED NOH Z-PINCH PROBLEM

S. Zalesak¹, J. Giuliani², A. Velikovich², A. Beresnyak²

¹Berkeley Research Associates, Beltsville, MD, United States

²Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

WE Posters-78 INFLUENCE OF DIELECTRIC COATING AND SOLDERING ON ELECTRICAL EXPLOSION OF TUNGSTEN WIRES

Y. Shi¹, Z. Shi¹, K. Wang², Z. Wu¹, S. Jia¹

¹Dept. of Electrical Engineering, Xi'an Jiaotong University, Xi'an, Shaanxi, China

²Dept. of Electrical Engineering, Hebei University of Technology, Tianjin, China

WE Posters-79 COMPARATIVE STUDIES OF MAGNETIC FIELD EVOLUTION AND Z-PINCH DYNAMIC PROCESS OF CURRENT-CARRYING RAREFIED DEUTERIUM PLASMA SHELL

C. Ning, Z. Feng, S. Sun, C. Xue, B. Li

Institute of Applied Physics and Computational Mathematics, Beijing, China

WE Posters-80 RESEARCH ON TWO-DIMENSIONAL MHD SIMULATIONS OF X-PINCH IMPLOSION DYNAMICS

J. Cui, T. Zhao, L. Shi, Y. Zhang, L. Zou

School of Electrical Engineering, Shandong University, Ji'nan, Shandong Province, China

WE Posters-81 THE EFFECTS OF CENTRAL JET ON THE AR-ON-D DOUBLE-SHELL GAS PUFF Z-PINCH LOADS ON SANDIA ZR FOR PULSED NEUTRON SOURCE

Y. Chong¹, A. L. Velikovich¹, J. Giuliani¹, P. Knapp², C. Jennings²

¹Naval Research Laboratory, WASHINGTON, DC

²Sandia National Laboratories, Albuquerque, NM

WE Posters-82 DEVELOPMENT OF PULSED PINCH PLASMAS FOR THE APPLICATION AS FAIR PLASMA STRIPPER

M. Iberler, T. Ackermann, B. Bohlender, K. Cistakov, C. Hock, D. Mann, G. Xu, J. Wiechula, J. Jacoby

Institute for Applied Physics, Goethe University Frankfurt, Frankfurt am Main, Germany

WE Posters-83 PLASMA SPECTRAL CHARACTERISTICS OF SINGLE ALUMINUM WIRE ELECTRICALLY EXPLODED IN HIGH VACUUM

Z. Wu, Z. Shi, Y. Shi, J. Bai, S. Jia

Xi'an Jiaotong University, Xi'an, Shaanxi, China

WE Posters-84 FULLY KINETIC MODELING OF DENSE PLASMA FOCI FROM KILO- TO MEGA-AMP DEVICES

D. P. Higginson, J. Angus, I. Holod, S. Jiang, C. Kueny, J. Liu, M. McMahon, A. Pankin, J. Sears, K. Tummel, A. Voronin, A. Link, A. Schmidt

Lawrence Livermore National Lab, Livermore, CA, United States

WE Posters-85 Investigation of 1-MA, 200-ns Ar Gas Puff Z-Pinches on COBRA

N. Qi, S. V. Rocco, J. T. Banasek, L. Atoyan, T. Byvank, W. M. Potter, J. B. Greenly, D. A. Hammer, B. R. Kusse

Lab. of Plasma Studies, Cornell University, Ithaca, NY, United States

WE Posters-86 INSTABILITIES AND THE IMPLOSION DYNAMICS OF GAS-PUFF Z-PINCH EXPERIMENTS

S. V. Rocco¹, J. Banasek¹, D. Hammer¹, B. Kusse¹, N. Qi², W. Potter¹

¹Lab of Plasma Studies, Cornell University, Ithaca, NY, United States

²L3 Communications, San Leandro, CA, United States

WE Posters-87 STAGED Z-PINCH EXPERIMENTS ON THE MEGA-AMPERE CURRENT DRIVER COBRA

J. C. Valenzuela¹, F. Conti¹, M. P. Ross¹, N. Aybar¹, J. Narkis¹, F. N. Beg¹, F. J. Wessel², E. Ruskov², H. U. Rahman², P. Ney², T. W. Darling³, A. Covington³, D. A. Hammer⁴, T. Byvank⁴, J. T. Banasek⁴, J. B. Greenly⁴, W. M. Potter⁴, S. V. Rocco⁴

¹University of California, San Diego, San Diego, CA, United States

²Magneto-Inertial Fusion Technologies, Inc, Tustin, CA, United States

³University of Nevada, Reno, Nevada, Reno, United States

⁴Cornell University, Ithaca, NY, United States

WE Posters-88 FORCE-FREE CURRENT FLOW IN Z PINCHES IMPLoded IN AN AXIAL MAGNETIC FIELD

A. L. Velikovich¹, N. D. Ouart¹, J. L. Giuliani¹, R. B. Baksht², A. G. Roussikh², V. I. Oreshkin², D. Mikitchuk³, M. Cvejic³, R. Doron³, E. Kroupp³, Y. Maron³

¹Plasma Physics Division, Naval Research Laboratory, Washington, DC, United States

²Institute of High Current Electronics of the Siberian Branch of the Russian Academy of Sciences, Tomsk, Russia

³Weizmann Institute of Science, Rehovot, Israel

Session WE 2.1: Computational Physics and Techniques III

Wednesday, May 24 16:00-18:00, Wildwood 9

Session Chair: Tanvir Farouk, University of South Carolina

16:00 WE 2.1-1 COMPUTATION OF CATHODE LAYER THICKNESS FOR NORMAL GLOW DISCHARGE

X. Wang¹, X. Hou¹, Y. Fu², X. Zou¹

¹Tsinghua University, Beijing, China

²Michigan State University, East Lansing, USA

16:15 WE 2.1-2 (invited) STRUCTURE-PRESERVING SECOND-ORDER INTEGRATION OF RELATIVISTIC PARTICLE TRAJECTORIES IN ELECTROMAGNETIC FIELDS

A. V. Higuera^{1,2}, J. R. Cary^{1,2}

¹University of Colorado, Boulder, Boulder, CO, United States

²Tech-X Corporation, Boulder, CO, United States

16:45 WE 2.1-3 THE DYNAMICS OF COLLISIONAL BUNEMAN INSTABILITY DEVELOPMENT

E. V. Rostomyan

Theoretical, Institute of Radiophysics & Electronics National Ac Sci of Armenia, Ashtarak, Armenia

17:00 WE 2.1-4 NEW MULTI-WEIGHT COLLISION ALGORITHM FOR DSMC/PIC SIMULATIONS OF GASES AND PLASMA FLOWS

S. N. Averkin, D. Han, N. A. Gatsonis

Worcester Polytechnic Institute, Worcester, MA, United States

17:15 WE 2.1-5 STUDY ON THE ANALYTICAL SOLUTION OF ELECTRON NUMBER DENSITY AND IMPEDANCE OF α MODE HELIUM RADIO-FREQUENCY ATMOSPHERIC PRESSURE GLOW DISCHARGES

H. Wang, J. Jiao, H. Luo, X. Wang

Department of electric engineering, Tsinghua university, Beijing, China

17:30 WE 2.1-6 COMPUTER SIMULATIONS FOR MODELLING EXPLOSIVE PROPERTIES OF BALL LIGHTNING

M. O. McDougall, S. Kelty, J. Lopez

Physics, Seton Hall University, South Orange, NJ, United States

17:45 WE 2.1-7 ELECTRON INTERACTIONS WITH PLASMA FEED GASES

C. G. Limbachiya¹, R. Bhavsar², M. Swadia³, M. Vinodkumar⁴

¹Applied Physics, Department of Applied Physics, The M.S. University of Baroda, Vadodara (India) - 390001, Vadodara, India

²Physics, M.N. Science College, Visnagar, india

³Physics, HVHP Institute of PG Studies and Research, Kadi, India

⁴Electronics, V.P. Science College, Vallabh Vidyanagar, India

Session WE 2.2: Joint Fusion HEDP

Wednesday, May 24 16:00-18:15, Wildwood 10

Session Chair: David Ampleford, Sandia National Lab

16:00 WE 2.2-1 (invited) INVESTIGATION OF CORE TRANSPORT DURING THE FIRST W7-X EXPERIMENTAL CAMPAIGN

N. A. Pablant¹, S. Bozhnikov², A. Dinklage², G. Fuchert², M. Landreman³, A. Langenberg², A. Alonso⁴, C. D. Beidler², M. Beurskens², M. Bitter¹, R. Burhenn², L. F. Delgado-Aparicio¹, D. A. Gates¹, J. Geiger², K. W. Hill¹, M. Hirsch², U. Hofel², J. Knauer², A. Kramer-Flecken⁵, S. Lazerson¹, H. Maassberg², O. Marchuk⁵, N. B. Marushchenko², D. R. Mikkelsen¹, E. Pasch², T. S. Pedersen², S. Satake⁶, H. Smith², J. Svensson², P. Traverso⁷, Y. Turkin², P. Valson², J. L. Velasco⁴, G. Weir², T. Windisch², R. C. Wolf², M. Yokoyama⁶, D. Zhang²

¹Princeton Plasma Physics Laboratory, Princeton, NJ, United States

²Max-Planck-Institut für Plasmaphysik, Greifswald, Germany

³University of Maryland, College Park, MD, United States

⁴Laboratorio Nacional de Fusión, CIEMAT, Madrid, Spain

⁵Forschungszentrum Jülich, Jülich, Germany

⁶National Institute for Fusion Science, Toki, Japan

⁷Auburn University, Auburn, AL, United States

16:30 WE 2.2-2 UNDERSTANDING AND PREDICTION OF INTERNAL TRANSPORT BARRIERS IN TOKAMAKS USING INTEGRATED MODELING

A. Y. Pankin¹, I. Holod¹, A. Garofalo², J. Weiland³

¹Lawrence Livermore National Laboratory, Livermore, CA, United States

²General Atomics, San Diego, CA, United States

³Chalmers University of Technology, Chalmers, Sweden

16:45 WE 2.2-3 A HYBRID TRANSPORT-DIFFUSION SIMULATION IN LASER FUSION

J. Li

Institute of Applied Physics and Computational Mathematics, Beijing, China

17:00 WE 2.2-4 THE SIMULATION OF FORMING PROCESS OF Z-PINCH DRIVEN DYNAMIC HOHLRAUM BASED ON THE PROGRAM MULTI2D-Z

C. Ning, Z. Chen

Institute of Applied Physics and Computational Mathematics, Beijing, China

17:15 WE 2.2-5 (invited) AZIMUTHAL CURRENT DENSITY DISTRIBUTION RESULTING FROM A POWER FEED VACUUM GAP IN METALLIC LINER EXPERIMENTS AT 1 MA

S. Bott-Suzuki¹, S. W. Cordaro¹, L. S. Caballero Bendixsen¹, L. Atayan², T. Byvank², W. Potter², B. R. Kusse², J. B. Greenly², D. A. Hammer², C. A. Jennings³

¹U. C. San Diego, La Jolla, CA, United States

²Cornell University, Ithaca, NY, United States

³Sandia National Laboratories, Albuquerque, NM, United States

17:45 WE 2.2-6 MEASURING PRESSURE IN WARM DENSE TUNGSTEN PLASMA CREATED IN PLASMA-FILLED ROD-PINCH DIODES

B. V. Weber¹, C. N. Boyer², D. Mosher³, N. R. Pereira⁴, A. S. Richardson¹, J. W. Schumer¹

¹Naval Research Laboratory, Washington, DC, United States

²Sotera Defense Solutions, Herndon, VA, United States

³Syntek Technologies Inc, Arlington, VA, United States

⁴Ecopulse Inc, Springfield, VA, United States

18:00 WE 2.2-7 THE ELECTROTHERMAL INSTABILITY ON PULSED POWER ABLATIONS OF THIN FOILS

A. M. Steiner, P. C. Campbell, D. A. Yager-Elorriaga, N. M. Jordan, Y. Y. Lau, R. M. Gilgenbach

Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI, United States

Session WE 2.3: Plasma Medicine and Biological Effects II

Wednesday, May 24 16:00-17:30, Wildwood 12

Session Chair: John E Foster, University of Michigan

16:00 WE 2.3-1 (invited) NON-THERMAL ATMOSPHERIC PRESSURE PLASMA EFFECTS ON LUNG CANCER CELLS WITHIN 3D COLLAGEN MATRIX

S. B. Karki, H. Ayan

University of Toledo, Toledo, OH, United States

16:30 WE 2.3-2 EFFECT OF ELECTRIC FIELDS ON BIOFILM FORMATION

H. Panesar¹, J. L. Lopez²

¹Department of Biology, Seton Hall University, South Orange, NJ, United States

²Department of Physics, Seton Hal University, South Orange, NJ, United States

16:45 WE 2.3-3 COLD AIR ATMOSPHERIC PRESSURE PLASMA FOR DECONTAMINATION OF ESCHERICHIA COLI CONTAMINATED FRUITS, MOHAMED ICOPS-BEAMS 2017

A. -A. H. Mohamed¹, A. H. Basher¹, A. A. Alhazime¹, J. Q. M. Almarashi¹, M. A. Ellabban¹, A. Al-Mashraqi¹, S. A. Ouf²

¹Physics Department/Faculty of Science, Taibah University, Medina, Saudi Arabia

²Botany Department/ Faculty of Science,, Cairo University, Giza, Egypt

17:00 WE 2.3-4 ANALYSIS OF LOW-TEMPERATURE PLASMA JET AND TREATMENT EFFECTS ON STAPHYLOCOCCUS AUREUS WITH AND WITHOUT BIOFILM FORMATION

S. D. Knecht, G. Kirmanjeswara, S. G. Bilen, A. Sosa, G. Ryan, C. Whalen

Penn State University, University Park, PA, United States

17:15 WE 2.3-5 COLD PLASMA PROVIDES IMMUNE STIMULUS TO BATTLE CANCER

S. Bekeschus, T. von Woedtke, K. -D. Weltmann

ZIK plasmatis, Leibniz-Institute for Plasma Science and Technology (INP Greifswald), Greifswald, Germany

Session WE 2.4: Intense Beam Microwave Generation II

Wednesday, May 24 16:00-17:30, Wildwood 13

Session Chair: John Jelonnek, Karlsruhe Institute of Technology, Germany

16:00 WE 2.4-1 RESEARCH AND DEVELOPMENT OF THE RECIRCULATING PLANAR CROSSED-FIELD AMPLIFIER

S. C. Exelby¹, G. B. Greening¹, N. M. Jordan¹, D. Simon¹, Y. Y. Lau¹, R. M. Gilgenbach¹, B. W. Hoff²

¹*Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI, United States*

²*Directed Energy Directorate, Air Force Research Laboratory, Albuquerque, NM, United States*

16:15 WE 2.4-2 PLASMA-BASED PULSE SHORTENING IN THE RECIRCULATING PLANAR MAGNETRON

N. M. Jordan, G. B. Greening, S. C. Exelby, D. A. Packard, K. A. Schneider, Y. Y. Lau, R. M. Gilgenbach

Nuclear Engineering and Radiological Sciences, University of Michigan, Ann Arbor, MI, United States

16:30 WE 2.4-3 NOVEL RELATIVISTIC MAGNETRON WITH LENGTHY VIRTUAL CATHODE AND MAGNETIC MIRROR

E. Schamiloglu¹, M. Fuks¹, A. A. Koronovskii², S. A. Kurkin²

¹*Department of Electrical and Computer Engineering, University of New Mexico, Albuquerque, NM, United States*

²*Faculty of Nonlinear Processes, Saratov State University, Saratov, Russian Federation*

16:45 WE 2.4-4 DEVELOPMENT OF A PHASE-CONTROLLED MAGNETRON EXPERIMENT USING A MODULATED ELECTRON SOURCE

J. Browning¹, M. Pearlman¹, D. Plumlee¹, T. Akinwande², M. Worthington³, J. Cipolla³

¹*Electrical Engineering, Boise State University, BOISE, ID, USA*

²*Electrical Engineering, Massachusetts Institute of Technology, Cambridge, MA, USA*

³*L-3 EDD Communications, Williamsport, PA, USA*

17:00 WE 2.4-5 (invited) MATERIAL SELECTION FOR THE PERIODIC ELEMENTS OF A METAMATERIAL-ENHANCED RESISTIVE WALL AMPLIFIER

T. Rowe, P. Forbes, J. H. Booske, N. Behdad

Electrical and Computer Engineering, University of Wisconsin-Madison, Madison, WI, United States

Session WE 2.5: Source technologies and material interfaces

Wednesday, May 24 15:00-17:00, Wildwood 14

Session Chair: Steven Shannon, NC State

15:00 WE 2.5-1 THE ELECTROSTATIC DEBYE LAYER OF THE PLASMA-LIQUID INTERFACE

P. Rumbach, J. P. Clarke, D. B. Go

University of Notre Dame, Notre Dame, IN, United States

15:15 WE 2.5-2 NANOMOLAR TO MICROMOLAR OH AND 102 DELIVERY WITH 3D PRINTED MICROPLASMA JETS ARRAY

P. P. Sun^{1,2}, E. Araud¹, S. Zhong², Z. Tong², J. G. Eden², T. H. Nguyen¹

¹*Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

²*Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, United States*

15:30 WE 2.5-3 INVESTIGATION OF SCALING EFFECTS DUE TO VARYING DIELECTRIC MATERIAL IN ASYMMETRIC DIELECTRIC BARRIER DISCHARGE ACTUATORS

A. D. Ngo¹, K. K. Pai², J. D. Jacob¹

¹*MAE, Oklahoma State University, Stillwater, United States*

²*Plasma Bionics LLC, Stillwater, United States*

15:45 WE 2.5-4 A STUDY OF PULSE OPTIMIZATION FOR THE TREATMENT OF DIESEL EMISSIONS USING TRANSIENT PLASMA

S. Kerketta, S. Subramanian, W. P. Schroeder, M. Gundersen

Electrical Engineering, University of Southern California, Los Angeles, California, United States

16:00 WE 2.5-5 INVESTIGATION OF CHARACTERISTICS OF A COAXIAL DIELECTRIC BARRIER DISCHARGE REACTOR WITH DIFFERENT POWER SOURCES

F. Liu, C. Miao, Q. Wang, B. Zhang, Z. Fang

College of Electrical Engineering and Control Science, Nanjing Tech University, Nanjing, China

16:15 WE 2.5-6 TIME-RESOLVED IMAGING OF ELECTRICAL DISCHARGE DEVELOPMENT IN BUBBLES IMMERSED IN WATER

Y. Yang

Electrical and Electronics Engineering, Huazhong University of Science and Technology, Wuhan, China

16:30 WE 2.5-7 A COMPARISON OF OZONE GENERATION USING MESHED AND PLANAR ELECTRODES IN DIELECTRIC BARRIER DISCHARGES

Y. Zhou, T. Wang, S. MacGregor, M. Wilson, I. Timoshkin, M. Given

Electronic And Electrical Engineering, University of Strathclyde, GLASGOW, United Kingdom

16:45 WE 2.5-8 Characteristics of Homogeneous MDBD Excited by Unipolar Sub-microsecond pulse Power at Atmospheric Pressure

J. Li, X. Li, P. Dong, C. Lan, J. Long, L. Zhang

Accelerator physics and applications, Institute of fluid physics, CAEP, Mianyang, Sichuan, China

Session PL7: Plenary 7

Thursday, May 25 08:30-09:30, Wildwood 3

Session Chair: WeiDong Zhu, St. Peter's University

8:30 PL7-1 (invited) PROGRESS AND PROSPECTS OF PLASMA-BASED ACCELERATORS AND THEIR APPLICATIONS

C. Joshi

Electrical Engineering, UCLA, Los Angeles, CA, United States

Session TH 1.1: Codes and Modeling II

Thursday, May 25 10:00-12:00, Wildwood 9

Session Chair: Andrey D Andreev, Booz Allen Hamilton Inc.

10:00 TH 1.1-1 STUDY ON THE BEFORE CAVITY INTERACTION IN A SECOND HARMONIC GYROTRON USING 3D CFDTD PIC SIMULATIONS

M. C. Lin¹, A. Malygin², S. Illy², M. Thumm², J. Jelonnek²

¹*Department of Electrical and Biomedical Engineering, Hanyang University, Seoul, South Korea*

²*Institute for Pulsed Power and Microwave Technologies, Karlsruhe Institute of Technology, Karlsruhe, Germany*

10:15 TH 1.1-2 (invited) STUDY ON THE AFTER CAVITY INTERACTION IN A 140 GHZ GYROTRON USING 3D CFDTD PIC SIMULATIONS

M. C. Lin¹, S. Illy², K. Avramidis², M. Thumm², J. Jelonnek²

¹*Department of Electrical and Biomedical Engineering, Hanyang University, Seoul, South Korea*

²*Institute for Pulsed Power and Microwave Technologies, Karlsruhe Institute of Technology, Karlsruhe, Germany*

10:45 TH 1.1-3 VALIDATION AND BENCHMARKING OF TWO PARTICLE-IN-CELL CODES FOR A GLOW DISCHARGE

J. Carlsson¹, A. Khrabrov¹, I. Kaganovich¹, T. Sommerer², D. Keating³

¹*Princeton Plasma Physics Laboratory, Princeton, NJ, United States*

²*General Electric Global Research, Niskayuna, NY, United States*

³*Department of Physics, University of California at Berkeley, Berkeley, CA, United States*

11:00 TH 1.1-4 COUPLING MD SIMULATIONS OF LASER ABLATION WITH PIC-DSMC SIMULATIONS OF PLASMA PLUME EXPANSIONS AND SUBSEQUENT LASER-PLASMA INTERACTIONS

S. M. Copplestone¹, P. Ortwein¹, C. -D. Munz¹, M. Pfeiffer², S. Fasoulas²

¹*Institute of Aerodynamics and Gas Dynamics, Stuttgart, Germany*

²*Institute of Space Systems, Stuttgart, Germany*

11:15 TH 1.1-5 COMPUTER SIMULATION OF ACETYLENE PLASMA POLYMERIZATION: EFFECT OF SUBSTRATE TEMPERATURE

M. Zarshenas¹, A. Delcorte¹, T. Leyssens²

¹Bio & Soft Matter, Institute of Condensed Matter and Nanoscience-Bio & Soft Matter, Université catholique de Louvain, Louvain-la-Neuve, Belgium

²Molecules, Solids and Reactivity, Institute of Condensed Matter and Nanoscience, Université catholique de Louvain, Louvain-la-Neuve, Belgium

11:30 TH 1.1-6 VALIDATION AND VERIFICATION OF A PIC/MCC CODE FOR LOW TEMPERATURE PLASMAS

A. Sun

Xi'an Jiaotong University, Xi'an, Shaanxi, China

11:45 TH 1.1-7 PICLAS: A HIGHLY FLEXIBLE PARTICLE CODE FOR THE SIMULATION OF REACTIVE PLASMA FLOWS

P. Ortwein¹, S. Coppleson¹, C. -D. Munz¹, M. Pfeiffer², T. Binder², A. Mirza², P. Nizenzov², S. Fasoulas²

¹Institute of Aerodynamics and Gas Dynamics, Stuttgart, Germany

²Institute of Space Systems, Stuttgart, Germany

Session TH 1.2: Partially Ionized Plasmas/Space Plasmas

Thursday, May 25 10:00-11:15, Wildwood 10

Session Chair: Anne Bourdon, LPP, Ecole Polytechnique, France

10:00 TH 1.2-1 THE EFFECT OF NEUTRALS DEPLETION ON PLASMA DIAMAGNETISM

A. Fruchtman¹, S. Shinohara², D. Kuwahara²

¹Physics department, Holon Institute of Technology, Holon, Israel

²Division of Advanced Mechanical Systems Engineering, Tokyo University of Agriculture and Technology, Tokyo, Japan

10:15 TH 1.2-2 INVESTIGATION OF THE SIMILARITY LAW IN DISCHARGES AT HIGH PRESSURE USING A KINETIC GLOBAL MODEL

Y. Fu¹, G. Parsey¹, J. Kerk¹, J. Verboncoeur¹, A. Chiristlieb¹, X. Wang²

¹Department of Computational Mathematics, Science and Engineering, Michigan State University, East Lansing, United States

²Department of Electrical Engineering, Tsinghua University, Beijing, China

10:30 TH 1.2-3 ION ACOUSTIC GARDNER SOLITONS IN SUPERHERMAL PLASMA WITH ELECTRON BEAM

N. S. Saini, N. Kaur

Physics, Guru Nanak Dev University, Amritsar, Punjab, India

10:45 TH 1.2-4 KINETIC MODEL TO INTERPRET WHISTLER WAVES IN MULTICOMPONENT NON-MAXWELLIAN SPACE PLASMAS

W. Nasir¹, M. N. Sarwar²

¹PHYSICS, Forman Christian College (A Chartered University), Lahore, PAKISTAN

²PHYSICS, Government College University, Lahore, PAKISTAN

11:00 TH 1.2-5 ION EMISSION ENERGISTICS FROM A POSITIVELY BIASED HOLLOW CATHODE CONTACTOR

G. Miars¹, O. Leon¹, B. Gilchrist¹, G. L. Delzanno², F. L. Castello², J. E. Borovsky³

¹The University of Michigan, Ann Arbor, MI, United States

²Los Alamos National Laboratory, Los Alamos, NM, United States

³Space Science Institute, Boulder, CO, United States

Session TH 1.3: Plasma Material Interactions

Thursday, May 25 10:00-11:30, Wildwood 12

Session Chair: Tatyana Sizyuk, Purdue University

10:00 TH 1.3-1 PLASMA ELECTROLYTIC BORIDING

Y. Jiang, Y. Bao, M. Wang

Hohai University, Changzhou, Jiangsu, China

10:15 TH 1.3-2 OUTGASSING AND SECONDARY ELECTRON REDUCTION FROM LASER-PROCESSED ANODES

S. B. Fairchild¹, D. Gortat², P. T. Murray³, T. C. Back⁴, N. Lockwood⁵, D. C. Ingram⁶

¹Materials Directorate, Air Force Research Laboratory, WPAFB, OH, United States

²Institute for Manufacturing, University of Cambridge, Cambridge, UK

³MurHop Technical Consulting, LLC, Dayton, OH, United States

⁴Research Institute, University of Dayton, Dayton, OH, United States

⁵Directed Energy Directorate, Air Force Research Laboratory, Albuquerque, NM, United States

⁶Dept of Physics and Astronomy, Ohio University, Athens, OH, United States

10:30 TH 1.3-3 IONIZATION COMPRESSION OF HIGH POWER PICOSECOND CO2 LASER

L. A. Johnson¹, D. F. Gordon¹, J. P. Palastro¹, V. Hasson²

¹Division of Plasma Physics, U.S. Naval Research Laboratory, Washington, DC, United States

²PaR System, Shoreview, MI, United States

10:45 TH 1.3-4 NEON PLASMA JET INTERACTIONS WITH CONDUCTIVE AND NON-CONDUCTIVE TARGETS

A. Kone, B. Caillier, C. Muja, F. P. Sainct, P. Guillot

Laboratoire Diagnostics des Plasmas Hors Equilibre, Universite de Toulouse, INU Champollion,, Albi, France

11:00 TH 1.3-5 ION DYNAMICS AND ABLATION MECHANISMS OF FEMTOSECOND AND NANOSECOND LASER PRODUCED PLASMAS

A. Aelseid, P. K. Diwakar, A. Hassanein

Center for Materials Under Extreme Environment (CMUXE), School of Nuclear Engineering, Purdue University, West Lafayette, United States

11:15 TH 1.3-6 INVESTIGATION OF ENHANCED LASER-INDUCED BREAKDOWN (LIB) FOR APPLICATION IN HIGH-ENERGY LASER (HEL) DAMAGE MITIGATION

C. Campbell, D. Staack

Department of Mechanical Engineering, Texas A&M University, College Station, Texas, United States

Session TH 1.4: Plasma Thrusters

Thursday, May 25 10:00-10:45, Wildwood 13

Session Chair: Vladislav Vekselman, Princeton Plasma Physics Laboratory

10:00 TH 1.4-1 PARTICLE-IN-CELL SIMULATION OF ANOMALOUS TRANSPORT IN A PENNING DISCHARGE

J. Carlsson¹, I. Kaganovich¹, Y. Raitses¹, A. Smolyakov², I. Romadanov²

¹Princeton Plasma Physics Laboratory, Princeton, NJ, United States

²Department of Physics and Engineering Physics, University of Saskatchewan, Saskatoon, SK, Canada

10:15 TH 1.4-2 NUMERICAL MODELING OF ROTATING SPOKES IN HALL THRUSTER DISCHARGE PLASMA

R. Kawashima¹, K. Hara²

¹Department of Aeronautics and Astronautics, The University of Tokyo, Tokyo, Japan

²Department of Aerospace Engineering, Texas A&M University, TX, USA

10:30 TH 1.4-3 NUMERICAL STUDY ON DYNAMIC BEHAVIOR OF INDUCTIVE PULSED PLASMA THRUSTER

G. Xia

School of Aeronautics and Astronautics, Dalian University of Technology, Dalian, Liaoning, China

Session TH 1.5: Plasma Medicine and Biological Effects III

Thursday, May 25 10:00-11:30, Wildwood 14

Session Chair: Sander Bekeschus, INP Greifswald, Germany

10:00 TH 1.5-1 (invited) BIOACTIVE AND ANTIBACTERIAL PLASMA SPRAYED COATINGS ON POLYMER SUBSTRATES SUITABLE FOR ORTHOPEDIC AND TISSUE ENGINEERING APPLICATIONS

L. Barillas¹, H. Testrich², J. M. Cubero-Sesin¹, I. Vargas¹, M. Froehlich², K. -D. Weltmann², M. Polak²

¹Plasma Laboratory for Fusion Energy and Applications, Instituto Tecnológico de Costa Rica, Cartago, Costa Rica

²Plasma Surface Technology Department, Leibniz Institute for Plasma Science and Technology, Greifswald, Germany

10:30 TH 1.5-2 PLASMA-BASED SURFACE MODIFICATION OF POLYSTYRENE FOR SERUM-FREE CELL CULTURE

E. C. Stancu, A. Quade, K. -D. Weltmann, M. Polak
Leibniz Institute for Plasma Science and Technology (INP Greifswald e.V.), Greifswald, Germany

10:45 TH 1.5-3 MEASUREMENT OF ELECTRIC PULSE MODIFICATION OF CELL SUSPENSION CONDUCTIVITY DURING TREATMENT

A. J. Fairbanks, A. M. Darr, A. Vadlamani, A. L. Garner
Nuclear Engineering, Purdue University, West Lafayette, IN, United States

11:00 TH 1.5-4 EFFECT OF NANOSECOND PULSED ATMOSPHERIC PRESSURE DIELECTRIC BARRIER DISCHARGES ON IMMUNE CELL MEDIATED WOUND HEALING

Y. Malkova
C&J Nyheim Plasma Institute, Drexel University, Philadelphia, PA, United States

11:15 TH 1.5-5 NON-THERMAL PLASMA IN CONJUNCTION WITH CHLORHEXIDINE (CHX) DIGLUCONATE STERILIZE THE BIOFILM CONTAMINATED TITANIUM SURFACE

T. T. Gupta¹, H. Ayan^{1,2}
¹*Bioengineering, University of Toledo, Toledo, OH, USA*
²*Mechanical, Industrial and Manufacturing Engineering, University of Toledo, Toledo, OH, USA*

Session TH 1.6: Slow-Wave Devices

Thursday, May 25 10:00-11:45, Wildwood 15

Session Chair: Jane Lehr, University of New Mexico

10:00 TH 1.6-1 HIGH POWER LONG PULSE MICROWAVE GENERATION FROM A METAMATERIAL BASED BACKWARD WAVE OSCILLATOR

X. Lu, J. S. Hummelt, M. A. Shapiro, R. J. Temkin
Massachusetts Institute of Technology, Cambridge, MA, United States

10:15 TH 1.6-2 EVALUATION OF THE PIERCE PARAMETERS C AND Q IN A TRAVELING WAVE TUBE

D. H. Simon^{1,2}, P. Wong¹, D. Chernin³, Y. Y. Lau¹, B. W. Hoff², P. Zhang^{1,4}, C. Dong^{1,5}, R. M. Gilgenbach¹
¹*University of Michigan, Ann Arbor, MI, United States*
²*Air Force Research Laboratory, Albuquerque, NM, United States*
³*Leidos, Reston, VA, United States*
⁴*Michigan State University, East Lansing, MI, United States*
⁵*Princeton Plasma Physics Laboratory, Princeton, NJ, United States*

10:30 TH 1.6-3 (invited) DESIGN AND SIMULATION OF A RELATIVISTIC INVERTED MAGNETRON

T. P. Fleming¹, M. R. Lambrecht¹, P. J. Mardahl¹, J. D. Keisling²
¹*RDHE, Air Force Research Laboratory, Kirtland AFB, NM, United States*
²*Leidos Inc., Albuquerque NM, United States*

11:00 TH 1.6-4 MODELING OSCILLATIONS IN TWTS BY USING THE TESLA-FAMILY OF 2D LARGE-SIGNAL CODES

I. A. Chernyavskiy¹, A. N. Vlasov¹, B. Levush¹, T. M. Antonsen, Jr.²
¹*U.S. Naval Research Laboratory, Washington, DC, United States*
²*Leidos, Inc., Reston, VA, United States*

11:15 TH 1.6-5 LOW VOLTAGE FOLDED WAVEGUIDE MULTIPLE BEAM MINI-TWTS: DESIGN AND MODELING

A. N. Vlasov¹, J. C. Rodgers¹, J. A. Pasour¹, I. A. Chernyavskiy¹, S. J. Cooke¹, B. Levush¹, T. M. Antonsen Jr.², D. Chernin², K. T. Nguyen³
¹*Naval Research Laboratory, Washington, DC, United States*
²*Leidos Inc., Billerica, MA, United States*
³*Beam-Wave Research Inc., Bethesda, MD, United States*

11:30 TH 1.6-6 HARMONIC GENERATION IN AN OCTAVE BANDWIDTH TRAVELING-WAVE TUBE

P. Y. Wong¹, D. Chernin², Y. Y. Lau¹, P. Zhang³, D. H. Simon⁴, B. W. Hoff⁴, G. B. Greening¹, R. M. Gilgenbach¹
¹*University of Michigan, Ann Arbor, MI, United States*
²*Leidos Inc., Reston, VA, United States*

³*Michigan State University, East Lansing, MI, United States*

⁴*Air Force Research Laboratory, Albuquerque, NM, United States*