

# 2016 ELECTROSTATICS JOINT CONFERENCE

June 13-16, 2016

Purdue University

**General Chair:** *Raji Sundararajan, Purdue University*

**Technical Chair:** *Keith Forward, California State Polytechnic University, Pomona*

## Monday, June 13<sup>rd</sup>

7:00 PM – 9:00 PM

Informal Welcome Gathering & Registration

## Tuesday, June 14<sup>th</sup>

7:00 AM – 8:00 AM

Registration & Breakfast

7:50 AM – 8:00 AM

Welcome Address

8:00 AM – 9:30 AM

Session A: Contact Charging and Triboelectric Effects I

9:30 AM – 9:45 AM

*Coffee Break*

9:45 AM – 11:00 AM

Session B: Atmospheric and Space Applications

11:00 AM – 11:15 AM

*Session Break*

11:15 AM – 12:00 PM

Session C: Materials Synthesis, Processing, and Behavior

12:00 PM – 1:30 PM

*Lunch*

1:30 PM – 3:00 PM

Session D: Electrically-Induced Flows and Electrokinetics I

3:00 PM – 3:15 PM

*Coffee Break*

3:15 PM – 4:15 PM

Session E: Breakdown Phenomena and Discharges I

4:15 PM – 4:30 PM

*Session Break*

4:30 PM – 5:30 PM

Session F: Electrically-Induced Flows and Electrokinetics II

6:00 PM – 8:00 PM

Session G: Poster Session and Demonstrations

## Wednesday, June 15<sup>th</sup>

7:00 AM – 8:00 AM

Registration & Breakfast

8:00 AM – 9:15 AM

Session H: Electrospinning

9:15 AM – 9:30 AM

*Coffee Break*

9:30 AM – 10:45 PM

Session I: Biological and Medical Applications

10:45 AM – 11:00 AM

*Session Break*

11:00 AM – 12:15 PM

Session J: Contact Charging and Triboelectric Effects II

12:15 PM – 1:30 PM

*Lunch*

1:30 PM – 2:45 PM

Session K: Electrically-Induced Flows and Electrokinetics III

2:45 PM – 3:00 PM

*Coffee Break*

3:00 PM – 3:45 PM

Session L: Gas Discharges and Microplasmas I

3:45 PM – 4:00 PM

*Session Break*

4:00 PM – 5:15 PM

Session M: Contact Charging and Triboelectric Effects III

## Thursday, June 16<sup>th</sup>

7:00 AM – 8:00 AM

Registration & Breakfast

8:00 AM – 9:15 AM

Session N: Gas Discharges and Microplasmas II

9:15 AM – 9:30 AM

*Coffee Break*

9:45 AM – 11:00 AM

Session O: Measurements and Instrumentation

11:00 AM – 11:15 AM

*Session Break*

11:15 AM – 12:15 PM

Session P: Electrically-Induced Flows and Electrokinetics IV

12:15 PM – 1:30 PM

*Lunch*

1:30 PM – 2:30 PM

Session Q: Gas Discharges and Microplasmas III

2:30 PM – 2:45 PM	<i>Coffee Break</i>
2:45 PM – 4:00 PM	<u>Session R</u> : Breakdown Phenomena and Discharges II
4:00 PM – 4:15 PM	<u>Session S</u> : Safety and Hazards
4:00 PM – 4:15 PM	<i>Sesssion Break</i>
4:15 PM – 5:00 PM	<u>Session T</u> : Electrically-Induced Flows and Electrokinetics V
6:00 PM – 9:00 PM	<b>Conference Banquet, Recognitions and Awards</b>

**Note:** Keynote Lectures are 25 min + 5 min for questions; Invited and Regular Talks are 12 min + 3 min for questions

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**Tuesday, June 14, 2016**

**7:50 – 8:00 AM**                      **Welcome Address:** Sheshakamal Jayaram (University of Waterloo), ESA President  
Raji Sundararajan (Purdue University), General Chair

**Session A: Contact Charging and Triboelectric Effects I**
**Tuesday, June 14, 8:00 AM**
*Chair: Keith M. Forward (Cal Poly Pomona)*

- 8:00 – 8:30 AM**            **A1**    **Keynote Lecture:** Heinrich Jaeger (University of Chicago) – *Contact charging in single component systems.*
- 8:30 – 8:45**                **A2**    Yuki Osada, Tatsushi Matsuyama, Junichi Ida, Hideo Yamamoto (Soka University) – *Charge accumulation process of a single ceramic particle due to successive impacts.*
- 8:45 – 9:00**                **A3**    Dylan Carter, Christine Hartzell (University of Maryland College Park) – *A model of granular tribocharging for dielectric mixtures with continuous size distributions.*
- 9:00 – 9:15**                **A4**    Xiaozhou Shen, Andrew E. Wang, R. Mohan Sankaran, Daniel J. Lacks (Case Western Reserve University) - *Contact charging between single-crystal oxides from first principles electronic structure calculations and experiments.*
- 9:15 – 9:30**                **A5**    Sara Messal<sup>1</sup>, Abdelkader Mekhaleff<sup>2</sup>, Karim Medles<sup>2</sup>, Thami Zeghloul<sup>1</sup>, and Lucian Dascalescu<sup>1</sup> (<sup>1</sup>PPRIME Institute, CNRS – Université de Poitiers – ENSMA IUT, Angoulême, France <sup>2</sup>Université Djillali Liabes, Sidi-Bel-Abbes, Algeria) - *Factors that influence the efficiency of a tribo-aero-electrostatic separator for finely-grinded matter.*
- 9:30 – 9:45 AM**            **Coffee Break**

**Session B: Atmospheric and space applications**
**Tuesday, June 14, 9:45 AM**
*Chair: Mark N. Horenstein (Boston University)*

- 9:45 – 10:00 AM**        **B1**    C.I. Calle and P.J. Mackey (NASA Kennedy Space Center) - *The electrostatic environment at the international space station.*
- 10:00 – 10:15**            **B2**    M. Reznikov (Physical Optics Corporation) - *Further progress in the electrostatic nucleation of water vapor.*
- 10:15 – 10:30**            **B3**    Hiroyuki Kawamoto, Megumi Kato and Masato Adachi (Waseda University) - *Electrostatic transport of regolith particles for sample return mission from asteroids.*
- 10:30 – 10:45**            **B4**    Shubho Banerjee, Mason Levy, McKenna Davis (Rhodes College) - *Electrostatic force between two conducting equal-sized charged spheres.*
- 10:45 – 11:00**            **B5**    Masato Adachi<sup>1</sup>, Hirofumi Moroka<sup>1</sup>, Hiroyuki Kawamoto<sup>1</sup>, Sachiko Wakabayashi<sup>2</sup>, Takeshi Hoshino<sup>2</sup> (<sup>1</sup>Dept. of Applied Mechanics, Waseda University, <sup>2</sup>Space Exploration Innovation Hub Center, Japan Aerospace Exploration Agency) - *Particle-size sorting system of lunar regolith using electrostatic traveling wave.*
- 11:00 – 11:15 AM**        **Session Break**

**Session C: Materials synthesis, processing, and behavior**
**Tuesday, June 14, 11:15 AM**
*Chair: Kelly Robinson (Electrostatic Answers)*

- 11:15 – 11:30 AM**        **C1**    Prakash Kodali (Indian Institute of Science) - *Use of flat ribbon like electrode geometry to pole PVDF piezoelectrics in solution processing.*
- 11:30 – 11:45**            **C2**    Chitral J Angamma, Ryan J Gerakopoulos, Shesha H Jayaram (University of Waterloo) - *Mass production of nano-composites using electrospinning.*
- 11:45 – 12:00**            **C3**    Gontran Richard<sup>1,2</sup>, Abdelhady Ragab Salama<sup>1,3</sup>, Karim Medles<sup>1,4</sup>, Cedric Lubat<sup>1,2</sup>, Seddik Touhami<sup>1,4</sup>, Lucian Dascalescu<sup>1</sup> (<sup>1</sup>PPRIME Institute, CNRS - University of Poitiers – ENSMA, IUT, Angoulême, France, <sup>2</sup>CITF, Saint Cybardeaux, France, <sup>3</sup>Shoubra Faculty of Engineering, Benha University, Cairo, Egypt, <sup>4</sup>University of Sidi-Bel-Abbes, Algeria) - *Electrostatic separation of two types of copper wires from electric cable wastes.*

12:00 – 1:30 PM

Lunch Break

**Session D: Electrically-induced flows and electrokinetics I****Tuesday, June 14, 1:30 PM**

Chair: Shubho Banerjee (Rhodes College)

- 1:30 – 2:00**      **D1**    **Keynote Lecture:** Rajorshi Paul<sup>1</sup>, Guttapalli Naveen Kumar<sup>2</sup>, Shubhadeep Mandal<sup>2</sup>, N.K. Kishore<sup>2</sup>, SauravPramanik<sup>2</sup>, Suman Chakraborty<sup>2</sup> (<sup>1</sup>Department of Mechanical Engineering, Indian Institute of Technology Kharagpur, Kharagpur-721302, West Bengal, India, <sup>2</sup>Department of Electrical Engineering, Indian Institute of Technology) - *Experimental investigation on the electrohydrodynamic motion and shape deformation of a sedimenting drop under uniform alternating electric field.*
- 2:00 – 2:15**      **D2**    V.A. Chirkov, E.S. Rodikova, Yu.K. Stishkov (St. Petersburg State University) - *The dependence of the efficiency of electrohydrodynamic heat exchanger on the electric conductivity of liquid*
- 2:15 – 2:30**      **D3**    M. Talmor, L. Yang, T. Larkin, O. Kamat, T. Dancy, J. Seyed-Yagoobi (Worcester Polytechnic Institute) – *Flow distribution control in micro-scale via electrohydrodynamic conduction pumping.*
- 2:30 – 2:45**      **D4**    Clément Gouriou, Christophe Louste and Philippe Traoré (Poitiers University) - *Influence of seeding particle type on velocity measurements in silicone oil under high voltage.*
- 2:45 – 3:00**      **D5**    Keiichiro Yoshida and Ryusuke Sakamoto (Osaka Institute of Technology) - *Flow generation in a narrow space using dielectric barrier discharge.*

3:30 – 3:15 PM

Coffee Break

**Session E: Breakdown phenomena and discharges I****Tuesday, June 14, 3:15 PM**

Chair: Daniel J. Lacks (Case Western Reserve University)

- 3:15 – 3:30 PM**      **E1**    Michael D. Hogue<sup>1</sup>, Jayanta Kapat<sup>2</sup>, Kareem Ahmed<sup>2</sup>, Rachel E. Cox<sup>1</sup>, Jennifer G. Wilson<sup>1</sup>, Luz M. Calle<sup>2</sup>, Jaysen Mulligan<sup>1</sup> (<sup>1</sup>NASA Kennedy Space Center, <sup>2</sup>University of Central Florida) - *Dynamic gas flow effects on the ESD of aerospace vehicle surfaces*
- 3:30 – 3:45**      **E2**    Zahirul Hasan Khan (HRZ Research & Consultancy) - *The development of modern discharge electrode in electrostatic precipitation: A systematic review*
- 3:45 – 4:00**      **E3**    Rahul Chakraborty and Subba Reddy B (Indian Institute of Science) - *Performance of silicone rubber insulators under thermal and electrical stress*
- 4:00 – 4:15**      **E4**    Alok Ranjan Verma, Subba Reddy B (Indian Institute of Science) - *Tracking and erosion resistance of silicon rubber samples subjected to environmental conditions*

4:15 – 4:30 PM

Session Break

**Session F: Electrically-induced flows and electrokinetics II****Tuesday, June 14, 4:30 PM**

Chair: Carlos I. Calle (NASA Kennedy Space Center)

- 4:30 – 4:45 PM**      **F1**    Kang Luo<sup>1</sup>, Jian Wu<sup>2</sup>, Hong-Liang Yi<sup>1</sup>, He-Ping Tan<sup>1</sup> (<sup>1</sup>Harbin Institute of Technology, <sup>2</sup>Université de Lorraine) - *A lattice Boltzmann method for electric field-space charge coupled problems*
- 4:45 – 5:00**      **F2**    S. Modh<sup>1</sup>, C. Gouriou<sup>1</sup>, R. Sosa<sup>2</sup>, M. Daaboul<sup>3</sup>, P. Traore<sup>1</sup>, C. Louste<sup>1</sup> (<sup>1</sup>P' institute, electrohydrodynamic Team CNRS - Université de Poitiers - ISAE-ENSMA, <sup>2</sup>Laboratorio de Fluidodinamica University of Buenos Aires Conicet, <sup>3</sup>Dept. of Mechanical Engineering University of Balamband) - *Electroconvective cavity flows produced by a cylinder/plane electrode geometry*
- 5:00 – 5:15**      **F3**    Adrian Ieta, Justin D'Antonio, Marius Chirita, (State University of New York at Oswego) - *Experimental characterization of EHD thrust from pin emitters*
- 5:15 – 5:30**      **F4**    Robert L. Garriss, Maciej A. Noras (UNC Charlotte) - *Manipulation of electrosprayed dielectric fluids using electric fields*

Tuesday, June 14, 6:00 PM

**Session G: Poster Session and Demonstrations**

Chair: Keith M. Forward (Cal Poly Pomona)

6:00 – 8:00 PM

- G1** W. Mike Arnold (Callaghan Innovation / MacDiarmid Institute of Victoria University, Wellington) - *Low-conductivity, high permittivity media for electromanipulation.*
- G2** Meral Birbir, Eda Yazici, Pinar Caglayan, Yasar Birbir, Richard Alan Goebel (Marmara University) - *Electric current and antibacterial agent application to inactivate antibiotic resistant enterobacteriaceae*
- G3** Amanda M. Loveless, and Allen L. Garner (Purdue University) - *Calculating field enhancement factor using the boundary element method.*
- G4** F.J. Durán-Olivencia and Philippe Traoré (University of Poitiers) - *A Consistent Fluid Approach (CFA) to model electrical discharges.*
- G5** John Beach, Bridget Chartrand, and Hugh Gallagher (SUNY Oneonta) - *Quantitative Determination of the Breakdown Field of Air from Van de Graaff Generator Discharge.*
- G6** Abdelkader Mekhalef<sup>1,2</sup>, Sara Messal<sup>2</sup>, Karim Medles<sup>1,2</sup>, Thami Zeghloul<sup>2</sup>, Lucian Dascalescu<sup>2</sup> (<sup>1</sup>University of Sidi Belabbes, Algeria, PPRIME Institute, CNRS – Université de Poitiers - ENSMA) - *A propeller-type tribocharger for granular plastics mixtures*
- G7** Yoshiaki Ota, Tatsushi Matsuyama, Junichi Ida, Hideo Yamamoto (Soka University) - *Charge relaxation property of PFA films in contact charging.*
- G8** P.A.Vázquez, A.T. Pérez, P. Traoré, J. Wu (University of Seville) - *Non-linear numerical study of 2D electroconvection between parallel plates*
- G9** Philippe Traoré, Jian Wu, Alberto T. Pérez, Pedro A. Vázquez, Christophe Louste (Départ Institut PPRIME, Université de Poitiers, France) – *Numerical investigation of electroconvection induced by strong induced unipolar injection between two rotating coaxial cylinders.*
- G10** Justin D'Antonio, Bibash Kc, Marius Chirita, and Adrian Ieta (SUNY Oswego) - *Assessing EHD thrust using rotational motion*
- G11** Sachin Modh, Christophe Louste, Philippe Traoré (Université de Poitiers) - *Parametric study of an electrohydrodynamic conduction pump with a washer-type geometry.*
- G12** Koichi Kurita (Kindai University) - *Detection method for contact electrification based on electrostatic induction.*
- G13** Toshiyuki Sugimoto, Takuya Aoki (Yamagata University) - *Measurement of wettability for polymer materials using non-contact surface resistivity measurement*
- G14** J. Roine, M. Murtomaa, J. Salonen (University of Turku) - *Influence of electrospaying parameters on microcapsule properties in dual-capillary electroencapsulation - a case study using the Taguchi robust design method*
- G15** Outi Alanen, Matti Murtomaa, Jarno Salonen (University of Turku) - *Thermosensitivity of coaxial electrospun PEG-HPMC/tricaprin fibers*
- G16** Abdeldjalil Reguig<sup>1</sup>, Abdelber Bendaoud<sup>1</sup>, Peyman Dordizadeh<sup>2</sup>, Lucien Dascalescu<sup>3</sup> (<sup>1</sup>APELEC Laboratory, Djillali Liabes University of Sidi Bel-Abbes, Algeria, <sup>2</sup>Department of Electrical and Computer Engineering, Western University, London, Ontario, Canada, <sup>3</sup>PPRIME Institute, University of Poitiers – IUT, Angoulême, France) – *Experimental and numerical study of corona discharge generated by a wire-type dual electrode located between parallel grounded strips.*
- G17** Cynthia Montanez, Andy Quan, Jennifer Lopez, Sam White, Keith Forward (Cal Poly Pomona) – *Triboelectrification of insulators in low humidity environments.*
- G18** B. Vail Cook, Luke Gibson, Matthew Galazzo, Joshua Yamaguchi, Keith Forward (Cal Poly Pomona) - *Development of ceramic metal oxide membranes by means of reactive electrospinning.*

**Wednesday, June 15, 2016****Session H: Electrospinning****Wednesday, June 15, 8:00 AM***Chair: Sheshakamal Jayaram (University of Waterloo)*

- 8:00 – 8:30 AM**      **H1**    **Keynote Lecture:** George G Chase (University of Akron) - *Applications of electrical fields in chemical processes.*
- 8:30 – 8:45**        **H2**    Keith M. Forward (Cal Poly Pomona) - *Role of heat and mass transfer in electrospinning.*
- 8:45 – 9:00**        **H3**    Chitral J. Angamma, Ryan J. Gerakopoulos, Shesha H. Jayaram (NanoQuan Inc) - *Rheological, electrical and thermal properties of enhanced epoxy/silica composites.*
- 9:00 – 9:15**        **H4**    Yuguang Ge, David Rodriguez, Araz Boghazian, Chris W. Draper, Jose D. Jimenez, Menooa Zohrabian, Lihua Zhang and Yong X. Gan (Cal Poly Pomona) - *Hyperthermia property of aligned composite nanofibers.*
- 9:15 – 9:30**        **H5**    Jeremy M. Mortrud, James M. Roska, Patrick S. Hogan, Harjot S. Gill, Gevork Kazaryan, and Keith M. Forward (Cal Poly Pomona) - *Free surface electrospun polyvinylidene fluoride membranes for direct contact membrane distillation.*
- 9:30 – 9:45 AM**      **Coffee Break**

**Session I: Biological and medical applications****Wednesday, June 15, 9:45 AM***Chair: Allen L. Garner (Purdue University)*

- 9:45 – 10:00 AM**    **I1**    Anand Vadlamani, Jie Zhuang, Juergen F. Kolb, Allen L. Garner (School of Nuclear Engineering, Purdue University) - *Biological cell dielectric property variation with temperature.*
- 10:00 – 10:15**      **I2**    Anh Lam, Jeremy Lewis, Grace Machado, Michelle Miner, Cuong Nguyen and Keith M. Forward (Cal Poly Pomona) - *Free Surface Electrospinning of Microemulsions Containing Vitamin E.*
- 10:15 – 10:30**      **I3**    Vishak Raman, Vishveswaran Jothi, Ignacio Camarillo, and Raji Sundararajan (Purdue University) - *Electroporation-based enhanced anticancer effect of Veliparib on triple negative breast cancer cells.*
- 10:30 – 10:45**      **I4**    Kazuo Shimizu, An Nhat Tran, Kristof Jaroslav, Marius Gabriel Blajan (Shizuoka University) - *Investigation of atmospheric microplasma for improving skin permeability.*
- 10:45 – 11:00**      **I5**    Hak-Joon Kim<sup>1</sup>, Bangwoo Han<sup>1</sup>, Chang-gyu Woo<sup>1</sup>, Yong-Jin Kim<sup>1</sup>, Gi-Taek Lim<sup>1,2</sup> and Weon Gyu Shin<sup>2</sup> (<sup>1</sup>Korea Institute of Machinery and Materials, <sup>2</sup>Chungnam National University) - *Air cleaning performance of a novel electrostatic air purifier using activated carbon fiber filter for passenger cars.*
- 11:00 – 11:15 AM**    **Session Break**

**Session J: Contact charging and triboelectric effects II****Wednesday, June 15, 11:15 AM***Chair: Keith M. Forward (Cal Poly Pomona)*

- 11:15 – 11:30 AM**    **J1**    Isaac Greber and John C. Angus (Case Western Reserve University) - *Parametric study of size and surface effects on surface concentrations of thermally excited charge carriers.*
- 11:30 – 11:45**      **J2**    Ladislav Konopka, Simon Jantaa, Juraj Kosek (University of Chemistry and Technology Prague) - *Triboelectric charging of polyethylene powders: experimental and modeling study.*
- 11:45 – 12:00**      **J3**    Fahad Chowdhury, Andrew Sowinski, Alberto Passalacqua and Poupak Mehrani (University of Ottawa) - *CFD simulation of charge generation due to single particle contact*
- 12:00 – 12:15**      **J4**    Victor Lee and Heinrich M. Jaeger (University of Chicago) - *Using acoustic levitation to study tribocharging of sub-millimeter particles.*
- 12:15 – 1:30 PM**      **Lunch**

**Session K: Electrically-induced flows and electrokinetics III****Wednesday, June 15, 1:30 PM***Chair: Adrian Ieta (SUNY Oswego)*

- 1:30 – 2:00 PM**      **K1**    **Keynote Lecture:** Eric Moreau and Nicolas Benard (University of Poitiers) - *Electrohydrodynamic phenomena in atmospheric discharges : application to airflow control by plasma actuators.*
- 2:00 – 2:15**        **K2**    David Crowell, Annie Bernard, Carlos Coutinho, Alecia Driffin, Ryan Eriksen, Mark Horenstein, and Malay Mazumder (Boston University) - *Electrostatic charging of particles by electrodynamic screens.*
- 2:15 – 2:30**        **K3**    Paul Leblanc, Thierry Paillat, Juan Martin Cabaleiro and Gérard Touchard (University of Poitiers) - *Flow electrification investigated under the effect of the wall shearing stress.*
- 2:30 – 2:45**        **K4**    Yoshio Higashiyama, Chou Tae Yeong and Toshiyuki Sugimoto (Yamagata University) - *Enhancement of liquid flow in a water droplet located on a super-hydrophobic surface during resonant vibration by unbalanced-electric field.*
- 2:45 – 3:00 PM**      **Coffee Break**

**Session L: Gas discharges and micro-plasmas I****Wednesday, June 15, 3:00 PM***Chair: Raji Sundararajan (Purdue University)*

- 3:00 – 3:15 PM**      **L1**    Kazuo Shimizu, Saho Muramatsu, Kristof Jaroslav and Marius Blajan (National University Corporation Shizuoka University) - *Analysis of hexadecane decomposition by atmospheric microplasma*
- 3:15 – 3:30**        **L2**    Yunxiao Cao, Zhiqiang Wang, Jinjun Wang, Guofeng Li (Dalian University of Technology) - *Experimental study on magnesite and mineral components electrostatic separation methods*
- 3:30 – 3:45**        **L3**    M. Okubo<sup>1</sup>, H. Yamada<sup>2</sup>, K. Yoshida<sup>1</sup>, T. Kuroki<sup>1</sup> (<sup>1</sup>Osaka Prefecture University, <sup>2</sup>Railways Dept. Kanto District Transport Bureau Ministry of Land, Infrastructure, Transport, and Tourism) - *Simultaneous reduction of diesel particulate and NO<sub>x</sub> using catalysis combined nonthermal plasma reactor*
- 3:45 – 4:00 PM**      **Session Break**

**Session M: Contact charging and triboelectric effects III****Wednesday, June 15, 4:00 PM***Chair: Victor Lee (University of Chicago)*

- 4:00 – 4:15 PM**      **M1**    Joshua S. Méndez Harper, Josef Dufek (Georgia Institute of Technology) - *The effects of granular dynamics on the triboelectric charging of volcanic ash: Experiments and numerical simulations*
- 4:15 – 4:30**        **M2**    T. A. L. Burgo, and F. Galembeck (University of Campinas) - *The Role of mechanistic and interfacial events in electrified liquids and aerosols*
- 4:30 – 4:45**        **M3**    Juan-Martin Cabaleiro<sup>1</sup>, Thierry Paillat<sup>2</sup>, Guillermo Artana<sup>1</sup>, Gerard Touchard<sup>2</sup> (<sup>1</sup>Laboratorio de Fluidodinámica (LFD), Facultad de Ingeniería, Universidad de Buenos Aires, Argentina <sup>2</sup>Electrofluidodynamic group, Pprime Institute, University of Poitiers) - *Flow electrification in rectangular channels - Comparison of different theoretical models*
- 4:45 – 5:00**        **M4**    Andrew E. Wang, Daniel J. Lacks, and R. Mohan Sankaran (Case Western Reserve University) - *Triboelectric charging studies of single crystal insulators*
- 5:00 – 5:15**        **M5**    Shiquan Lin, Shiyu Hu, Tianmin Shao (Tsinghua University) - *A method to measure the surface state distribution of insulators by KPFM*

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**Thursday, June 16, 2016**
**Session N: Gas discharges and micro-plasmas II****Thursday, June 16, 8:00 AM**

Chair: TBA

- 8:00 – 8:30 AM**      **N1**    **Keynote Lecture:** Tomoyuki Kuroki (Osaka Prefecture University) - *Nanoparticle removal and exhaust gas cleaning using a gas-liquid interfacial nonthermal plasma*
- 8:30 – 8:45**      **N2**    N. Manivannan, G. Agozzino, W. Balachandran, M. Abbod, D. Brennen and F. Di Natale (Brunel University) - *NO Abatement using microwave micro-plasma generated using granular activated carbon*
- 8:45 – 9:00**      **N3**    Abbas Semnani, Sergey Macheret, and Dimitrios Peroulis (Purdue University) - *Plasma-based reconfigurable RF electronics*
- 9:00 – 9:15**      **N4**    Atsushi Katatani<sup>1</sup>, Hiroshi Hosono<sup>1</sup>, Hikaru Murata<sup>1</sup>, Yuki Iizuka<sup>1</sup>, Hiroshi Yahata<sup>1</sup> and Akira Mizuno<sup>2</sup> (<sup>1</sup>Panasonic Ecology Systems Co.,Ltd., <sup>2</sup>Toyohashi University of Technology) - *Electrostatic precipitator using weak corona discharge generated by carbon fiber flocking electrodes*
- 9:15 – 9:30**      **N5**    Rui Xu, Paul Rumbach, David B. Go (University of Notre Dame) - *Electroreduction of CO<sub>2</sub> (aq) with an atmospheric-pressure plasma Cathode*
- 9:30 – 9:45 AM**      **Coffee Break**

**Session O: Measurements and instrumentation****Thursday, June 16, 9:45 AM**

Chair: Kelly Robinson (Electrostatic Answers)

- 9:45 – 10:00 AM**      **O1**    Sean Heintzelman (Army Research Laboratory) - *Self-adjusting Quasi-static Electric-field Sensor*
- 10:00 – 10:15**      **O2**    Dipl.-Ing. Hartmut Berndt (B.E.STAT European ESD competence centre) – *Electrostatics discharge (ESD): Sources of electrostatic charge in a production line (SMT); measurement of chargeability*
- 10:15 – 10:30**      **O3**    Janne Peltonen, Matti Murtomaa, Jarno Salonen (University of Turku) - *Solving the radius and position of a passing charged sphere using a coaxial probe*
- 10:30 – 10:45**      **O4**    Arnold Steinman (Electronics Workshop) - *Mitigating electrostatic effects on manufacturing processes and measurement accuracy*
- 10:45 – 11:00 AM**      **O5**    N. K. Kishore and Gururaj.S.Punekar (IIT Kharapur) - *On designing of a high voltage standard capacitor using a semi-analytical field computation method*
- 11:00 – 11:15 AM**      **Session Break**

**Session P: Electrically-induced flows and electrokinetics IV****Thursday, June 16, 11:15 AM**

Chair: TBA

- 11:15 – 11:30 AM**      **P1**    Albert Gazaryan, Andrei Sitnikov, Vladimir Chirkov, Yury Stishkov (Saint Petersburg State University) - *A method for estimation of functional dependence of injection charge formation on electric field strength.*
- 11:30 – 11:45**      **P2**    Jian Wu, Philippe Traor, Perdo A. Vázquez, Alberto T. Pérez (GeoResources Lab, Université de Lorraine) – *Numerical simulation of electro-thermo-convection in a dielectric liquid lying between two eccentric cylinders.*
- 11:45 – 12:00**      **P3**    Z. Ramshani, Michael J. Johnson, Massood Z. Atashbar, David B. Go (University of Notre Dame/Western Michigan University) - *A self-pumping, low-voltage piezoelectrically-driven electrospray.*
- 12:00 – 12:15**      **P4**    Katsuo Sakai (Electrostatic generator Laboratory) - *A second trial for the new electrostatic generator.*
- 12:15 – 1:30 PM**      **Lunch**



**Session Q: Gas discharges and micro-plasmas III****Thursday, June 16, 1:30 PM***Chair: Paul Rumbach (University of Notre Dame)*

- 1:30 – 2:00 PM**      **Q1**    **Keynote Lecture:** Kazunori Takashima, Hirofumi Kurita, Hachiro Yasuda, and Akira Mizuno (Toyoashi University of Technology) - *Application of atmospheric pressure plasma in environmental remediation and medicine.*
- 2:00 – 2:15**        **Q2**    Takashi Miura (National Institute of Occupational Safety and Health, Japan) - *Effect of gas species and pressures on relaxation of triboelectricity due to microgap discharge.*
- 2:15 – 2:30**        **Q3**    Peyman Dordizadeh, K Adamiak, GSP Castle (University of Western Ontario) - *Investigation of the impact of the photoionization on negative and positive corona discharges.*
- 2:30 – 2:45 PM**      **Coffee Break**

**Session R: Breakdown phenomena and discharges II****Thursday, June 16, 2:45 PM***Chair: Maciej A. Noras (UNC Charlotte)*

- 2:45 – 3:00 PM**      **R1**    Amanda M. Loveless Allen L. Garner (Purdue University) - *Predicting breakdown voltage for microscale and nanoscale gaps as a function of pressure.*
- 3:00 – 3:15**        **R2**    A. Ohsawa (National Institute of Occupational Safety and Health, Japan) - *A kinetic model of spark discharge breakdown.*
- 3:15 – 3:30**        **R3**    Shakthi Prasad D. and Subba Reddy B. (Indian Institute of Science, Bangalore) - *Study on corona activity using image processing approach.*

**Session S: Safety and hazards****Thursday, June 16, 3:30 PM***Chair: Maciej A. Noras (UNC Charlotte)*

- 3:30 – 3:45 PM**      **S1**    Kelly Robinson (Electrostatic Answers) - *Assessing passive static dissipators*
- 3:45 – 4:00**        **S2**    Swaroop Kishan Singh, G S Puneekar, N K Kishore (IIT Kharagpur) - *Electric field distribution in an EHV substation: A Case study.*
- 4:00 – 4:15 AM**      **Session Break**

**Session T: Electrically-induced flows and electrokinetics V****Thursday, June 16, 4:15 PM***Chair: Keith M. Forward (Cal Poly Pomona)*

- 4:15 – 4:30 PM**      **T1**    Hak-Joon Kim, Bangwoo Han, Chang-Gyu Woo, Yong-Jin Kim (Korea Institute of Machinery and Materials) - *Electrical and particle collection performance of a novel ESP with indirect charging method for corrosive and explosive gas cleaning.*
- 4:30 – 4:45**        **T2**    Michal Talmor, Lei Yang, Thomas R. Larkin, Omesh K. Kamat, Tobin J. Dancy, Jamal Seyed-Yagoobi (Worcester Polytechnic Institute) – *Flow Distribution control in microscale via electrohydrodynamic conduction pumping.*
- 4:45 – 5:00**        **T3**    Ishnath Pathak (I.I.T. Guwahati) - *A concept of absolute polarization in dielectrics*

- 6:00 – 9:00 PM**      **Conference Banquet, Recognitions and Awards**