Proceedings of the 2016 Electrostatics Joint Conference
June 13-16, 2016
Purdue University
Technical Program

Conference Chair: **Rajeswari Sundararajan**, Purdue University
Technical Program Chair: **Keith Forward**, Cal Poly Pomona

A. Contact Charging and Triboelectric Effects I

A1. **Keynote Lecture: Heinrick,** Contact charging in a single component systems.

A2. **Yuki Osada**, Charge accumulation process of a single ceramic particle due to successive impacts.

A3. **Dylan Carter, Christine Hartzell,** A model of granular tribocharging for dielectric mixtures with continuous size distributions.

A4. **Xiaozhou Shen, Andrew W. Wang, R. Mohan Sankaran, Daniel J. Lacks**, Contact charging between single-crystal oxides from first principles electronic structure calculations and experiments.

A5. **Sara Messal, Abdelkader Mekhaleff, Karim Medles, Thami Zeghloul and Lucian Dascalesce,** Factors that influence the efficiency of a tribo-aero-electrostatic separator for finely-grinded matter.

B. Atmospheric and Space Applications

B1. **C.I. Calle and P.J. Mackey,** The electrostatic environment at the international space station.

B2. **M. Reznikov**, Further progress in the electrostatic nucleation of water vapor.

B3. **Hiroyuki Kawamoto, Megumi Kato and Masato Adachi,** Electrostatic transport of regolith particles for sample return mission from asteroids.

B4. **Shubho Banerjee, Mason Levy, McKenna Davis**, Electrostatic force between two conducting equal-sized charged spheres.

B5. **Masato Adachi, Hirofumi Moroka, Hiroyuki Kawamoto, Sachiko Wakabayashi, Takeshi Hoshino,** Particle-size sorting system of lunar regolith using electrostatic traveling wave.

C. Materials synthesis, processing, and behavior

C1. **Prakash Kodali,** Use of flat ribbon like electrode geometry to pole PVDF piezoelectrics in solution processing.

C2. **Chitral J Angammana, Ryan J Gerakopulos, Shesha H Jayaram**, Mass production of nano-composites using electrospinning.

C3. **Gontran Richard, Abdelhady Ragab Salama, Karim Medles, Cedric Lubat, Seddik Touhami, Lucian Dascalescu**, Electrostatic separation of two types of copper wires from electric cable wastes.

D. Electrically-induced flows and electrokinetics I

D1. **Rajorshi Paul, Guttapalli Naveen Kumar, Shubhadeep Mandal, N.K. Kishore , Saurav Pramanik, Suman Chakraborty,** Experimental investigation on the electrohydrodynamic motion and shape deformation of a sedimenting drop under uniform alternating electric field.
D2. **V.A. Chirkov, E.S. Rodikova, Yu.K. Stishkov**, The dependence of the efficiency of electrohydrodynamic heat exchanger on the electric conductivity of liquid.
D3. **M. Talmor, L. Yang, T. Larkin, O. Kamat, T. Dancy, J. Seyed-Yagoobi**, Flow distribution control in micro-scale via electrohydrodynamic conduction pumping.
D4. **Clément Gouriou, Christophe Louste and Philippe Traoré**, Influence of seeding particle type on velocity measurements in silicone oil under high voltage.
D4. **Keiichiro Yoshida and Ryusuke Sakamoto**, Flow generation in a narrow space using dielectric barrier discharge.

E. Breakdown phenomena and discharges I

E1. **Michael D. Hogue, Jayanta Kapat, Kareem Ahmed, Rachel E. Cox, Jennifer G. Wilson, Luz M. Calle, Jaysen Mulligan**, Dynamic gas flow effects on the ESD of aerospace vehicle surfaces.
E2. **Zahirul Hasan Khan**, The development of modern discharge electrode in electrostatic precipitation: A systematic review.
E3. **Rahul Chakraborty and Subba Reddy B**, Performance of silicone rubber insulators under thermal and electrical stress.
E4. **Alok Ranjan Verma, Subba Reddy B**,Tracking and erosion resistance of silicon rubber samples subjected to environmental conditions.

F. Electrically-induced flows and electrokinetics II

F1. **Kang Luo, Jian Wu, Hong-Liang Yi, He-Ping Tan**,A lattice Boltzmann method for electric field-space charge coupled problems
F2. **S. Modh, C. Gouriou, R. Sosa, M. Daaboul, P. Traore, C. Louste**, Electroconvective cavity flows produced by a cylinder/plane electrode geometry
F3. **Adrian Ieta, Justin D'Antonio, Marius Chirita**, Experimental characterization of EHD thrust from pin emitters
F4. **Robert L. Garris, Maciej A. Noras**, Manipulation of electrosprayed dielectric fluids using electric fields

G. Poster Session and Demonstrations
G1. **W. Mike Arnold**,Low-conductivity, high permittivity media for electromanipulation.
G2. **Meral Birbir, Eda Yazici, Pinar Caglayan, Yasar Birbir, Richard Alan Goebel**, Electric current and antibacterial agent application to inactivate antibiotic resistant enterobactericeae
G3. **Amanda M. Loveless, and Allen L. Garne**r, Calculating field enhancement factor using the boundary element method.
G4. **F.J. Durán-Olivencia and Philippe Traoré**, A Consistent Fluid Approach (CFA) to model electrical discharges.
G5. **John Beach, Bridget Chartrand, and Hugh Gallagher,** Quantitative Determination of the Breakdown Field of Air from Van de Graaff Generator Discharge.
G6. **Abdelkader Mekhalef, Sara Messal, Karim Medles, Thami Zeghloul, Lucian Dascalescu**, A propeller-type tribocharger for granular plastics mixtures

G7. **Yoshiaki Ota, Tatsushi Matsuyama, Junichi Ida, Hideo Yamamoto**, Charge relaxation property of PFA films in contact charging.
G8. **P.A.Vázquez, A.T. Pérez, P. Traoré, J. Wu**, Non-linear numerical study of 2D electroconvection between parallel plates.
G9. **Philippe Traoré, Jian Wu, Alberto T. Pérez, Pédro A. Vázquez, Christophe Louste**, 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**, Assessing EHD thrust using rotational motion
G11. **Sachin Modh, Christophe Louste, Philippe Traoré**, Parametric study of an electrohydrodynamic conduction pump with a washer-type geometry.
G12. **Koichi Kurita**, Detection method for contact electrification based on electrostatic induction.
G13. **Toshiyuki Sugimoto, Takuya Aok**i,Measurement of wettability for polymer materials using non-contact surface resistivity measurement.
G14. **J. Roine, M. Murtomaa, J. Salonen**, Influence of electrospraying parameters on microcapsule properties in dual-capillary electroencapsulation - a case study using the Taguchi robust design method.
G15. **Outi Alanen, Matti Murtomaa, Jarno Salonen**, Thermosensitivity of coaxial electrospun PEG-HPMC/tricaprin fibers.
G16. **Abdeldjalil Reguig, Abdelber Bendaoud, Peyman Dordizadeh, Lucien Dascalescu**, 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**, Triboelectrification of insulators in low humidity environments.
G18. **B. Vail Cook, Luke Gibson, Matthew Galazzo, Joshua Yamaguchi, Keith Forward**, Development of ceramic metal oxide membranes by means of reactive electrospinning.
G19. **G. Sivakumar, Gowri Sree, Viswanathan Jothi, and Raji Sundararajn**, Application of high voltage pulse for mushroom cultivation

G20. **Anand Valdlamani, Jie Zhuang, Juergen F. Kolb, Allen L. Garner,** Biological cell dielectric property variation with temperature.

H. Electrospinning

H1. **George G Chase**, Applications of electrical fields in chemical processes.
H2. **Keith M. Forward**, Role of heat and mass transfer in electrospinning.
H3. **Chitral J. Angammana, Ryan J. Gerakopulos, Shesha H. Jayaram**, Rheological, electrical and thermal properties of enhanced epoxy/silica composites.
H4. **Yuguang Ge, David Rodriguez, Araz Boghozian, Chris W. Draper, Jose D. Jimenez, Menooa Zohrabian**, **Lihua Zhang and Yong X. Gan**, Hyperthermia property of aligned composite nanofibers.
H5. **Jeremy M. Mortrud, James M. Roska, Patrick S. Hogan, Harjot S. Gill, Gevork Kazaryan, and Keith M. Forward**, Free surface electrospun polyvinylidene fluoride membranes for direct contact membrane distillation.

I. Biological and medical applications

I1. Moved to different session

I2. **Anh Lam, Jeremy Lewis, Grace Machado, Michelle Miner, Cuong Nguyen and Keith M. Forward**, Free Surface Electrospinning of Microemulsions Containing Vitamin E.

I3. **Vishak Raman, Vishveswaran Jothi, Ignacio Camarillo, and Raji Sundararajan**, Electroporation-based enhanced anticancer effect of Veliparib on triple negative breast cancer cells.

I4. **Kazuo Shimizu, An Nhat Tran, Kristof Jaroslav, Marius Gabriel Blajan**, Investigation of atmospheric microplasma for improving skin permeability.

I5. **Hak-Joon Kim, Bangwoo Han, Chang-gyu Woo, Yong-Jin Kim, Gi-Taek Lim and Weon Gyu Shin**, Air cleaning performance of a novel electrostatic air purifier using activated carbon fiber filter for passenger cars.

J. Contact charging and triboelectric effects II

J1. **Isaac Greber and John C. Angus**, Parametric study of size and surface effects on surface concentrations of thermally excited charge carriers.

J2. **Ladislav Konopka, Simon Jantaa, Juraj Kosek**, Triboelectric charging of polyethylene powders: experimental and modeling study.

J3. **Fahad Chowdhury, Andrew Sowinski, Alberto Passalacqua and Poupak Mehrani**, CFD simulation of charge generation due to single particle contact

J4. **Victor Lee and Heinrich M. Jaeger**, Using acoustic levitation to study tribocharging of sub-millimeter particles.

K. Electrically-induced flows and electrokinetics III

K1. **Eric Moreau and Nicolas Benard**, Electrohydrodynamic phenomena in atmospheric discharges : application to airflow control by plasma actuators.

K2. **David Crowell, Annie Bernard, Carlos Coutinho, Alecia Driffin, Ryan Eriksen, Mark Horenstein, and Malay Mazumde**r, Electrostatic charging of particles by electrodynamic screens.

K3. **Paul Leblanc, Thierry Paillat, Juan Martin Cabaleiro and Gérard Touchard**, Flow electrification investigated under the effect of the wall shearing stress.

K4.**Yoshio Higashiyama, Chou Tae Yeong and Toshiyuki Sugimoto**, Enhancement of liquid flow in a water droplet located on a super-hydrophobic surface during resonant vibration by unbalanced-electric field.

L. Gas discharges and micro-plasmas I

L1. **Kazuo Shimizu, Saho Muramatsu, Kristof Jaroslav and Marius Blajan**, Analysis of hexadecane decomposition by atmospheric microplasma.

L2. **Yunxiao Cao, Zhiqiang Wang, Jinjun Wang, Guofeng Li**, Experimental study on magnesite and mineral components electrostatic separation methods.

L3. **M. Okubo, H. Yamada, K. Yoshida, T. Kuroki**, Simultaneous reduction of diesel particulate and NOX using catalysis combined nonthermal plasma reactor.

M. Contact charging and triboelectric effects III

M1. **Joshua S. Méndez Harper, Josef Dufek**, The effects of granular dynamics on the triboelectric charging of volcanic ash: Experiments and numerical simulations.

M2. **T. A. L. Burgo, and F. Galembeck**, The Role of mechanistic and interfacial events in electrified liquids and aerosols.
M3. **Juan-Martin Cabaleiro, Thierry Paillat, Guillermo Artana, Gerard Touchard**,Flow electrification in rectangular channels - Comparison of different theoretical models.
M4. **Andrew E. Wang, Daniel J. Lacks, and R. Mohan Sankaran**, Triboelectric charging studies of single crystal insulators.
M5. **Shiquan Lin, Shiyu Hu, Tianmin Shao**, A method to measure the surface state distribution of insulators by KPFM.

N. Gas discharges and micro-plasmas II

N1. **Tomoyuki Kuroki,** Nanoparticle removal and exhaust gas cleaning using a gas-liquid interfacial nonthermal plasma.
N2. **N. Manivannan, G. Agozzino, W. Balachandran, M. Abbod, D. Brennen and F. Di Natale**, NO Abatement using microwave micro-plasma generated using granular activated carbon.
N3. **Abbas Semnani, Sergey Macheret, and Dimitrios Peroulis**,Plasma-based reconfigurable RF electronics.
N4. **Atsushi Katatani, Hiroshi Hosono, Hikaru Murata, Yuki Iizuka, Hiroshi Yahata and Akira Mizuno**, Electrostatic precipitator using weak corona discharge generated by carbon fiber flocking electrodes.
N5. **Rui Xu, Paul Rumbach, David B. Go**, Electroreduction of CO2 (aq) with an atmospheric-pressure plasma cathode.

O. Measurements and instrumentation

O1. **Sean Heintzelman**, Self-adjusting Quasi-static Electric-field Sensor.
O2. **Dipl.-Ing. Hartmut Berndt**, Electrostatics discharge (ESD): Sources of electrostatic charge in a production line (SMT); measurement of chargebility.
O3. **Janne Peltonen, Matti Murtomaa, Jarno Salonen**,Solving the radius and position of a passing charged sphere using a coaxial probe.
O4. **Arnold Steinman**, Mitigating electrostatic effects on manufacturing processes and measurement accuracy.
O5. **N. K. Kishore and Gururaj S. Punekar**, On designing of a high voltage standard capacitor using a semi-analytical field computation method.

P. Electrically-induced flows and electrokinetics IV

P1. **Albert Gazaryan, Andrei Sitnikov, Vladimir Chirkov, Yury Stishkov**, A method for estimation of functional dependence of injection charge formation on electric field strength.
P2. **Jian Wu, Philippe Traor, Perdo A. Vázquez, Alberto T. Pérez**, Numerical simulation of electro-thermo-convection in a dielectric liquid lying between two between two eccentric cylinders.
P3. **Z. Ramshani, Michael J. Johnson, Massood Z. Atashbar, David B. Go**, A self-pumping, low-voltage piezoelectricallydriven electrospray.
P4. **Katsuo Sakai**, Asecond trial for the new electrostatic generator.

Q. Gas discharges and micro-plasmas III

Q1. **Kazunori Takashima, Hirofumi Kurita, Hachiro Yasuda, and Akira Mizuno**,Application of atmospheric pressure plasma in environmental remediation and medicine.
Q2. **Takashi Miura**, Effect of gas species and pressures on relaxation of triboelectricity due to microgap discharge.
Q3. **Peyman Dordizadeh, K Adamiak, GSP Castle**, Investigation of the impact of the photoionization on negative and positive corona discharges.

R. Breakdown phenomena and discharges II

R1. **Amanda M. Loveless Allen L. Garner**, Predicting breakdown voltage for microscale and nanoscale gaps as a function of pressure.
R2. **A. Ohsawa**, Akinetic model of spark discharge breakdown.
R3. **Shakthi Prasad D. and Subba Reddy B.**, Study on corona activity using image processing approach.

S. Safety and hazards

S1. **Kelly Robinson,** Assessing passive static dissipators
S2. **Swaroop Kishan Singh, G S Punekar, N K Kishore**, Electric field distribution in an EHV substation: A Case study.

T. Electrically-induced flows and electrokinetics V
T1. **Hak-Joon Kim, Bangwoo Han, Chang-Gyu Woo, Yong-Jin Kim**, Electrical and particle collection performance of an novel ESP with indirect charging method for corrosive and explosive gas cleaning.
T2. **Michal Talmor, Lei Yang, Thomas R. Larkin, Omesh K. Kamat, Tobin J. Dancy, Jamal Seyed-Yagoobi**, Flow Distribution control in microscale via electrohydrodynamic conduction pumping.
T3. **Ishnath Pathak**,
A concept of absolute polarization in dielectrics