



SCTC2018: THE 15TH SPACECRAFT CHARGING TECHNOLOGY CONFERENCE

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Monday, June 25th

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09:00 [Hiroshi Takeda](#)

**Opening Remark by the President of Kobe University** ([abstract](#))

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[Mengu Cho](#), [Hiroaki Miyake](#) and [Tutomu Nagatsuma](#)

**Spacecraft Charging Study in Japan** ([abstract](#))

09:35 [Dale Ferguson](#)

**USA Overview** ([abstract](#))

10:00 [Vladimir Saenko](#)

**Present day status of spacecraft charging investigations in Russia** ([abstract](#))

10:25-10:40 Coffee Break

10:40-11:55 Session 2: Plenary Talks

10:40 [David Rodgers](#), [Fabrice Cipriani](#) and [Denis Payan](#)

**Overview of activities Europe-wide and in France** ([abstract](#))

11:05 [Jianguo Huang](#), [Weiquan Feng](#) and [Lixiang Jiang](#)

**Status of Spacecraft Charging Study in China** ([abstract](#))

11:30 [Dr.-Ing. Suryakant Gupta](#)

**An Overview of Spacecraft Charging Research in India: Spacecraft Plasma Interaction Experiments—SPIX—III** ([abstract](#))

11:55-12:55 Lunch Break

12:55-14:55 Session 3: Poster & Mini-oral Session A

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12:55 [Juan Rodriguez](#), [Brian Kress](#), [Athanasios Boudouridis](#) and [Terrance Onsager](#)

**P-A-2: Observations of Frame Charging by the MPS-LO Instrument on GOES-16** ([abstract](#))

12:55 [Insoo Jun](#), [Henry Garrett](#), [Timothy Cassidy](#), [Wousik Kim](#) and [Logan Dougherty](#)

**P-A-3: Updating the Europa Spacecraft Charging Environment** ([abstract](#))

12:55 [Jordan Maxwell](#), [Ryan Hoffmann](#) and [Hanspeter Schaub](#)

**P-A-4: Low Earth Orbit Plasma Wake Shaping and Applications to On-Orbit Proximity Operations ( [abstract](#) )**

12:55 [Janet Green](#), [Justin Likar](#), [Yuri Shprints](#), [Rick Quinn](#), [Paul Whelan](#), [Nils Reker](#), [Pamela Puhl-Quinn](#), [Stu Huston](#), [Adam Kellerman](#) and [Teal Harada](#)

**P-A-5: Tools for understanding on-orbit satellite anomalies ( [abstract](#) )**

12:55 [Xuejie Meng](#), [Dong Chen](#), [Liqin Shi](#), [Siqing Liu](#) and [Shanqiang Chen](#)

**P-A-6: Statistical study of surface-charging events in aurora region over one solar cycle ( [abstract](#) )**

12:55 [Ryota Kawachi](#), [Tsuyoshi Teraoka](#), [Masao Nakamura](#), [Tutomu Nagatsuma](#) and [Mamoru Ishii](#)

**P-A-7: Development of a real-time risk estimation method of spacecraft surface charging ( [abstract](#) )**

12:55 [Nizam Ahmad](#), [Hideyuki Usui](#) and [Yohei Miyake](#)

**P-A-8: The Impact of Auroral Electron Streams on LEO Polar Satellites as a Source of Charging ( [abstract](#) )**

12:55 [Tsuyoshi Teraoka](#), [Ryota Kawachi](#), [Yuuichirou Watanabe](#) and [Masao Nakamura](#)

**P-A-9: Statistical analysis of spacecraft charging environment in the medium earth orbit ( [abstract](#) )**

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**P-A-12: The Development of Space Instrumentation for In-situ Measurements of the LEO Environment and Test Facilities for Induced, High-frequency Plasma Instabilities ( [abstract](#) )**

12:55 [Jean-Michel Siguier](#)

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**P-A-15: Studying interaction of hot magnetospheric plasma with spacecraft solar array protective coating ( [abstract](#) )**

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**P-A-19: Result of plasma measurement in HTV during ISS attached phase ( [abstract](#) )**

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- 12:55 [Carl Reed](#) and [Richard Briët](#)  
**P-A-29: A Possible Cause of Dielectric Degradation in On-Orbit Solar Panels ( [abstract](#) )**
- 12:55 [Tristan Gouriou](#), [Maxime Ribiere](#), [Damien Aubert](#), [Mohammed Yousfi](#), [Olivier Eichwald](#), [Christophe Delbos](#), [Alain Garrigues](#) and [Gilles Assaillit](#)  
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- 12:55 [Zhenlong Zhang](#)  
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**P-A-33: Internal Electrostatic Discharge (IESD) Design Guidelines for Jovian Missions ( [abstract](#) )**
- 12:55 [Rémi Pacaud](#), [Thierry Paulmier](#), [Pierre Sarrailh](#), [Denis Payan](#), [Keith Ryden](#), [Alex Hands](#) and [David Rodgers](#)

**P-A-34: Study of internal charging of polymers through numerical and experimental analyses - Comparison of different space used numerical tools ( [abstract](#) )**

12:55 [Benjamin Jeanty-Ruard](#), [Pierre Sarrailh](#), [Denis Payan](#), [Arnaud Trouche](#) and [Julien Forest](#)

**P-A-35: Internal charging analysis of a realistic experiment with a dedicated modelling chain ( [abstract](#) )**

12:55 [Hansheng Zheng](#), [Zhenlong Zhang](#) and [Jianwei Han](#)

**P-A-36: Experimental study of deep dielectric discharging of polymer under energetic electron irradiation ( [abstract](#) )**

12:55 [Colby Lemon](#), [James Roeder](#) and [Joseph Fennell](#)

**P-A-37: Long Term Charge Buildup and Dissipation in Spacecraft Materials ( [abstract](#) )**

12:55 [Kohei Kubo](#), [Shugo Yoshida](#), [Hiroaki Miyake](#) and [Yasuhiro Tanaka](#)

**P-A-38: Characteristics of electron - hole pairs generation in fluorinated polymer irradiated by an electron ( [abstract](#) )**

12:55 [Ushio Chiba](#), [Masahito Miyoshi](#), [Hiroaki Miyake](#) and [Yasuhiro Tanaka](#)

**P-A-39: Analysis of deterioration phenomena on fluorinated insulating material irradiated by proton and electron ( [abstract](#) )**

#### 14:55-16:35 Session 4: Space Weather & Charging

14:55 [Kazushi Asamura](#), [Yasuko Shibano](#) and [Yu Miyazawa](#)

**\*INVITED TALK: Suppression of local surface charging on the ERG (Arase) satellite ( [abstract](#) )**

15:20 [Juan Rodriguez](#), [Athanasios Boudouridis](#), [Brian Kress](#) and [Terrance Onsager](#)

**GOES-R-series Radiation Belt Observations in Support of Internal Charging Alerts and Investigations ( [abstract](#) )**

15:45 [Insoo Jun](#), [Henry Garrett](#) and [Robin Evans](#)

**Trapped Electron Environments of the Outer Planets ( [abstract](#) )**

16:10 [Elena Plis](#), [Daniel Engelhart](#), [Russell Cooper](#), [Dale Ferguson](#) and [Ryan Hoffmann](#)

**Physical and spectrometric analysis of electron-damaged LDPE ( [abstract](#) )**

#### 16:35-17:00 Coffee Break

#### 17:00-18:40 Session 5: Solar Array Plasma Interactions

17:00 [Joseph Minow](#), [Ira Katz](#), [Paul Craven](#), [Victoria Davis](#), [Barbara Gardner](#), [Thomas Kerlake](#), [Myron Mandell](#), [Linda Neergaard Parker](#), [Timothy Peshek](#), [Emily Willis](#) and [Kenneth Wright](#)

**Evidence for Arcing on the International Space Station Solar Arrays ( [abstract](#) )**

17:25 [Dale Ferguson](#), [Stephen White](#), [Richard Rast](#), [Ernest Holeman](#) and [David Suszcynsky](#)

**The Case for GPS Arcing and High Satellite Arc Rates ( [abstract](#) )**

17:50 [Bernard Boulanger](#), [Herve Zugaj](#), [Sylvie Brosse](#), [Etienne Rapp](#), [Jean-Michel Siguier](#) and [Virginie Inguibert](#)

**Arcing Risk due to Micrometeorite/Debris Impact on Flexible Solar Array with 100V Bus Voltage ( [abstract](#) )**

18:15 [Sebastien Hess](#), [Jean-Michel Siguier](#), [Mathieu Lepilliez](#), [Benoit Thiebault](#), [Virginie Inguibert](#), [Gaël Murat](#) and [Denis Payan](#)

**Semi-analytical model of the current collection by the interconnects and cell edges of high voltage solar panels exposed to LEO or thruster plume plasma: numerical models and comparison with experimental data ( [abstract](#) )**

Tuesday, June 26th

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**09:00-10:15** Session 6: On-Orbit Investigations & Nano-Satellite (1)

- 09:00 [Yasushi Ohkawa](#), [Teppey Okumura](#), [Satomi Kawamoto](#) and [Yuki Kobayashi](#)  
**Charging Behavior of the H-II Transfer Vehicle by Active Electron Emission** ( [abstract](#) )
- 09:25 [Klaus Torkar](#), [Rumi Nakamura](#), [Simon Wellenzohn](#), [Harald Jeszenszky](#), [Roy B. Torbert](#),  
[Per-Arne Lindqvist](#), [Robert E. Ergun](#) and [Barbara L. Giles](#)  
**Improved determination of plasma density based on spacecraft potential of the Magnetospheric Multiscale mission under active potential control** ( [abstract](#) )
- 09:50 [Denis Payan](#), [Jean-André Sauvaud](#), [Angelica Sicard](#) and [Jean-Charles Mateo-Velez](#)  
**AMBER, The French plasma monitor onboard JASON3** ( [abstract](#) )

**10:15-10:30** Coffee Break

**10:30-11:45** Session 7: On-Orbit Investigations & Nano-Satellite (2)

- 10:30 [Mengu Cho](#), [Hiroshi Fukuda](#), [Tatsuo Shimizu](#), [Kazuhiro Toyoda](#) and [Horyu-Iv Project](#)  
**High Voltage Experiment Mission Results of HORYU-IV** ( [abstract](#) )
- 10:55 [Kazuhiro Toyoda](#), [Essien Ewang](#), [Horyu Iv Team](#) and [Mengu Cho](#)  
**Photoelectron Emission Current In-Situ Measurement of Space Material in Low Earth Orbit** ( [abstract](#) )
- 11:20 [William Bialke](#), [Joseph Minow](#) and [Robert Meloy](#)  
**Correlations of Volatile Space Charging Environments with Aerospace Mechanism Friction Anomalies** ( [abstract](#) )

**11:45-12:45** Lunch Break

**12:45-14:45** Session 8: Poster & Mini-oral Session B

- 12:45 [Hongwei Li](#), [Jianwei Han](#), [Minghui Cai](#) and [Zhenlong Zhang](#)  
**P-B-1: The research of small space debris impact inducing discharge on high voltage** ( [abstract](#) )
- 12:45 [W. Dull](#), [A. Wang](#), [W. Yu](#) and [J. Wang](#)  
**P-B-2: Laboratory Investigations of Electrostatic Discharge on Insulating Materials in Dusty Plasma** ( [abstract](#) )
- 12:45 [Andreas W. Polsak](#), [Nuno Dias](#) and [Christopher O.A. Semprimoschnig](#)  
**P-B-3: Materials charging investigations for Solar Orbiter** ( [abstract](#) )
- 12:45 [Nelson Green](#), [Wousik Kim](#), [Allen Andersen](#), [Nora Low](#), [Chaoyin Zhou](#), [Tanner Linton](#), [Eduardo Martin](#) and [James Chinn](#)  
**P-B-4: Electrostatic Discharges from Conductive Thermal Coatings** ( [abstract](#) )
- 12:45 [Pierre Sarrailh](#), [Sébastien Hess](#), [Lara Popelier](#), [Christophe Théroude](#), [Benoit Thiébaud](#),  
[Käthe Dannenmayer](#), [Fabrice Cipriani](#), [Mario Merino](#), [Pablo Fajardo](#), [Eduardo Ahedo](#),  
[Stephane Mazouffre](#) and [Gabriel Giono](#)  
**P-B-5: Plasma plume interaction with chamber walls during on ground experiments: SPIS-EP simulations and comparison with experiments** ( [abstract](#) )
- 12:45 [Allen Andersen](#) and [Jr Dennison](#)  
**P-B-6: Wireless Antenna Detection of Electrostatic Discharge Events** ( [abstract](#) )
- 12:45 [Takaaki Sasaki](#), [Kazuhiro Toyoda](#) and [Mengu Cho](#)  
**P-B-7: Surface potential measurement of coverglass using electron beam and ultraviolet as charging method** ( [abstract](#) )
- 12:45 [Miguel Sangregorio](#), [Kan Xie](#), [Ningfei Wang](#), [Zun Zhang](#) and [Yu Qin](#)  
**P-B-8: 3D Printed molybdenum for grids and keeper electrodes in ion thruster** ( [abstract](#) )
- 12:45 [Joseph Wyatt](#), [Douglas Breden](#), [Anand Karpatne](#) and [Laxminarayan Raja](#)

**P-B-9: Hybrid Fluid-Particle Plasma Modeling of a Radio-Frequency Gridded Ion Thruster ( [abstract](#) )**

12:45 [Benoit Thiebault](#), [Lara Popelier](#), [Mathieu Lepilliez](#), [Christophe Theroude](#), [Dimitry Loubere](#), [Kathe Dannenmayer](#), [Pierre Sarrailh](#), [Sebastien Hess](#), [Mario Merino](#), [Pablo Fajardo](#), [Eduardo Ahedo](#), [Stephane Mazouffre](#) and [Gabriel Giono](#)

**P-B-10: Model and Experimental validation of spacecraft-thruster interactions for electric propulsion thruster plumes ( [abstract](#) )**

12:45 [Yuwei Yang](#) and [Hong Cai](#)

**P-B-11: Effect of Periodic Attitude Libration on Long-term Orbital Dynamics of the Electrodynamic Tether System ( [abstract](#) )**

12:45 [Takanobu Muranaka](#), [Kazuma Ueno](#), [Ryota Hattori](#), [Hiroki Nagai](#), [Mitsuhiro Isaka](#), [Satoshi Hosoda](#) and [Kazutaka Nishiyama](#)

**P-B-12: Measurements of Backflow Ions from Ion Thruster for Evaluation of Surface Erosion on HAYABUSA2 ( [abstract](#) )**

12:45 [Ryota Hattori](#), [Hiroki Nagai](#), [Kazuma Ueno](#), [Satoshi Hosoda](#), [Kazutaka Nishiyama](#) and [Takanobu Muranaka](#)

**P-B-13: Energy Measurement of Backflow Ions from Ion Thruster for Estimation of Erosion Rate on HAYABUSA2 Surface Material ( [abstract](#) )**

12:45 [Mitsuhiro Isaka](#), [Hiroki Nagai](#), [Ryota Hattori](#), [Kazuma Ueno](#), [Satoshi Hosoda](#), [Kazutaka Nishiyama](#) and [Takanobu Muranaka](#)

**P-B-14: Current Measurement of Backflow Ions from Ion Thruster for Estimation of Erosion Rate on HAYABUSA2 Surface Material ( [abstract](#) )**

12:45 [Hiroki Nagai](#) and [Takanobu Muranaka](#)

**P-B-15: Plume Potential Analysis for Ion Thruster Varying Spacecraft Potential by a Three-dimensional Electrostatic Full Particle Code ( [abstract](#) )**

12:45 [Song Bai](#), [Ningfei Wang](#), [Kan Xie](#), [Qimeng Xia](#), [Zun Zhang](#) and [Yu Qin](#)

**P-B-16: Testing and simulation of the  $\mu$ CAT plasma plume ( [abstract](#) )**

12:45 [Zun Zhang](#), [Kan Xie](#), [Miguel Sangregorio](#), [Yu Qin](#), [Qimeng Xia](#), [Song Bai](#) and [Haoxiang Yuan](#)

**P-B-17: Effects of the two-grid optics on a mini gridded helicon ion thruster ( [abstract](#) )**

12:45 [Haoxiang Yuan](#), [Kan Xie](#), [Zun Zhang](#), [Qimeng Xia](#), [Yu Qin](#) and [Ningfei Wang](#)

**P-B-18: Design and Experiment of Hollow-Cathode Plasma Contactor by a Kind of Criterion ( [abstract](#) )**

12:45 [Yu Qin](#), [Kan Xie](#), [Zun Zhang](#) and [Jiting Ouyang](#)

**P-B-19: Instability of Potential Oscillations for Different Type and Current Hollow Cathode ( [abstract](#) )**

12:45 [Hiroya Saito](#), [Kazuhiro Toyoda](#), [Teppei Okumura](#) and [Yasushi Ohkawa](#)

**P-B-20: Electron Current measurement of Electrodynamic Tether with eliminating current collection at tether edge ( [abstract](#) )**

12:45 [Hiroaki Murakami](#), [Kazuhiro Toyoda](#) and [Mengu Cho](#)

**P-B-21: Prototype Design of Surface Arc Thruster ( [abstract](#) )**

12:45 [Omar Leon](#), [Walter Hoegy](#), [Grant Miars](#), [Brian Gilchrist](#) and [Linda H. Krause](#)

**P-B-22: Analytic expressions of current collection behavior for a cuboid spacecraft in a drifting plasma and preparing for tethered CubeSat experiments, the MiTEE mission ( [abstract](#) )**

12:45 [Daisuke Nakayama](#), [Kateryna Aheieva](#), [Yayoi Murakami](#), [Kazuhiro Toyoda](#) and [Mengu Cho](#)

**P-B-23: Development of Vacuum Arc Thruster with Plasma Interaction Ignition for Nanosatellite ( [abstract](#) )**

12:45 [Hideyuki Usui](#), [Sho Nakano](#), [Masanori Nunami](#) and [Masaharu Matsumoto](#)

**P-B-24: Particle Simulation on the Electromagnetic Environment of Ion Thruster**



**Beam Neutralization ( [abstract](#) )**

- 12:45 [Ryo Shirakawa](#), [Hideyuki Usui](#), [Yohei Miyake](#), [Masahito Tagawa](#) and [Kazutaka Nishiyama](#)  
**P-B-25: Plasma particle simulation of ECR plasma generation in Air Breathing Ion Engine (ABIE) ( [abstract](#) )**
- 12:45 [Necmi Cihan Orger](#), [Jose Rodrigo Cordova Alarcon](#), [Kazuhiro Toyoda](#) and [Mengu Cho](#)  
**P-B-26: Electrostatic Dust Transportation due to Secondary Electron Emission and Surface Electric Field above the Lunar Terminator ( [abstract](#) )**
- 12:45 [Hiroshi Fukuda](#), [William Yu](#), [Joseph Wang](#), [Kazuhiro Toyoda](#) and [Mengu Cho](#)  
**P-B-27: Discharge Rate on Dusty Conducting Surface: Laboratory Measurements ( [abstract](#) )**
- 12:45 [Andrew Wang](#), [Kevin Chou](#) and [Joseph Wang](#)  
**P-B-28: Laboratory Investigations of Dusty Spacesuit Arcing in Plasma ( [abstract](#) )**
- 12:45 [William Yu](#) and [Joseph Wang](#)  
**P-B-29: Numerical Simulation of Charged Dust Transport around Irregularly Shaped Small Asteroids ( [abstract](#) )**
- 12:45 [Pauline Oudayer](#), [Loanne Monnin](#), [Jean-Charles Mateo-Velez](#), [Sebastien Hess](#), [Pierre Sarrailh](#), [Gaël Murat](#) and [Jean-François Roussel](#)  
**P-B-30: Ground Testing and Modelling of Dust Charging and Adhesion ( [abstract](#) )**
- 12:45 [Bryon Neufeld](#) and [Megan Maguire](#)  
**P-B-31: Techniques for Evaluating the Risk of Internal Space Charging on Long Time-Scale Orbits ( [abstract](#) )**
- 12:45 [Yigit Cay](#) and [Kazuhiro Toyoda](#)  
**P-B-32: Hybrid PIC Code for Active Shielding Demonstration Inspired from Magneto Plasma Sail ( [abstract](#) )**
- 12:45 [Yasubumi Kubota](#), [Tsutomu Nagatsuma](#), [Aoi Nakamizo](#), [Kaori Sakaguchi](#), [Mitsue Den](#), [Haruhisa Matsumoto](#) and [Takashi Tanaka](#)  
**P-B-33: Comparison of Magnetospheric Magnetic Field Variations at Quasi-Zenith Orbit Based on Michibiki Observation and REPPU Global MHD Simulation ( [abstract](#) )**
- 12:45 [Qimeng Xia](#), [Ningfei Wang](#), [Kan Xie](#), [Zun Zhang](#), [Yu Qin](#), [Song Bai](#) and [Haoxiang Yuan](#)  
**P-B-34: Plume Structure Study of Cathodic Plasma Contactor ( [abstract](#) )**
- 12:45 [David Barton](#) and [Brian Beecken](#)  
**P-B-35: Transformation of Energy and Charge Deposition Profiles between Normally incident and Isotropically incident Electrons for various Materials ( [abstract](#) )**
- 12:45 [Gregory Wilson](#), [Anne Starley](#) and [Jr Dennison](#)  
**P-B-36: Electron Range Computational Tool for Arbitrary Materials over a Wide Energy Range ( [abstract](#) )**

**14:45-16:00** Session 9: Ground Testing

- 14:45 [Dale Ferguson](#), [Ryan Hoffmann](#), [Elena Plis](#) and [Daniel Engelhart](#)  
**Arc Plasma Propagation and Arc Current Profiles ( [abstract](#) )**
- 15:10 [Boris Vayner](#) and [Wesley Johnson](#)  
**Electrostatic Testing of Multilayer Insulation for In-Space Cryogenic Vehicles ( [abstract](#) )**
- 15:35 [Denis Payan](#)  
**Test set-up review for Arcing test on new Solar Array Generation ( [abstract](#) )**

**16:00-16:15** Coffee Break

**16:15-17:30** Session 10: Internal Charging (1)

- 16:15 [Guo-Bao Feng](#), [Wanzhao Cui](#) and [Chunliang Liu](#)  
**Transient characteristics of Charging effects due to E-beam irradiation: A method**

of charging balance mode ( [abstract](#) )

16:40 [Pierre Sarrailh](#), [Rémi Pacaud](#), [Thierry Paulmier](#), [Sébastien Hess](#) and [Denis Payan](#)  
**Simulation of the effect of time-dependent electron environment on the internal charging dynamic using SPIS-IC** ( [abstract](#) )

17:05 [Vladimir Saenko](#), [Andrey Tyutnev](#), [Margarita Afanasyeva](#) and [Andrey Abrameshin](#)  
**Spacecraft inner charging simulation of the electronics devices plastic cases** ( [abstract](#) )

17:30-17:45 Coffee Break

17:45-19:00 Session 11: Internal Charging (2)

17:45 [Alex Hands](#), [Keith Ryden](#), [Remi Pacaud](#), [Thierry Paulmier](#), [Pierre Sarrailh](#), [Denis Payan](#)  
and [David Rodgers](#)  
**Validation of Internal Charging Tools with REEF data** ( [abstract](#) )

18:10 [Kit Frankie Wong](#)  
**Electric-Orbit-Raising Induced Deep Charging Requirement and Analysis of External Satellite Harness with Shields** ( [abstract](#) )

18:35 [James Roeder](#), [Colby Lemon](#), [Joseph Fennell](#) and [Mark Looper](#)  
**Comparisons of an Internal Charging Model with Laboratory Experiments** ( [abstract](#) )

Wednesday, June 27th

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09:00-10:40 Session 12: Plasma Propulsion and Tethers

09:00 [Yuan Hu](#) and [Joseph Wang](#)  
**On the Expansion of Collisionless Mesothermal Plasma: The Breakdown of the Fluid Approximation for Electrons and Its Implications on Plasma Plume/Wake Models** ( [abstract](#) )

09:25 [Sébastien Hess](#), [Pierre Sarrailh](#), [Arnaud Trouche](#), [Fabrice Cipriani](#), [Käthe Dannenmayer](#), [Julien Forest](#),  
[Alain Hilgers](#), [Benjamin Jeanty-Ruard](#), [Oriol Jorba-Ferro](#), [Jean-Charles Mateo-Velez](#), [Mathieu Lepilliez](#),  
[Veronique Perrin-Bailly](#), [Lara Popelier](#), [Christophe Théroude](#) and [Benoit Thiebault](#)  
**Coupling of a all-electric spacecraft with its plasma plume and its environment** ( [abstract](#) )

09:50 [Takanobu Muranaka](#) and [Yasutaka Inanaga](#)  
**Development of a Three-dimensional Electrostatic Code for Hall Thruster Plume and Spacecraft Interaction Analysis** ( [abstract](#) )

10:15 [Kan Xie](#), [Wei Wang](#), [Haoxiang Yuan](#), [Qimeng Xia](#) and [Ningfei Wang](#)  
**Study on Lorentz Force Characteristics of Electrodynamic Tether System Based on Hollow Cathode** ( [abstract](#) )

10:40-10:55 Coffee Break

10:55-12:20 Session 13: Plenary Talk & Charging of Dusts and Small Bodies in Space

10:55 [Mihaly Horanyi](#)  
**\*PLENARY TALK: The Effects of Dust Charging in Space and the Laboratory** ( [abstract](#) )

11:30 [Iliia Kuznetsov](#), [Alexander Zakharov](#), [Sergei Popel](#), [Gennady Dolnikov](#), [Andrew Lyash](#), [Sebastian Hess](#),  
[Elena Seran](#) and [Fabrice Cipriani](#)  
**Numerical modelling of the lunar exosphere and lunar lander interactions with SPIS-DUST** ( [abstract](#) )

11:55 [Laila Andersson](#), [David Malaspina](#) and [Christopher M. Fowler](#)  
**The effect of Plasma Cloud Expansion Associated with Dust Impacts** ( [abstract](#) )

12:20-19:00 Excursion

19:00-21:00 Banquet

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**09:00-10:15** Session 14: Theory, Modeling and Computer Simulations (1)

- 09:00 [Justin Likar](#), [Michelle Donegan](#) and [Jamie Porter](#)  
**Modeling surface charging for NASA's Europa Clipper mission** ( [abstract](#) )
- 09:25 [Anand Karpatne](#), [Douglas Breden](#), [Joseph Wyatt](#) and [Laxminarayan Raja](#)  
**High-fidelity Multi-Length Scale Modeling of Spacecraft Charging in GEO orbit** ( [abstract](#) )
- 09:50 [Gian Luca Delzanno](#), [Brendt Wohlberg](#), [Humberto Godinez](#), [Daniil Sviastsky](#) and [Mick Denton](#)  
**Spacecraft charging of the Van Allen Probes: theory and simulations** ( [abstract](#) )

**10:15-10:30**Coffee Break

**10:30-11:45** Session 15: Theory, Modeling and Computer Simulations (2)

- 10:30 [Richard Marchand](#), [Sigvald Marholm](#), [Diako Darian](#), [Wojciech Miloch](#) and [Mikael Mortensen](#)  
**Impact of miniaturized fixed-bias Multi-Needle Langmuir Probes on CubeSats** ( [abstract](#) )
- 10:55 [Fabrice Cipriani](#), [Philippe Escoubet](#), [Rumi Nakamura](#), [Klaus Torkar](#), [Grégoire Déprez](#),  
[David Rodgers](#), [Yuri Khotyaintsev](#) and [Alexander Barrie](#)  
**Simulation of the Electrostatic Environment of the Magnetospheric Multiscale Mission** ( [abstract](#) )
- 11:20 [Yohei Miyake](#), [Takeshi Kiriya](#), [Yuto Katoh](#) and [Hideyuki Usui](#)  
**Numerical Simulation of Spacecraft Charging Processes in Time-varying Plasma Environment** ( [abstract](#) )

**11:45-12:45**Lunch Break

**12:45-14:45** Session 16: Poster & Mini-oral Session C

- 12:45 [Minghui Cai](#), [Tao Yang](#) and [Jianwei Han](#)  
**P-C-1: Simulation and analysis of the SMILE charging using SPIS** ( [abstract](#) )
- 12:45 [Xiaogang Qin](#)  
**P-C-2: Spacecraft surface charging simulation based on 3D electrostatic PIC model** ( [abstract](#) )
- 12:45 [Pedro Alberto Resendiz Lira](#) and [Richard Marchand](#)  
**P-C-3: Simulations of non-ideal effects In Langmuir Probe measurements** ( [abstract](#) )
- 12:45 [Fredrik Lefte Johansson](#), [Anders Eriksson](#), [Elias Odelstad](#), [Pierre Henri](#) and [Erik Vigren](#)  
**P-C-4: Simulations of the Rosetta spacecraft interaction with comet plasma** ( [abstract](#) )
- 12:45 [Sébastien Hess](#), [Pierre Sarrailh](#), [Arnaud Trouche](#), [Fabrice Cipriani](#), [Käthe Dannenmayer](#),  
[Julien Forest](#), [Alain Hilgers](#), [Benjamin Jeanty-Ruard](#), [Jean-Charles Matéo Vélez](#), [Mathieu Lepilliez](#),  
[Véronique Perrin-Bailly](#), [Denis Pavan](#), [Lara Popelier](#), [Christophe Théroutte](#) and [Benoît Thiébaud](#)  
**P-C-5: Improvement of the Spacecraft-Plasma Interaction Software (SPIS) with a new versatile architecture and enhanced modeling capabilities for electric propulsion** ( [abstract](#) )
- 12:45 [Oriol Jorba Ferro](#), [Sebastien Hess](#), [Elena Seran](#), [Michel Godefroy](#), [Christophe Bastien-Thiry](#)  
and [Denis Pavan](#)  
**P-C-6: Advanced numerical schemes implemented in SPIS to improve the accuracy of the description of the dense cold and drifting plasma populations** ( [abstract](#) )
- 12:45 [Diako Darian](#), [Wojciech Miloch](#), [Yohei Miyake](#), [Mikael Mortensen](#) and [Hideyuki Usui](#)  
**P-C-7: Wake formation behind small satellites** ( [abstract](#) )
- 12:45 [Ashish Pandya](#), [Nikhil Kothari](#), [Rizwan Alad](#) and [Prarthan Mehta](#)  
**P-C-8: Differential Charging Estimation of Spacecraft in single and double Maxwellian Plasma Environment** ( [abstract](#) )
- 12:45 [Kiyokazu Koga](#), [Hiroko O. Ueda](#) and [Shinji Hatta](#)

- P-C-9: Current status of MUSCAT (Multi-Utility Spacecraft Charging analysis tools) ( [abstract](#) )**
- 12:45 [Takeshi Kiriya](#), [Yohei Miyake](#), [Yuto Katoh](#) and [Hideyuki Usui](#)  
**P-C-10: Particle Simulation Analysis of Spacecraft Charging Processes in Plasma Wave Environment ( [abstract](#) )**
- 12:45 [Joakim John Paul Paulsson](#), [Wojciech Jacek Miloch](#), [Yohei Miyake](#) and [Hideyuki Usui](#)  
**P-C-11: Numerical study on the plasma disturbance and charging processes by booms of an ionospheric rocket ( [abstract](#) )**
- 12:45 [Yukari Sasaki](#), [Hideyuki Usui](#), [Yohei Miyake](#) and [Wojciech Jacek Miloch](#)  
**P-C-12: Numerical study on plasma disturbance near a low-Earth orbit satellite ( [abstract](#) )**
- 12:45 [Rikio Watanabe](#) and [Yuki Shibuya](#)  
**P-C-13: Charging Characteristics of Electron Irradiated Polyimide Film under Cryogenic Temperature ( [abstract](#) )**
- 12:45 [Jianguo Huang](#), [Sizhan Wang](#) and [Lixiang Jiang](#)  
**P-C-14: The Secondary Electron Emission Properties and the Influence on Charging Potentials ( [abstract](#) )**
- 12:45 [Yusuke Fujimoto](#), [Ryota Okura](#), [Kazuki Kita](#), [Minoru Iwata](#), [Kumiko Yokota](#) and [Masahito Tagawa](#)  
**P-C-15: A Consideration of Degradation of Polymeric Materials in Sub-Low Earth Orbit Space Environment ( [abstract](#) )**
- 12:45 [Ryota Okura](#), [Yusuke Fujimoto](#), [Kazuki Kita](#), [Minoru Iwata](#), [Chee Sze Keat](#), [Yugo Kimoto](#), [Kumiko Yokota](#) and [Masahito Tagawa](#)  
**P-C-16: Development of a Pulsed Supersonic Valve Aimed for Martian Atmospheric Simulation ( [abstract](#) )**
- 12:45 [Marc Villemant](#), [Pierre Sarrailh](#), [Laurent Garrigues](#), [Christophe Inguibert](#), [Mohamed Belhaj](#) and [Claude Boniface](#)  
**P-C-17: On the use of a detailed electron emission model for spacecraft charging at low energy ( [abstract](#) )**
- 12:45 [Ryan Hoffmann](#), [Virginie Griseri](#), [Elena Plis](#), [Daniel Engelhart](#) and [Russell Cooper](#)  
**P-C-18: Modification of Charge Body Migration in LDPE as a Result of Electron Radiation Exposure. ( [abstract](#) )**
- 12:45 [Mohamed Belhaj](#), [Pierre Sarrailh](#), [Sarah Dadouch](#) and [Denis Payan](#)  
**P-C-19: Effect of plume interaction with spacecraft materials on electron emission properties and electrical characteristics ( [abstract](#) )**
- 12:45 [Charles Rigoudy](#), [Kremena Makasheva](#), [Mohamed Belhaj](#), [Sarah Dadouch](#), [Gilbert Teyssedre](#) and [Laurent Boudou](#)  
**P-C-20: Dielectric charging mechanisms involved in the non-typical electron emission yield observed for thin dielectric layers ( [abstract](#) )**
- 12:45 [Brian Wood](#), [Justin Christensen](#), [Greg Wilson](#), [T.-C. Shen](#) and [J.R. Dennison](#)  
**P-C-21: Secondary Electron Yield Measurements of Carbon Nanotube Forests: Dependence on Morphology and Substrate ( [abstract](#) )**
- 12:45 [Masaki Kataoka](#), [Kazuhiro Toyoda](#) and [Mengu Cho](#)  
**P-C-22: Charging analysis with changing the satellite surface material property due to space environment ( [abstract](#) )**
- 12:45 [Natsumi Sato](#), [Maimi Mima](#), [Kazuki Kodama](#), [Hiroaki Miyake](#) and [Yasuhiro Tanaka](#)  
**P-C-23: Construction of Measurement System for Carrier Mobility in Insulating Materials for Spacecraft ( [abstract](#) )**

- 12:45 [Justin Christensen](#), [Jordan Lee](#) and [Jr Dennison](#)  
**P-C-24: Measurements of the Intrinsic Electron Yield of Highly Insulating Materials** ( [abstract](#) )
- 12:45 [Justin Christensen](#), [Phillip Lundgreen](#) and [Jr Dennison](#)  
**P-C-25: Parameterization of Secondary and Backscattered Electron Yields for Spacecraft Charging** ( [abstract](#) )
- 12:45 [Matthew Robertson](#), [Justin Christensen](#) and [Jr Dennison](#)  
**P-C-26: Electron Yield of Carbon-Composite Nanodielectric Material** ( [abstract](#) )
- 12:45 [Kieran Wilson](#) and [Hanspeter Schaub](#)  
**P-C-27: Method for touchless determination of electrostatic potential and material composition for spacecraft** ( [abstract](#) )
- 12:45 [Miles Bengtson](#), [Joseph Hughes](#) and [Hanspeter Schaub](#)  
**P-C-28: Remote sensing of spacecraft electrostatic potential using secondary electrons** ( [abstract](#) )
- 12:45 [Anju Damodaran](#), [Joy Anil Gomes](#), [Pramod V B](#), [S S Kumar](#) and [V K Hariharan](#)  
**P-C-29: Detailed charging analysis of exposed KAPTON in GSAT-19** ( [abstract](#) )
- 12:45 [Teppei Okumura](#), [Yasushi Ohkawa](#), [Hiroyuki Okamoto](#) and [Satomi Kawamoto](#)  
**P-C-30: Concerning of the spacecraft charging for space debris removal and orbital services** ( [abstract](#) )
- 12:45 [Qi Zhao](#), [Feipeng Wang](#), [Jian Li](#), [Kaizheng Wang](#), [Wanzhao Cui](#) and [Tianyan Jiang](#)  
**P-C-31: An Efficient Hybrid Approach for the Reduction of Secondary Electron Yield** ( [abstract](#) )
- 12:45 [Virginie Inguibert](#), [Jean-Michel Siguier](#), [Denis Payan](#) and [Gael Murat](#)  
**P-C-32: Dielectric barriers for arc mitigation** ( [abstract](#) )
- 12:45 [Grant Miars](#), [Gian Luca Delzanno](#), [Federico Lucco Castello](#), [Omar Leon](#) and [Brian E. Gilchrist](#)  
**P-C-33: Enabling Electron Beam Use in Tenuous Space Plasmas using Plasma Contactors: the Ion Emission Model** ( [abstract](#) )
- 12:45 [Baipeng Song](#)  
**P-C-34: Dynamic attenuation of secondary electrons emission yield of fluorinated polyimide films** ( [abstract](#) )
- 12:45 [Justin Likar](#), [Janet Green](#), [Yuri Shprits](#), [Rick Quinn](#), [Paul Whelan](#), [Nils Reker](#) and [Adam Kellerman](#)  
**P-C-35: Significance of shielding kernel selection for spacecraft charging assessments** ( [abstract](#) )
- 12:45 [Justin Likar](#), [T. Paul O'Brien](#), [Michael Xapsos](#), [W. Robert Johnston](#), [Eamonn Daly](#) and [Veronique Ferlet-Cavrois](#)  
**P-C-36: Improved spacecraft charging roadmaps developed to support user community needs** ( [abstract](#) )
- 12:45 [Jean-Charles Mateo-Velez](#), [Thierry Paulmier](#), [Angelica Sicard](#), [Bernard Dirassen](#) and [Denis Payan](#)  
**P-C-37: Testing materials under electron spectra representative of GEO worst-case environments for surface charging** ( [abstract](#) )

#### 14:45-16:25 Session 17: Material Properties (1)

- 14:45 [Guibai Xie](#), [Guanghui Miao](#), [Jianli Xu](#), [Jing Yang](#), [Yun Li](#) and [Wanzhao Cui](#)  
**The suppression of spacecraft charging based on nanographene composite** ( [abstract](#) )
- 15:10 [Jean-Charles Mateo-Velez](#), [Mohamed Belhaj](#), [Sarah Dadouch](#), [Pierre Sarrailh](#), [Sebastien Hess](#) and [Denis Payan](#)  
**Worst-case surface charging: On the importance of measuring the electron emission yield under representative environmental conditions** ( [abstract](#) )
- 15:35 [Thierry Paulmier](#), [Bernard Dirassen](#), [Aurélien Roggero](#), [Guilhem Rival](#), [Eric Dantras](#) and [Denis Payan](#)  
**Electrical Ageing of Polymers under Space Radiation Environment** ( [abstract](#) )

16:00 [Hiroaki Miyake](#), [Virginie Griseri](#), [Ushio Chiba](#), [Yasuhiro Tanaka](#) and [Gilbert Teyssedre](#)  
**Analysis of Charge Accumulation Phenomena by Physicochemical Analysis for fluorinated Polymer Films Irradiated by Proton ( [abstract](#) )**

16:25-16:50 Coffee Break

16:50-18:30 Session 18: Material Properties (2)

16:50 [Andrey Tyutnev](#), [Vladimir Saenko](#), [Alexey Zhadov](#) and [Evgenii Pozhidaev](#)  
**Radiation-induced conductivity in Kapton-like polymers featuring conductivity rising with accumulating dose ( [abstract](#) )**

17:15 [Jason A Young](#) and [Mark W Crofton](#)  
**Conductivity of Thermal Control White Paints as a Function of Temperature and Surface Voltage ( [abstract](#) )**

17:40 [Brian Wood](#), [David King](#) and [Jr Dennison](#)  
**Time Evolved Constant Voltage Conductivity Measurements of Common Spaceborn Polymeric Materials ( [abstract](#) )**

18:05 [Linda Neergaard Parker](#) and [Joseph Minow](#)  
**Spacecraft Charging Material Properties Database ( [abstract](#) )**

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09:00-10:40 Session 19: Charging and Arcing Mitigation

09:00 [Nicole Pothier Mcgillivray](#), [Eric Miller](#) and [Bryon Neufeld](#)  
**Quantifying Spacecraft Specific Surface-Charging Risk in Geostationary Orbit ( [abstract](#) )**

09:25 [James Chinn](#), [Douglas Dawson](#), [Ronglin Liou](#), [Dan Goebel](#), [Todd Parker](#) and [Eric Miller](#)  
**Preventing Electrostatic Discharge in the Mars 2020 PIXL X-Ray Tube ( [abstract](#) )**

09:50 [Atomu Tanaka](#), [Hisaharu Yasushima](#), [Minoru Iwata](#), [Kazuhiro Toyoda](#) and [Mengu Cho](#)  
**Study on a method of stabilizing the electron emission of ELFs-charm ( [abstract](#) )**

10:15 [Shi Liang](#)  
**The Defending Film of LEO Spacecraft High-voltage Solar Array Charging Effect ( [abstract](#) )**

10:40-10:55 Coffee Break

10:55-12:00 Session 20: Standards & Award Ceremony & Closing Remark

10:55 [Takahiro Obara](#)  
**Guidelines for Space Weather Research and Operation discussed in Space Weather Expert Group (SWEG) in UNCOPUOS /LTS WG ( [abstract](#) )**

11:20 [Kazuhiro Toyoda](#)  
**Spacecraft potential estimation in worst case environment ( [abstract](#) )**

11:45 [Hideyuki Usui](#)  
**Award Ceremony & Closing Remark ( [abstract](#) )**

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