2019 IEEE CEIDP
IEEE CONFERENCE ON ELECTRICAL INSULATION AND DIELECTRIC PHENOMENA

October 20-23, 2019
Pacific Northwest National Laboratory (PNNL)
Richland, Washington, USA

CONFERENCE PROGRAM
# 2019 IEEE CEIDP Schedule

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<th>Time</th>
<th>Sunday</th>
<th>Monday</th>
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<tr>
<td>8:15</td>
<td>Welcome reception</td>
<td>Welcome</td>
<td>Session 4 (Oral)</td>
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<td>Workshop: Discharge</td>
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**Remarks**
- 1 pm Technical Tour
- 2 pm Technical Tour
- 3 pm Technical Tour

**CEIDP Board Meeting**
Saturday, October 20, 2019

9:00-12:00 Workshop: Discharge Phenomena in Air
12:30-17:00 DEIS AdCom
12:30-20:00 Registration
18:00-20:00 Welcome Reception

Sunday, October 20, 2019

Yuichi Murakami, Yuji Muramoto; Meijo University, Japan

12:00-12:30 Poster Preview 1
(Short oral introductions of the papers with the marker * in session 2)
Chair: Leo S. Fifield, PNNL, USA

12:30-13:45 Catered Lunch and Student Social

Monday, October 21, 2019

8:30-8:45 Welcome
Nicola Bowler, Iowa State University, USA

8:45-10:00 Whitehead Lecture
Challenging Defects of High Voltage Insulation Systems
Erling Ildstad, Norwegian University of Technology and Science, Norway

10:00-10:30 Break and Photo

10:30-12:20 Session 1 (Oral) Breakdown and pre-breakdown phenomena, aging and treeing
Chair: 
Co-chair: 
1-1 Physics-Driven Dual-Defect Model Fits of Voltage Step-Up to Breakdown Data in Spacecraft Polymers
Andersen, Allen1; Dennison, JR2; 1: Jet Propulsion Laboratory, California Institute of Technology; 2: Utah State University, USA

1-2 Degradation in Dielectric Behavior of Soft Epoxy Resin by Concurrent Aging with Heat and Radiation
Hiroyuki Ishii1; Ikikarai Yamauchi1; Keigo Mori1; Naoshi Hira2; Yoshimichi Ohki1,2; 1: Department of Electrical Engineering and Bioscience, Waseda University, Japan; 2: Research Institute for Materials Science and Technology, Waseda University

1-3 Effects of Temperature on Electrical Treeing in Epoxy/silica nanocomposites
Shin Nakamura1; Akiko Kumada1; Kunihiko Hidaka2; Hiromitsu Hira1; Takahiro Im2; Takahiro Nakamura3; Tetsuo Yoshimitsu4; 1: The University of Tokyo; 2: Tokyo Denki University; 3: Toshiba Infrastructure Systems & Solutions Corporation; 4: Toshiba Mitsubishi-Electric Industrial Systems Corporation

1-4 Effect of New Voltage Stabilizers on Electrical Tree Initiation in Polyethylene Blends
Linwei Yu, Haiyan Liu, Zuojun Wei, Hao Zhou, Xiangrong Chen; Zhejiang University, China

1-5 Intermolecular Interaction and Electric Field Dependence of Reverse Micelle on Water Tree Initiation in Polyethylene Hiroaki Uehara1; Tatsuki Okamoto1; Shinya Iwata2; Yasuo Seki3; Tatsuo Takada4; Yang Cao5; 1: Kanto Gakuin University; 2: Osaka Research Institute of Industrial Science and Technology; 3: Sekii PE Laboratory; 4: Tokyo City University; 5: University of Connecticut

1-6 Effect of Ester Exchange Reaction on the Breakdown Properties of Soybean Oil

Chairers with the marker * in session 2)

Session 2A – Nanocomposites

2A-1 Effects of Nanoparticle Concentration and Surfactant on Dielectric Strength of Nanofluids
Daigo Komesu1; Satoshi Ichimura1; Hiroshi Morita1; Hitachi, Ltd.

2A-2* The Dielectric Properties of PP-EVA blends Compatibilised by an Organoclay
Allison Vivienne Shaw1; Alun Stuart Vaughan1; Thomas Andritsch2; University of Southampton, UK

2A-3 Comparing the influence of organoclay on the morphology and dielectric properties of three thermoplastic polymers
Allison Vivienne Shaw1; Alun Stuart Vaughan1; Thomas Andritsch2; University of Southampton, UK

2A-4* Electrical and Thermal Properties of PMMA/hBN Composite Insulating Material Produced by Electrostatic Adsorption Method
Ryosuke Minami1; Norikazu Hamasaki1; Tomohiro Kawashima1; Naohiro Hozumi1; Yoshinobu Murakami1; Toyohashi University of Technology, Japan

2A-5* Enhanced Energy Storage Properties of Polyetherimide Film Capacitors Filled with Boron Nitride Nanosheets
He Li1,2; Lulu Ren1; Ding AP1; Zongliang Xie1; Sijia Zhu1; Peng Liu1; Zongren Peng1; Qing Wang1; 1: Xi’an Jiaotong University, China; 2: The Pennsylvania State University, USA

2A-6 Effect of thickness of one-dimensional nanofibers by electrospinning on the dielectric properties of PVDF composites
Yan Qiu1; Jun-Wei Zha1,2; Zhi-Min Dang1; 1: University of Science and Technology Beijing; 2: Tsinghua University

2A-7 Enhanced permittivity and energy density in PVDF/PMMATiO2 nanocomposite
Yongbin Liu, Yang Zhang, RuiFeng Yao, Tongxin Zhao, Jinghui Gao, Lisheng Zhong; Xi’an Jiaotong University, China

2A-8* Dielectric Properties of PEI/SiO2 Nanocomposites
Fatihha Talbi1; Eric David2; David Malec3; Dominique Mary3; 1: Laboratoire de Physique et Chimie Quantique, Université Mouloud Mammeri, Tizi-Ouzou, Algeria; 2: ETS, Canada; 3: Laboratoire Plasma et Conversion d’Énergie, CNRS, UPS, INPT, Toulouse, France

2A-9* Enhanced Thermal Conductive Boron Nitride/ Silicon Carbide/ Silicone Elastomer with Nonlinear Conductive Characteristic and Partial Discharge Resistance
Yalin Wang1; Jiandong Wu1; Tao Han2; Yi Yin1; 1: Department of Electrical Engineering, Shanghai Jiao Tong University, China; 2: Department of Instrument Science and Engineering, Shanghai Jiao Tong University, China

2A-10 Impulse Breakdown Strength of Epoxy/ Silica Nanocomposite Prepared with Using Ultrasonic Dispersion

10:30-12:20 Session 2 (Poster)
Chair: 
Co-chair: 

12:45-13:00 Lunch and Student Social

13:00-13:15 Welcome and Afternoon Session Chair: 
13:15-13:30 Registration

13:30-15:30 Session 2B (Oral) Dielectric Response to AC and DC Stresses in NEMS
Chair: 
Co-chair: 

13:30-13:50 Effects of humidity on the air breakdown strength of high pressure Natural Gas Pipelines
Jinghui Gao1; Lisheng Zhong1; Yongbin Liu1; Yang Zhang1; Ruifeng Yao1; Tongxin Zhao1; 1: Laboratoire de Physique et Chimie Quantique, Université Mouloud Mammeri, Tizi-Ouzou, Algeria; 2: ETS, Canada; 3: Laboratoire Plasma et Conversion d’Énergie, CNRS, UPS, INPT, Toulouse, France

13:50-14:10 Effect of B:Si ratio in B-Si:SiO2 nanocomposite on the breakdown strength of nanofibers
Chenyang Guo1; Lanmei Zhang1; Hua Li1; Daigoj Komesu1; Satoshi Ichimura1; Hiroshi Morita1; Hitachi, Ltd.

14:10-14:30 Polarization history and oxygen plasma treatment effect on the dielectric properties of PMMA/SiO2 nanocomposites
Zhejiang University, China; 2: De-Long Engineering Polymer Co. Ltd

14:30-14:50 Enhanced electrical properties of nanocomposite thin films based on silicones and silver nanocomposites
Yalin Wang1; Jiandong Wu1; Tao Han2; Yi Yin1; 1: Department of Electrical Engineering, Shanghai Jiao Tong University, China; 2: Department of Instrument Science and Engineering, Shanghai Jiao Tong University, China

14:50-15:10 Enhanced permittivity and energy density in PVDF/PMMATiO2 nanocomposite
Yongbin Liu, Yang Zhang, RuiFeng Yao, Tongxin Zhao, Jinghui Gao, Lisheng Zhong; Xi’an Jiaotong University, China

15:10-15:30 Enhanced energy storage properties of Polyetherimide Film Capacitors Filled with Boron Nitride Nanosheets
He Li1,2; Lulu Ren1; Ding AP1; Zongliang Xie1; Sijia Zhu1; Peng Liu1; Zongren Peng1; Qing Wang1; 1: Xi’an Jiaotong University, China; 2: The Pennsylvania State University, USA

15:30-15:50 Effect of thickness of one-dimensional nanofibers by electrospinning on the dielectric properties of PVDF composites
Yan Qiu1; Jun-Wei Zha1,2; Zhi-Min Dang1; 1: University of Science and Technology Beijing; 2: Tsinghua University

15:50-16:10 Enhanced permittivity and energy density in PVDF/PMMATiO2 nanocomposite
Yongbin Liu, Yang Zhang, RuiFeng Yao, Tongxin Zhao, Jinghui Gao, Lisheng Zhong; Xi’an Jiaotong University, China

16:10-16:30 Impulse Breakdown Strength of Epoxy/ Silica Nanocomposite Prepared with Using Ultrasonic Dispersion
Process
Chiharu Kato1, Muneki Kurimoto1, Toru Sawada1,
Takeyoshi Kato1, Shigeyuki Sugimoto1, Masaki Imanaka1,
Yasuo Suzuki2; 1: Nagoya university, Japan; 2: Aichi
Institute of Technology

2A-11 Electroluminescence of Epoxy Resin Nanocomposite
under AC High Field
Kazuyuki Tohyama1, Tomonori lizuka2, Kohei Tatsumi2,
Yasutomo Otake3, Takahiro Umemoto3, Takahiro Mabuchi3,
Hirotaka Muto3; 1: National Institute of Technology, Numazu
College, Japan; 2: Graduate School of Information,
Production and Systems, Waseda University, Japan; 3: Advance
technology Research and Development Center,
Mitsubishi Electric Corporation, Japan

2A-12 Electrical and Thermal Properties of Hybrid Materials
based on ZnO and BaTiO3 Nano Particles
Ammar Mubarak Sultan Al-Gheilani, K. L. Wong, Yongxiang Li, Wayne Rowe; RMIT University, Australia

2A-13 Electric Field Reduction by Multi-layer Functionally
Graded Material with controlled Permittivity and Conductivity Distribution
Ammar Mubarak Sultan Al-Gheilani, K. L. Wong, Yongxiang Li, Wayne Rowe; RMIT University, Australia

2A-14 Space Charge Distribution Analysis Before and after
Drying of Micro-extruded LDPE/MgO Nanocomposites
Virginie Griseri1, Eric David2, Dominque Mary3; 1: LAPLACE - University of Toulouse, France; 2: ETS -
Montréal, Canada

2A-15 Enhanced Electrical Breakdown Strength in Nano-
coatings of Polymer Composites
Yifei Wang1,2, Jing Xie1,2, Shamina Nasreen1,2, JoAnne
Ronzello1,2, Henry Teng1, Linda Jacobs4, Yang Cao1,2,3, 1: NSF iUCRC Center on High Voltage/temperature Materials and Structures; 2: Electric Insulation Research Center, Institute of Materials Science, University of Connecticut, USA; 3: Electrical and Computer Engineering, University of Connecticut, USA; 4: ABB Industrial Solution, Plainville, CT 06062 USA

2A-16 Effect of Electric Field and Temperature on the Failure
of Polypropylene Filled with Nanometric Natural Clay
Huseyin Recai Hiziroglu, Chuyan Zhang; Kettering
University, USA

2A-17 Hybrid Fillers for Thermal Conductivity and Erosion
Resistance Enhancements in Silicone Composites
Khadija Kanwal Khanum, Shessa Jayaram; University of
Waterloo, Canada

2A-18 Effect of Nano-doping on Breakdown Performance of
B4C/ETFE Nanodielectrics
Shusai Zheng1, Daomin Min1, Xiaoping Wang1, Shengtao Li1, Wenfeng Liu1, Xinbin Hou2, Li Wang2; 1: Xi'an Jiaotong
University, China; 2: Qian Xuesen Laboratory of Space
Technology, China

2A-19 Investigation of thermal conductivity of semiconducting
nanofluid for transformer
Sujita Srichandana Dey, Rohith Sangineni, Niharika Baruah,
Mutyunjay Maharana, Sisir Kumar Nayak; IIT GUWAHATI,
India

Session 2B – Aging and Treating

2B-1 A Novel Methodology to Monitor Partial Discharges in
Microcavities at Solid-Solid Interfaces
Emre Kantar1,2, Erling Ildstad2; 1: SINTEF Energy
Research; 2: Norwegian University of Science and Technology

2B-2 Contribution of wetting properties for coupling effect in
oil-paper Insulation
Ge Zhao, Yang Liuqiang, Li Shengtao, Li Shijun, Tan Ben,
Yan Wei, Cui Huize, Mao Ganlin; Xi'an Jiaotong University

2B-3* Treering Breakdown Property in Epoxy/TiO2
Nanocomposites
Norihiko Kodama1, Tomohiro Kawashima1, Naohiro
Hozumi1, Yoshinobu Murakami1, Shigeyoshi Yoshida2,
Takahiro Umemoto2, Takahiro Mabuchi2, Hirotaka Muto2; 1: Toyoohashi University of Technology, Japan; 2: Mitsubishi
Electric Corporation, Japan

2B-4 The leakage current characterization on the electrical tree
aging of polymer
Jiaye Xie, Qi Li, Jun Hu, Jinhang He; Tsinghua University,
China

2B-5 Degradation in Mechanical and Dielectric Properties of
Silicone Rubber under Severe Aging Conditions
Naoshi Hirai, Takuya Kaneko, Seitaro Ito, Takefumi
Minakawa, Yoshimichi Ohki; Waseda University, Japan

2B-6 Thermal ageing effects on polypropylene properties
Abdallah HEDIR1, Ferhat SLIMANI2, Mustapha
MOUDOU1, Omar LAMROUS2, Sombel DIAHAMD; 1: Mouldou Mammeri University, Algeria; 2: CNRS; LAPLACE;
Université de Toulouse, France

2B-7 Investigation on the Ageing Behaviour of Ester
Impregnated Insulating Paper in a Hermetically Sealed
System
Tobias Münster1, Tobias Kinkeldy1, Peter Werle1, Kai
Häme8, Jörg Preusel2; 1: Leibniz Universität Hannover,
Germany; 2: GRIDINSPECT GmbH, Germany

2B-8 The Evaluations of Stator Insulation for Direct-drive Wind
Turbine Generators Based on Accelerated Multi-factor
Aging
Qingyuan Liu1, Xuezhong Liu1, Yanqin Li2, Meng Wang3,
Hongsheng Chen2, Yong Zhao3, Yong Ma3; 1: Xi'an
Jiaotong University, China; 2: CRRC Zhuzhou Electric Co.;
3: Xi'an Thermal Power Research Institute Co.

2B-9* The Influence of SPWM Frequency on the Endurance of
Inverter-fed Motor Insulation
Ming Zhao1, Qun Zhou1, Peng Wang3, Jiawei Zhang2; 1:
Sichuan University, China; 2: Xi'an University of Technology

2B-10 Compatibility between C4F7N and Sealing Material
EPDM Used in GIL
ZHEYU ZHENG1, HAN LI1, WENJUN ZHOU1, JIANHUI
YU1, HANG WANG2, JIE ZHANG3, YONG JIANG1, JIAN
ZHAO2, LIN YANG2, YIBO ZHOU1; 1: School of Electrical
Engineering and Automation, Wuhan University, China; 2:
3M China Limited, Shanghai, China

2B-11* Compatibility between C3F7CN and Epoxy Resin at
High Temperature
Ruijun Yuan, Han Li, Wenjun Zhou, Jianhui Yu, Hang Wang;
Wuhan University, China

2B-12 Study on Formation Mechanism of Thermooxidative
Aging Protection Difference Among Nanoparticles in Low
Density Polyethylene
Zhanxi Zhang, Youyuan Wang, Yudong Li, Yanfang Zhang;
Chongqing University, China

2B-13 Study on Physicochemical Properties and Thermal
Aging Characteristics of a Mixed Ester Insulating Oil
Zyi Lou, Jian Li, Kaizheng Wang, Shengyuan Xia;
Chongqing University, China

2B-14 Fundamental Investigation of Discharge-Induced Fire
from Damaged Ac Power Supply Cord
Kiyoko Takenaka1,2, Yusuke Ishikawa1, Yukio Mizuno1,
Tomonari Kawai, Atsushi Yoshida; 1: Nagoya Institute of Technology, Japan; 2: Aichi Center for Industry and Science Technology, Japan; 3: Kawamura Electric Inc., Japan

2B-15 Cause Analysis of Aging Ablation on Sheath of 110 kV Single Core High Voltage Cable
Yue Xin, Lei Jiang, Xiuyan Zhao, Wenbin Li, Jinghui Gao, Baofeng Xi, lisheng Zhong, Linfeng Xie; Xi’an Jiaotong University, China

2B-16* Fillers impact analysis on aging of crosslinked polyethylene for nuclear application through dielectric spectroscopy
Simone Vincenzo Suraci1, Davide Fabiani1, Konsta Sipilä2, Harri Joki3; 1: Department of Electrical Engineering University of Bologna, Italy; 2: VTT Technical Research Centre of Finland Ltd, Espoo, Finland

2B-17 The Effect of the Humidity on the High Voltage Testing of VPI Insulation Systems before Impregnation
Davoud Esmaeil Moghadam, Thomas Hillmer, Christoph Herold, Rolf Zbinden, Brian George; Von Roll Institute, Switzerland

2B-18 Effect of moisture on electrical properties of epoxy/paper composites
Zongliang Xie, Hongliang Zhang, Siyu Zhang, He Li, Xiaolin Su, Peng Liu, Zongren Peng; Xi’an Jiaotong University, China

2B-19 Research on Thermal Aging Characteristics of Dry-type Transformer Epoxy Resin Based on Dielectric Response and Activation Energy
Junji Feng1, Xin Zhang1, Wei Wang1, Wei Zhang2, Peng Ren1, Peng Peng1; 1: Electric Power Research Institute of State Grid Tianjin Electric Power Corporation, China; 2: North China Electric Power University, China

2B-20 Insulation Lifetime Characteristics of Epoxy/TiO2 Nanocomposite with Internal Void
Takahiro Umemoto1, Shigeoishi Yoshih1, Yasutomo Otake1, Hirotaka Muto1, Muneaki Kurimoto2; 1: Mitsubishi Electric Corporation, Japan; 2: Nagoya University, Japan

2B-21 Dielectric Properties of High Voltage XLPE Power Cables Taken from Service
Haoming Wang1, Shengchen Fang1, Zhengzheng Meng1, Pengxian Song1, Xu Li1, M. Z. Zhu1, X. H. Zhu1, Yang Yu1, Boxue Du1; 1: Tianjin Electric Power Research Institute, China; 2: School of Electrical and Information Engineering, Tianjin University, China

2B-22 Fast Calculation for Temperature Rise of Trench Laying Cables Based on Thermal Circuit Model and Assessments of the Cable Life
Xiaowen Wang, Junping Zhao, Qiaogen Zhang, Siyun Wang, Yiping Gao, Qi Ying; Xi’an Jiaotong University

2B-23* Water Trees as a Dominant Deterioration Cause of 60 kV Class Dry Cured XLPE Cables
Toshihiro Takahashi, Takashi Kurihara, Tsuguhiko Takahashi, Tatsuki Okamoto; Central Research Institute of Electric Power Industry, Japan

Session 2C – Outdoor Insulation, Surface Flashover and GIS (I)

2C-1* Electrical Performance of a New RTV Coating with Antimicrobial Agents Added
Shihao Wang1, Zhidong Jia1, Xilin Wang1, Shifang Yang1, Huan Bai2; 1: Engineering Laboratory of Power Equipment Reliability in Complicated Coastal Environment, Graduate School at Shenzhen, Tsinghua University, China; 2: China State Grid Sichuan Electric Power Company

2C-2 Study on partial discharge characteristics of C4F7N/CO2 gas mixture GIL based on the integrated optical-UHF detection
Yiming Zang1, Yong Qian1, Wei Liu2, Yongpeng Xu1, Gehao Sheng1, Xuichen Jiang1, Simeng Song1; 1: Department of Electrical Engineering, Shanghai Jiaotong University, China; 2: Key Laboratory for Sulfur Hexafluoride Gas Analysis and Purification of SGCC, Anhui Electric Power Research Institute of SGCC, China

2C-3 The DC Voltage Flashover Characteristics of SF6 insulated DC Wall bushing under Uneven Rain Conditions
Xiaojie Xie, Wei Hu, Xiaoqing Luo, Zongren Yu, Pengbo Yin; China Electrical Power Research Institute, China

2C-4 TiO2-MWCNTs Nanofiller Enhance DC Surface Flashover Characteristics of Epoxy Nanocomposites in Vacuum
Zhen Li, Shengtao Li, Haoming Xu, Farooq Aslam; Xi’an Jiaotong University, China

2C-5 E-field distribution and optimization on shielding electrodes for reactor in ±1100kV indoor DC yard
Zehua Wu1, Huidong Tian1, Jialong Wang2, Shoufeng Jin1, Peng Liu1, Zongren Peng1; 1: Xi’an Jiaotong University, China; 2: State Power Economic Research Institute

2C-6 Study on Contamination Characteristics of Insulators on UHV Transmission Lines in Southern and Northern Climates
Qianhui Li, Yujun Guo, Xueqin Zhang, Kai Liu, Guangning Wu, Zhang Xiao, Yaozhen Wang; Southwest Jiaotong University, China

2C-7 Electric Field Simulation of a Voltage Graded Type Insulator for DC GIL
Kejie Huang1, Jianwei Cheng1, Shaobing Wang1, Xi Chen2, Zhiqiang Li1, Peng Liu1, Shoufeng Jin1; 1: Electric Power Research Institute, China Southern Power Grid, China; 2: China Southern Power Grid, China; 3: Xi’an Jiaotong University

2C-8* Simulation and Optimization Design of Isolating Switch in the Indoor DC Yard of ±1100 kV Converter Station
Zonghan Yang1, Jialong Wang1, Yujian Ding2, Yan Mao2, He Li1, Peng Liu1, Zongren Peng1; 1: Xi’an Jiaotong University, China; 2: China Electric Power Research Institute, China

2C-9 Surface Functional Graded Material Considered for DC Gas-Insulated Pipeline
Guoli Wang1,2, Tingting Wang1,2, Wenbo Zhu1,2, Mingli Fu1,2, Jin Li1, Hucheng Liang, Zhaoyu Ran1, Boxue Du1; 1: Technology Research Center of China Southern Power Grid; 2: School of Electrical and Information Engineering, Tianjin University; 3: National Engineering Laboratory for Ultra Voltage Engineering Technology (Kunming Guanzhou)

2C-10 Influence of Metal Particle Contamination on Surface Charging and Flashover Characteristics of PTFE Insulator under Impulse Voltage in Vacuum
Guo-Qiang Su1, He-Jin Liu1, Di Fan1, Feng Wang1, Yang Liu1, Yan-Bo Wang2, Jun-Bo Deng2, Guan-Jun Zhang2; 1: State Grid Shandong Electric Power Research Institute, China; 2: Xi’an Jiaotong University, China

2C-11 Influence of Flashover Initiation Process on Surface Insulation Performance for Insulators under Impulse Voltage in Vacuum
Guo-Qiang Su1, Di Fan1, He-Jin Liu1, Feng Wang1, Yang Liu1, Yan-Bo Wang2, Guan-Jun Zhang2, Jun-Bo Deng2; 1: State Grid Shandong Electric Power Research Institute, China; 2: Xi’an Jiaotong University, China
2C-12 A Comparative Study on the Breakdown Characteristics of SF6 and 20% C3F7CN / 80% CO2 Gas Mixture in a Coaxial Configuration
Loizos Loizou, Lujia Chen, Qiang Liu; The University of Manchester, UK

2C-13 Surface Conductivity Effects of SDBD Plasma Actuators Before Discharge Established
Wen Lu1, Liming Wang1, Hongwei Mei1, Fanghui Yin1, Xinyu Huang1, Fuzeng Zhang2; 1: Graduate School at Shenzhen; Tsinghua University, China; 2: Institute of China Southern Power Grid Co., Ltd., China

2C-14 3D Particle Simulation of Positive Needle-to-Plane Streamer Discharge in SF6 with Field Ionization
Muhammad Farasat Abbas, Han-Wei Li, An-Bang Sun, Guan-Jun Zhang; Xi’an Jiaotong University, China

2C-15 Study on the Movement of Water Drop on the Insulators Surface under AC and DC Electric Field
Wen Cao1,2, Hao Xue1, Yan Du1, Hao Yang1, Long Zhao1, Xiaoxue Guo1, Yang Wang1, Wei Shen1, Zepeng Lv1; 1: Xi’an Polytechnic University, China; 2: State Grid Shandong Electric Power Research Institute, China; 3: Xi’an Jiaotong University; China; 4: Northwestern Polytechnical University, China

2C-16 DC Air humidity correction factor for air external insulation revisited
Liliana Arevalo1, Dong Wu1, Mats Larsson2; 1: ABB Power Grids HVDC, Sweden; 2: ABB Corporate Research, Sweden

2C-17 Finite Element Method Simulation of 1100kV GIS SF6 Gas Insulated Composite Bushing
Shiling Zhang1, Siyu Zhang2, Xialin Su1; 1: State Grid Chongqing Electric Power Company Chongqing Electric Power Research Institute, China; 2: Xi’an Jiaotong University, China

2C-18 Analysis on Electric Field Distortion of Three-phase Tri-post Insulator in 220kV Compact GIL with Metal Defects
Jianwei Cheng1, Sijia Zhu2, Shoufeng Jin2, Zhiqiang Li1, Xi Chen1, Zehua Wu2, Zongren Peng1; 1: Electric Power Research Institute, China Southern Power Grid; 2: Xi’an Jiaotong University, China

2C-19 Broadening the application of the quick flashover method for RTV pre-coated glass cap-and-pin insulators sampled from service in the Italian Transmission grid
Massimo Marzinotto1, Giovanni Mazzanti2, Alessandro Panara2; 1: TERNA, Italy; 2: University of Bologna, Italy

2C-20 Optimization of Electric Field Distribution for Tri-Phase Tri-Post Insulator in 220kV GIL
Sijia Zhu1, Peng Liu1, Ao Gong1, Ruizhi Hu1, Zehua Wu1, Haoan Wang2, Zongren Peng1; 1: Xi’an Jiaotong University; 2: China Electric Power Research Institute, State Grid Corporation of China

Session 2D – Partial Discharges and Measurement Techniques (I)

2D-1 Simulation Study on Impedance Spectroscopy of Cables of Various Aging Statuses and with Local Defects
Yuli Wang1, Benhong Ouyang1, Huajie Yi2, Chengke Zhou2, Hao Zhou2, Xiaochuan Shi2; 1: China Electric Power Research Institute Ltd., Wuhan Branch; 2: Glasgow Caledonian University, United Kingdom; 3: Wuhan Intelligent Monitoring Technology Ltd.

2D-2 Assessing the severity of partial discharges in aerospace applications
Paolo Seri, Luca Lusuardi, Andrea Cavallini, Gabriele Neretti; Department of Electrical, Electronic and Information Engineering (DEI) - University of Bologna – Italy

2D-3 Feasibility Study on Evaluating Degree of Polymerization of Insulating Paper by Ethanol Content Dissolved in Transformer Oil
Enze Zhang, Hanbo Zheng, Yiyi Zhang, Jiefeng Liu, Chuangsheng Zhang, Guangqi Shao, Yi Li, Chaohai Zhang, Xianhao Fan; Guangxi Key Laboratory of Power System Optimization and Energy Technology, Guangxi University, China

2D-4 State evaluation of transformer paper insulation based upon dielectric response characteristic parameters
Xianhao Fan, Jiefeng Liu, Guangwei Ren, Yiyi Zhang, Hanbo Zheng, Chaohai Zhang; GXU University, China

2D-5 A Substation UHF Partial Discharge Detection Method Based on Maximum Likelihood Estimation
Nan Zhou, Lingen Luo, Hui Song, Gehao Sheng, Xichen Jiang; Shanghai Jiaotong University, China

2D-6 The Anti-interference Method of Michelson Optical Fiber Interferometer for GIS Partial Discharge Ultrasonic Detection
Hong-yang Zhou1, Meng Zhang1, Guo-ming Ma1, Cheng-rong Li2, Bo-yuan Cui2, Yu Yin2, Yu-ji Wu2; 1: North China Electric Power University, China; 2: High Voltage Department, China Electric Power Research Institute

2D-7 Simultaneous Electrical, UHF, Current and Optical PD Measurements on Floating Potential under DC Stress
Philip Wenger1, Michael Beitle1, Saliba Abdul Madhar2; 1: University of Stuttgart, Germany; 2: Haefely Test AG, Basel, Switzerland

2D-8 Analysis of PD-induced Ultraviolet Signal in GIS and Comparing with Electrical Signals
Nannan Yan1, Bengang Wei1, Yuhaof Lin2, Quan Wen3; 1: State Grid Shanghai Energy Interconnection Research Institute; 2: Bowdoin College; 3: State Grid Shanghai Municipal Electric Power Company

2D-9 Experimental Study on Corona Discharge Characteristics of SF6/N2 Gas Mixture in Needle-plane Model
Yanliang He1, Xianjun Shao2, Shaoan Wang2, Zhiwei Shen1, Xing Zhang1, Anbang Sun1, Guanjun Zhang1; 1: Xi’an Jiaotong University, China; 2: Research Institute of State Grid Zhejiang Electric Power Limited Company, China

2D-10 Study on Keypoint Extraction Method of Phase-Resolved Partial Discharge Pattern in Power Transformer
Yan-Bo WANG1, Ding-Ge CHANG1, Xian-Jun Shao2, Shao-Rui Qin3, Yu-Lun Chen1, Guan-Jun ZHANG1; 1: Xi’an Jiaotong University; 2: Research Institute of State Grid Zhejiang Electric Power Company; 3: State Grid Anhui Electric Power Research Institute

2D-11 Modelling the Impact of Ground Planes on Aircraft Transmission Cable Impedance
Ian Thomas Kiely, Patrick John Norman, Brian Gordon Stewart; University of Strathclyde, UK

2D-12 GIS partial discharge fault diagnosis based on numerical simulation and analysis of ultrasonic propagation characteristics
Kai Gao1, Xinlei Qiao2, Hua Huang1, Danrui Ma2, Fuchun Chen2, Lijun Jin2; 1: State Grid Shanghai Electric Power Research Institute, China; 2: Tongji University, China

2D-13 Ultrasonic Detection for Partial Discharge in Transformer Oil Based on Microfiber Coupler Sensor
Penghao Yu1, Yiying Liu1, Xinyi Wang1, Wenchao Wang1;
Delin Hu, 1 Xi’an Jiaotong University, China; 2 Suzhou Electrical Apparatus Science Research Institute Co. Ltd, China

2D-14 Development of Wireless Partial Discharge Detector based on Ultrasonic Signal
Yue Zhang1, Zhaoyuan Fu2, Ke Liu2, Xiaoping Lv2, Guangtao Zhang2, Yong Qian1, Weijia Yao1; 1: Shanghai Jiao Tong University, Shanghai, China; 2: State Grid Jinan Electric Power Company, China

2D-15 Research on Diagnosis Method of Insulation Defects of Environmental-friendly GIL Chamber Based on Features of Gabor Transform
Weijia Yao1, Yong Qian1, Wei Liu2, Yiming Zang1, Yongpeng Xu1, Gehao Sheng2; 1: Department of Electrical Engineering, Shanghai Jiao Tong University, China; 2: Key Laboratory for Sulfur Hexafluoride Gas Analysis and Purification of SGCC, Anhui Electric Power Research Institute of SGCC, China

2D-16 Partial Discharge Characteristics of surface defect under Fast Rising Repetitive Square Waveforms for Power Electronics Application
Chongxing Zhang; Xi’an Jiaotong University, China

2D-17 Localization the Inter-turn Faults in Transformer Winding by using Reflection Function Measurement
Sahand Seif1,2, Mahdi Rahimabakhsh1,3, Peter Werle1, Ernst Gockenbach1, Amir Abbas Shayegani Akma1, Hossein Mohseni1, Thomas Hinchel1, Joachim de Boer1, Tobias Muenster1; 1: Leibniz Universität Hannover, Germany; 2: University of Tehran, Iran; 3: Emerco GmbH, Germany

2D-18 Research on the temperature and flow characteristic of UHV GIL based on multi-field coupling
Shoufeng Jin1, Huidong Tian2, Ao Gong1, Shiyou Zhou1, Haoran Wang2, Peng Liu1, Zongren Peng1; 1: Xi’an Jiaotong University, China; 2: China Electric Power Research Institute

2D-19 Simulation and experiment on discharge characteristics of indoor devices in ±1100 kV converter station based on potential gradient equivalent method
Ran Shi1, Yujian Ding2, Jialong Wang1, Zehua Wu1, Shiyou Zhou1, Zongliang Xie1, Zongren Peng1; 1: Xi’an Jiaotong University, China; 2: China Electric Power Research Institute

2D-20 Data-driven Severity Assessment for GIS Partial Discharge
Xiaqiu Wan1, Hui Song2, Zhongmin Yu2, Gehao Sheng1, Xiuchen Jiang2; 1: Department of Electrical Engineering, Shanghai Jiao Tong University; 2: State Grid Shanghai Power Supply Company

2D-21 Investigation of Surface Discharge on PE in Air and Nitrogen under Different Pressures Based on Pockel Effect
Yan Du1,2, Kai Wu2, Wen Gao2, Yongcan Zhu2, Yuanyang Ren1; 1: Xi’an Polytechnic University, China; 2: Xi’an Jiaotong University, China

2D-22 Diagnosis of Operating Insulator Aging Status Based on Image Processing and Hyperspectral Analysis
Bin Wang, Changjie Xia, Ming Dong, Ming Ren, Tianxin Zhuang, Chenxi Guo; Xi’an Jiaotong University, China

15:30-16:00 Break

16:00-18:00 Session 3 (Oral): Advanced Materials
Chair: Co-chair:
3-1 Impact of Nanocomposite Thin Layer on Nanoparticles Dispersion and Their Dielectric Properties
Shakeel Akram1,2, Jerome Castellon1, Serge Agnelli1, Jean Pierre Habas2, Zhou Kai3, M. Tariq Nazir4; 1: IES-GEM University of Montpellier, Montpellier, France; 2: ICGM, CNRS, ENSCM Equipe Ingénierie et Architectures Macromoléculaires, Université Montpellier, Montpellier, France; 3: School of Electrical Engineering and Information, Sichuan University, China; 4: School of Mechanical and Manufacturing Engineering, University of New South Wales, Sydney, Australia

3-2 Dielectric Quantum Dot Traps in Polymer Nanocomposites
Toshikatsu Tanaka; Waseda University, Japan

3-3 Effect of Plasma Modification on Dielectric Properties of Polyimide Nanocomposite Films
Juan Liu, Guangning Wu, Yan Yang, Yixin Lei, Jiang Deng; Southwest Jiaotong University, China

3-4 Enhancing Discharged Energy Density of Polymer Dielectrics at High Temperature by Nanofilbers
Xin Chen, Tian Zhang, Q. M. Zhang; The PENN State Univ, USA

3-5 Influence of the Amount of Silane Coupling Agent on the Dielectric Properties of AlN/Polypropylene Nanocomposites
Xinyu Wang, Thomas Andritsch, George Chen; University of Southampton, UK

3-6 Study of Polyethylene and Polypropylene Nanocomposites for HVDC Insulation
Xuhui Duan1, Wah Hoon Siew1, Martin Givens1, John Liggat1, Mark Wilson1, Jinhoang He2; 1: University of Strathclyde, United Kingdom; 2: Tsinghua University, China

3-8 Behavior of triple negative breast cancer MDA-MB-231 cells due to reversible breakdown of cell membrane
Jeya Shree Thulasidas1,2, Gowri Sree Varadarajan1, Ignacio Camarillo1, Lakshya Mittal1, Raji Sundararajan1; 1: Division of High Voltage Engineering, Department of Electrical and Electronics Engineering, CEG campus, Anna University, Chennai, India; 2: Department of Biological Sciences, Purdue University, West Lafayette, Indiana, USA; 3: School of Engineering Technology, Purdue University, West Lafayette, Indiana, USA

Tuesday, October 22, 2019
8:15-10:00 Session 4 (Oral) Partial Discharges and Measurement Techniques
Chair: Co-chair:
4-1 Simulation and Experimental Results of Interdigital Capacitor (IDC) Sensors to Monitor Insulation Degradation of Cables
Samuel W. Glass1, Md. Nazmul Al-Imran2, Leo S. Fifield2, Mohammad Alif2; 1: Pacific Northwest National Laboratory, USA; 2: University of South Carolina

4-2 Fundamental Study for Quantification of Change in PD Waveform on Electrical Treeing
Tomohiro Kawashima1, Totoh Abdul Matin1, Yoshinobu Murakami1, Naohiro Hozumi1, Shigeyoshi Yoshida2, Takahiro Umemoto2, Takahiro Mabuchi3, Hirotaka Muto2; 1: Toyohashi University of Technology, Japan; 2: Mitsubishi
Electric Corporation, Japan

4-3 Partial Discharge Measurements of DC Insulation Systems: the Influence of the Energization Transient
Paolo Senni1, Siddhi Ghosh1, Hadi Naderiallah1, Leonardo Cirion1, Gian Carlo Montanari2; 1: Department of Electrical, Electronic and Information Engineering (DEI) - University of Bologna – Italy; 2: Center for Advanced Power Systems, Florida State University, Tallahassee, USA

4-4 An Investigation on the Dielectric Properties of Thermally-Aged Polyimide and its Capability to Withstand Partial Discharges
Andrea Cavallini1, Riccardo Succi2, Tan Han3; 1: University of Bologna, Italy; 2: Techimp Srl, Zola Predosa, Italy; 3: Tianjin University, China

4-5 Experimental Study on Deterioration Characteristics of Winding Insulation State in Double-Fed Wind Generator
Jianbo Han1, Xuezhong Liu1, Yong Zhao1, Pengfei Yuan1, Bin Han2, Yong Ma3; 1: Xi’an Jiaotong University, China; 2: Xi’an Thermal Power Research Institute CO.

4-6 UHF-PD Measurements and High-Speed-Imaging of Fireflow Motion at the Positive Electrode in HVDC-GIS
Philipp Wenger1, Michael Beil1, Stefan Tenbohlen1, Uwe Riecher1; 1: University of Stuttgart, Germany; 2: ABB Switzerland Ltd, Switzerland

4-7 DC Component Effect on Electrical Ageing Tests
Eugenia Torello, Francesco Guastavino, Luca Briano, Federico Gallesi; University of Genoa, Italy

10:00-10:30 Break

10:30-12:00 Session 5 (Oral) Outdoor Insulation, Surface Flashover and Gas Insulation
Chair: Co-chair:
5-1 Effects of Surface Nonlinear Conductive Coatings on Surface Charge Behavior of Alumina-Filled Epoxy Resin Spacers
Jian-Yi Xie, Jun-Hong Chen, Han Wang, Bao-Hong Guo, Jun-Bo Deng, Guan-Jun Zhang; Xi’an Jiaotong University, China

5-2 Flashover Voltage of Outdoor Insulators in the Presence of Multiple Drybands
Meghana Ramesh, R. S. Gorur; University of Alabama in Huntsville, USA

5-3 Composition Analysis of Operating Insulator Pollution Based on Hyperspectral Analysis
Changjie Xia, Chenxi Guo, Ming Ren, Ming Dong, Bin Wang, Jiacheng Xie, Siyun Wang, Ran Duan; Xi’an Jiaotong University, China

5-4 Electric Field Computation for HVDC GIS/GIL Spacer under Superimposed Impulse Conditions
Cong Thanh Vu, Frank Jacquier, Alain Girodet; SuperGrid Institute, France

5-5 Effect of Surfactant on Dielectric and Thermal Properties of Silicone Nanocomposites
Khadija Kanwal Khanum, Arathi Mohan Sharma, Shesha Jayaram; University of Waterloo, Canada

5-6 A Computational Model for Pre-breakdown Phenomena in Gas Insulated Switchgear
Qasim Khan1,2, Shady S Refaat2, Haidham Abu-Rub2, Hamid Toliyat1; 1: Texas A&M University, College Station, TX, 77840, USA; 2: Texas A&M University at Qatar, Qatar

12:00-12:30 Poster Preview 2

12:30-13:45 Catered Lunch

13:45-15:30 Session 6 (Poster)
Chair:
Session 6A – Polarization, Charge Storage and Transport

6A-1 Thermally Stimulated Depolarization Current Analysis of Stored Charge in LDPE and XLPE
Roger Walker1, Hossein Hamedi1, William H. Hunter Woodward2, Ramakrishnan Rajagopalan1, Michael Lanagan1; 1: Penn State, University Park, Pennsylvania, USA; 2: Dow Chemical, Midland, MI, USA

6A-2 Relation Between the Glass Transition and Dielectric Properties in Bisphenol A and F Epoxy Resins
Keigo Mori1, Naoshi Hira2, Yoshimichi Ohki1,2, Yasutomo Otake3, Takahiro Umemoto3, Hirotaoka Muto3; 1: Department of Electrical Engineering and Bioscience, Waseda University; 2: Research Institute for Materials Science and Technology, Waseda University; 3: Advanced Technology Research and Development Center, Mitsubishi Electric Corporation

6A-3 Electric Field Assisted Transport of the Crosslinking Byproducts in Low-Density Polyethylene
Hossein Hamedi1, Roger Walker1, William H. Hunter Woodward2, Ramakrishnan Rajagopalan1, Eugene Furman1, Michael T. Lanagan1; 1: Penn State, University Park, Pennsylvania, USA; 2: The Dow Chemical Company, Midland, MI, USA

6A-4 Dielectric charging of polyetheretherketone insulation used in spacecraft superimposed dc voltage
Wen Bu, Weiwang Wang, Shusai Zheng, Shengtao Li; Xi’an Jiaotong University, China

6A-5 Space charge measurements under a scaled equivalent thermal gradient in HVDC mini-cables
Giuseppe Rizzo1, Pietro Romano1, Guido Ala1, Eleonora Riva Sanseverino1, Roberto Candelà1, Vincenzo Li Vign1; 1: Università di Palermo, Italy; 2: Prysmian Electronics - Prysmian Group

6A-6 A deeper insight in predicting the effect of voltage polarity reversal on HVDC cables
Antonio Battaglia1, Massimo Marzotto1, Giovanni Mazzanti2; 1: TERNA, Italy; 2: University of Bologna, Italy

6A-7 Evaluation of Energy Level Distribution in Nanocomposite Based on Polarization Current
Guiyue Zhou, Jiandong Wu, Chang Dai, Yu Zhang, Yi Yin; Department of Electrical Engineering, Shanghai Jiao Tong University, China

6A-8 Effect of Sinewave Electric Field on Space Charge Distribution in Ethylene-Propylene Rubber
Chang Dai, Jiandong Wu, Guiyue Zhou, Linxin Miao, Yi Yin; Shanghai Jiaotong University, China

6A-9 Dielectric Response and Charge Injection Behavior for Cu/Pt and Cu/Pt/Si
Cesar A Nieves1, Michael T Lanagan2,3; 1: Materials Science and Engineering, The Pennsylvania State University, USA; 2: Engineering Science and Mechanics, The Pennsylvania State University, USA; 3: Materials Research Institute, The Pennsylvania State University, USA

6A-10 Polarization and Depolarization Processes of Polyimide Based on a Non-Invasive Surface Potential Measurement

Lu Fan¹, Yalin Wang¹, Enke Yu², Yi Yin¹, Jiandong Wu¹; 1: Shanghai Jiao tong University, China; 2: Zhoushan Power Supply Company, State Grid Zhejiang Electric Power Co., Ltd., China

6A-11 Space Charge and Conduction Current in Polypropylene Based Material Added Inorganic Filler under DC High Stress
Kouta Hashimoto¹, Takehiro Kanai¹, Yasuhiro Tanaka¹, Hiroaki Miyake¹, Yoitsu Sekiguchi²; 1: Tokyo City University, Japan; 2: Sumitomo Electric Industries, Ltd, Japan

6A-12 Effect of filler amount on relative permittivity and deformation rate of TiO₂ / silicone elastomer composite
Ryosuke Fujihara¹, Muneaki Kurimoto¹, Kento Naya¹, Takeyoshi Kato¹, Masaki Imanaka¹, Shigeyuki Sugimoto¹, Yasuo Suzuoki²; 1: Nagoya University; 2: Aichi Institute of Technology

6A-13 Acoustic Wave Behavior in a Multilayered Material Containing an Air Void Defect
Antonino Imburgia¹, Pietro Romano¹, Guido Ala¹, Graziella Giglia, Giuseppe Rizzo, Fabio Viola; University of Palermo, Italy

6A-14 Influence of Silicone Oil and Gold Coating during the Space Charge Measurements on Epoxy Resin Specimens
XiaiLin Su¹, Siyu Zhang¹, Peng Wei¹, Zongliang Xie¹, Peng Wu¹, Liangliang Pan¹, Peng Liu¹, Zongren Peng¹, Shiling Zhang¹; 1: Xi’an Jiaotong University, China; 2: State Grid Ningxia Electric Power Company Maintenance Company; 3: State Grid Ningxia Electric Power Company; 4: State Grid Chongqing Electric Power Company Chongqing Electric Power Research Institute

6A-15 Space Charge Measurements on flat sample and cable specimens made by P-Laser Technology
Antonino Imburgia¹, Pietro Romano¹, Guido Ala¹, Marco Albertini², Luca De Ra², Stefano Franchi Bononi², Eleonora Riva Sanseverino¹, Giuseppe Rizzo¹, Srinirup Murugan²; 1: University of Palermo, Italy; 2: Prysmian Group, Milan, Italy

6A-16 Space Charge in Electron-Beam Irradiated Cross-Linked Polyethylene (XLPE): Implantation and Release from the Bulk
Chérif Mouchache¹, Virginie GRISERI², Nadia SAIDI-AMROUN¹, Gilbert TEYSSEDRE², Sarah MOUACI¹, Mohamed SAIDD¹; 1: University of Sciences and Technology Houari Boumediène (USTHB), Algeria; 2: LAPLACE, Université de Toulouse and CNRS, France

6A-17 High Electric Field Conduction of Polymers at Ambient and Elevated Temperatures
Chao Wu¹,², Zongze Li¹,², Lihua Chen³, Ajinkya Deshmukh⁴, Yifei Wang⁵, Rampi Ramprasad⁶, Gregory Sotzing⁷, Yang Cao⁸; 1: Department of Electrical and Computer Engineering, University of Connecticut, USA; 2: Electrical Insulation Research Center, Institute of Materials Science, University of Connecticut; 3: School of Materials Science and Engineering, Georgia Institute of Technology; 4: Polymer Program, University of Connecticut

6A-18 Study on space charge behavior of insulations for high temperature applications
Mohamadreza Arab Baferani¹, Tohid Sahsavarian¹, Xin Wu², Charles Lents², Yang Cao¹; 1: University of Connecticut, USA; 2: United Technologies Research Center

6A-19 Effect of Electron Beam Irradiation on Epoxy and Its Stability
Mingru Li¹, Huan Niu¹, Yin Huang¹, Shengtao Li², Daomin Min¹, Ye Liu², Zhexuan Zhao¹; 1: Xi’an Jiaotong University, China; 2: State Grid Zhejiang Electric Power Co., Ltd., China

6A-20 Modeling and Band Offset of PE/Fluorinated layer interface: A First Principle Study
Xuefeng Zhao¹, Xi Chen¹, Wei Duan¹, Haofei Sun¹, Junbo Deng², Guanjun Zhang²; 1: Electric Power Research Institute of State Grid Shaanxi Electric Power Company; 2: Xi’an Jiaotong University

6A-21 Dielectric Properties of EPDM/SiC Composite under Huge Temperature Gradient
Pengxian Song¹, Zehui Zhang², Haoming Wang³, Shengchen Fang¹, Yang Yu¹, Zhengzheng Meng¹, Xu Li¹, M. Z. Zhu¹, X. H. Zhu¹, Boxue Du³; 1: Tianjin Electric Power Research Institute, China; 2: Laiwu Power Supply Company of State Grid Shandong Electric Power Company, China; 3: School of Electrical and Information Engineering, Tianjin University, China

Session 6B – High Field Effects and Breakdown

6B-1 Tests and Simulation Research on Control of Electric Field Intensity for Valve Hall Fittings
Jianwei Cheng¹, Shuaibing Wang¹, Kejie Huang¹, Linjie Zhao¹, Xi Chen¹, Zongliang Xie², Peng Liu³; 1: Southern Electric Power Research Institute, CSG; 2: Xi’an Jiaotong University

6B-2 Investigation on the Lightning Impulse Strength of Special Layered Silicone Dielectrics for HVDC Applications
Mirmes Aganbegovic, Peter Werle; Leibniz Universität Hannover, Germany

6B-3 Tuning the Potential Distribution of DC Cable Joints with Nonlinear Material
Xiaolei Zhao, Xiao Yang, Jun Hu, Chao Yuan, Qi Li, Jiniang He; Tsinghua University, China

6B-4 Effects of Types and Amounts of Additive Polymers on Resistivity and Dielectric Strength of Pure Water
Norimitsu Takamura, Nobutaka Araoka, Takuya Otsubo, Masahiro Hanai; Fukuoka University, Japan

6B-5 Void-less epoxy and silicone insulation systems
Andrey KRIVDA, Sergey PANCHESNYI; ABB Switzerland Ltd, Corporate Research, Baden-Daettwil, Switzerland

6B-6 Structure of Paper-Oil Insulation for Mass-Impregnated HVDC Cables
Gunnar Håkonseth¹,², Knut Magne Furuheim¹, Erling Ildstad³; 1: Nexans Norway AS, Norway; 2: Norwegian University of Science and Technology, Norway

6B-7 Fundamental study for breakdown characteristic of slush nitrogen as a coolant in superconducting coil
Kazuki Yamada, Tomohiro Kawashima, Yoshinobu Murakami, Naohiro Hozumi; Toyohashi University of Technology, Japan

6B-8 Simulation Study on Plugged Joint for 10kV Cable
Ruifeng Yao¹, Xiyuan Zhao¹, Lei Jiang¹, Ran Hu², Qida Zhong¹, Jinghui Gao¹; 1: Xi’an Jiaotong University, China; 2: Shenzhen Power Supply Bureau Co. LTD, China; 3: Guangdong Annuo New Material Co. LTD, China

6B-9 Deformation of bubbles in silicon gel insulation under an alternating electric field
Giuseppe Rizzo¹, Pietro Romano¹, Guido Ala¹, Thomas Hammarström²; 1: Università di Palermo, Italy; 2: Chalmers University of Technology, Sweden

6B-10 Lightning Impulse Breakdown Characteristics in Epoxy Resin Filled with Precipitated ZnO Varistor Granules
Yuki Sasaki, Nobutaka Araoka, Norimitsu Takamura, Shota Yamasaki, Masahiro Hanai; Fukuoka University, Japan
6B-11 AC Breakdown Characteristics of Mineral Oil with Nitrogen Fine Bubbles under Nitrogen Gas Atmosphere
Tomohiro Tsutsumi, Norimitsu Takamura, Nobutaka Araoka, Takuya Otsubo, Yuki Sasaki, Seiya Kamohara, Masahiro Hanai; Fukuoka University, Japan

6B-12 Lightning Impulse Breakdown Characteristics of Pure Water with Nitrogen Ultrafine Bubbles Using Pore Type Generator
Takuya Otsubo, Takamura Norimitsu, Nobutaka Araoka, Yuta Hino, Masahiro Hanai; Fukuoka University, Japan

6B-13 The Effect of Type of Voltage (Sinusoidal and Square Waveform) and the Frequency on the Performance of Nonlinear Field-Dependent Conductivity Coatings for Electric Field Control in Power Electronic Modules
Maryam Mesgarpour Tousi, Mona Ghassemi; Virginia Polytechnic Institute and State University, USA

6B-14 Electric Field Optimization of Cast Resin Dry-Type Transformer under Lightning Impulse
Ruizhi Hu1, Zhiyi Zhang2, Shuo Wang1, Yu Lu1, Lilan Liu1, Sijia Zhu1, Zongren Peng1; 1: Xi’an Jiaotong University, Xi’an, China; 2: NARI Group Co., Ltd, Nanjing, China

6B-15 Influence of Temperature on Ionization Coefficient of Helium at 300-20 K
Jie Wu, Chengqian Yi, Linzhen Fan, Wei Wang, Youping Tu, Sichen Qin; North China Electric Power University, China

6B-16 DC breakdown properties in large oil gaps with and without pressboard interface
Linfeng Xia1, Qinxue Yu1, Songlin Jiang1, Xiaoyuan Song1, Mingbang Guo1, Lisheng Zhong2, Baofeng Xi2, Yue Xin1; 1: Xi’an Jiaotong University, China; 2: Guangdong JOOYN new material technology co., LTD

6B-17 Interfacial Potential Barrier Induced Constriction and Stepwise Transition of a Dynamic Arc Root
Jindong Hu1, Yang Cao1; 1: Electrical Insulation Research Center, Institute of Materials Science, University of Connecticut, USA; 2: Electrical and Computer Engineering, University of Connecticut, USA

6B-18 Thermoelectric coupling study of three-core XLPE submarine cable by Finite element simulation
Zhao Hui Wang, Wei Wang, Zhen Li, Shengtao Li; Xi’an Jiaotong University, China

6B-19 Insulation Properties of Liquid C6F12O for the Use in Eco-Friendly Transmission Equipmen
RUI QIU, WENJUN ZHOU, JIANHUI YU, HAN LI, HANG WANG; School of Electrical Engineering and Automation, Wuhan University, China

6B-20 Thermal Evaporation of Different Copper Nanotip Structures under High Electric Field Based on Electrodynamic – Molecular Dynamics Simulations
Xinyu Gao, Bing Xiao, Ziang Jing, Nan Li, Qi Ying, Guodong Meng, Yonghong Cheng; Xi’an Jiaotong University, China

6B-21 High Electric field prebreakdown aging in polymer dielectric thin films
Zongze Li1,2, Chao Wu1, Alex Ronney1, Michael Sotzing1, Yang Cao1; 1: Department of Electrical and Computer Engineering, University of Connecticut; 2: Electrical Insulation Research Center, Institute of Materials Science, University of Connecticut

6B-22 Study on accumulation effect of multiple lightning impulse on vegetable oil-paper insulation
Jianfeng He1, Jian Li1, Gangwen Xie2, Xiong Liu2, Yongfu Li Li2, Rui Yang2, Jing Zhao2, Xiao Ren2; 1: Chongqing University, China; 2: State Grid Chongqing Electric Power Co. Electric Power Research Institute, China

Session 6C – Outdoor Insulation, Surface Flashover and GIS (II)

6C-1 Effect of Charge Transport on Surface Flashover
Shaoxing Pan1,2, George Chen1, Xiaoping Wang1, Shengtao Li1; 1: Xi’an Jiaotong University, China; 2: University of Southampton, UK

6C-2 Role of Interfacial Molecular Structure on Surface Flashover in Vacuum
Chao Wang, Wen-Dong Li, Jia Guo, Zhi-Hui Jiang, Xiao-Ran Li, Guan-Jun Zhang; Xi’an Jiaotong University, China

6C-3 Experimental analysis of characteristics of saturation pollution on high voltage insulator in North China
Yi Li1, Xu Zhang1, Xin Wang1, Shouciao Fan1, Yanfeng Gao1, Yuan Chen2, Shuyuan Wang2, Hui Wang2, Jifei Zhang2, Bin Su2; 1: State Grid Jibe Electric Power Co. Ltd. Research Institute, North China Electric Power Research Institute Co. Ltd., Beijing, China; 2: State Grid Jibe Electric Power Co. Ltd. Beijing, China

6C-4 Transient Overvoltage Simulation Analysis of Long Distance Gas Insulated Metal Enclosed Transmission Lines
Ao Gong, Zehua Wu, Shoufeng Jin, Peng Liu, Zongren Peng, Pengfei Zhang, Xialin Su; Xi’an Jiaotong University, China

6C-5 Numerical Simulation on Surface Charge Accumulation of Solid Dielectrics with Needle to Plane Electrode under Nano-Second Impulse Voltage
Yu Gao, Zheng Song, Jing Li, Tao Han, Yong Liu, Boxue Du; Tianjin University, China

6C-6 Design and Optimization of Particle Traps in DC GIL Based on the Capture Effect Analysis
Yanan Chang1, Chuanghua Liu2, Jin He3, Jian Wang1, Jingrui Wang1, Hanwen Ren1, Qingmin Li1; 1: Beijing Key Laboratory of High Voltage & EMC (North China Electric Power Research Institute), China; 2: State Grid Tianjin Electric Power Company, China; 3: Electric Power Research Institute, Tianjin Electric Power Company, China

6C-7 Study on Adsorption Law of Metal Powder near the Basins-type Insulator in DC GIL
Ruixue Liang1, Qi Hu1, Yuyan Man2, Yanan Chang1, Jian Wang1; 1: North China Electric Power University, China; 2: Electric Power Research Institute, Tianjin Electric Power Company

6C-8 Study on the effect of dielectric film on gap breakdown voltage under DC voltage in air, SF6 and SF6/N2 mixture
Wei Wei1, Jian Wang2, Jingrui Wang2, Yanan Chang2, Qi Hu2, Xiaoru Ni2, Ruixue Liang2, Li Zhang1; 1: School of Electrical Engineering, Shandong University; 2: State Key Lab of Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University, China

6C-9 The Accumulation Characteristics of Surface Charges on GIS Tri-post Insulator under DC Voltage in SF6
Wei guo Li1, Chun jia Gao2, Hao Han3, Bo Qi2, Changhong Zhang1, Xu Yang1, Zhong kang Huang1, Qi Wang1, Meng Huang2; 1: Maintenance & Test Center of EHV Power Transmission Company, China Southern Power Grid, China; 2: State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University, China

6C-10 Influence of Defects on the Electric Field Distribution of ±800kV Butt-type DC Wall Bushing
Session 6D – Partial Discharges and Measurement Techniques (II)

6D-1 Partial Discharge Signal Propagation in T-Structured GIS
Ahmad Darwish1, Shady Refaat2, Hamid Toliyat1, Haltham Abu-Rub1, Qasim Khan2; 1: Texas A&M University, College Station, USA; 2: Texas A&M University at Qatar, Doha, Qatar

6D-2 Investigation for influence of space charge accumulation in motor winding coating material on partial discharge inception voltage
Tokihiro Narita1, Maimi Mima1, Hiroaki Miyake1, Yasuhiro Tanaka1, Masahiro Kozako2, Masayuki Hikita3, 1: Tokyo City University, Japan; 2: Kyushu Institute of Technology, Japan

6D-3 Transformer Fault Diagnosis Method via Approximation Relations in Approximation Space
Tong-Wei Wang1, Yao-Yu Xu2, Yuan Li3, Guan-Jun Zhang4; 1: State Grid Jiangsu Electric Power Research Institute, China; 2: Xi’an Jiaotong University, China

6D-4 Effect of mechanical vibration on surface discharge along epoxy resin under AC electric field
Siyun Wang, Zheng Ren, Meng Dong, Xinyi Ma, Changjie Xia, Tianxin Huang, Ran Duan; Xi’an Jiaotong University, China

6D-5 Monitoring of oxidative aged nonedible ester based dielectric fluid by suitable dissolved gas analysis
Mrutyunjay Maharan1, Niharika Baruah2, Sisir Kumar Nayak1, Ka Wu2; 1: Centre for Energy and Dept. of Electronics and Electrical Engineering, IIT Guwahati, Assam, INDIA; 2: Xi’an Jiaotong University, China

6D-6 Behavioural assessment of aged natural ester based nanofluid using statistical technique
Niharika Baruah, Mrutyunjay Maharan, Sujita Srichandana Dey, Sisir Kumar Nayak; Indian Institute of Technology, Guwahati, India

6D-7 Partial Discharge Inception Voltage Characteristics for Nano-micro Composites under Impulse Voltages in SF6 Gas
Kazuma Abe1, Kotaro Ohtsuno1, Masahiro Kozako2, Masayuki Hikita3, Hiroshi Mitsudome4, Hironori Yanase5, Kenji Okamoto6; 1: Kyushu Institute of Technology, Japan; 2: Fuji electric Co., Ltd

6D-8 The Partial Discharge Behavior of Different Materials under DC Periodic Stress
Pietro Romano1, Roberto Candela2, Carlo Consolazione3, Giuseppe Rizzo1, Guido Ala1; 1: Palermo University, Palermo, Italy; 2: Prysmian Group, Milan, Italy

6D-9 The Effect of the Harmonic Content generated by AC/DC Modular Multilevel Converters on HVDC cable systems
Pietro Romano1, Guido Ala1, Jorgen Bliennow2, Massimo Bongiorno3, Christian Grasso4, Thomas Hammarstrom5, Antonino Impurgia6, Giuseppe Rizzo7, Yuriy Serdyuk8; 1: Palermo University, Palermo, Italy; 2: Chalmers University of Technology, Gothenburg, Sweden

6D-10 Thermal Profiles of High-voltage Capacitor Units
Calum J. Mackinnon, Brian G. Stewart; University of Strathclyde, UK

6D-11 Partial discharge studies on high-temperature insulation materials for hybrid compulsion systems
Tohid Shahsavarian1, Mohamadreza Arab Baferani2, Xin Wu2, Charles Lents2, Yang Cao3; 1: University of Connecticut, USA; 2: United Technologies Research Center

6D-12 Electrochemical Impedance Spectroscopy Measurement of Lithium Battery Based on Lock-in amplifier
Guanghao Xu, Ran Duan, Ming Ren, Jiacheng Xie, Yizhuo Hu; Xi’an Jiaotong University, China

6D-13 Time-domain dielectric response characteristics of XLPE cable insulation under different water content
Xuefeng Zhao1, Jianan Han1, Haofei Sun2, Wei Duan1, Xi Chen2, Junbo Deng2; 1: Electric Power Research Institute of State Grid Shaanxi Electric Power Company; 2: Xi’an Jiaotong University

6D-14 Design method of high frequency current sensor based on neural network
Chuan Chen1, Xin Liu1, Wei Wang2, Lin Wang2; 1: Global energy interconnection research institute, China; 2: North China electric power university, China; 3: Beijing power company, China

6D-15 Multi-band Ultrasonic Detection Analysis of the Evolution Process of Point Discharge Under Power Frequency Voltage
6D-16* Experimental and Numerical Investigation on the Electric Charge Deposition in a Dielectric Barrier Discharge
Andrea Cristofolini, Gabriele Neretti, Arturo Popoli, Anna Chiara Ricchiuto, Paolo Seri; Department of Electrical, Electronic and Information Engineering, University of Bologna

6D-17 Corona resistant insulating systems characterization for low voltage rotating machines
Eugenio Torello, Francesco Guastavino, Luca Brianio, Federico Gallesi; University of Genoa, Italy

6D-18 Power Transformer Condition Monitoring by 2FAL Content – a Fuzzy Logic Approach
Samuel EKE, Thomas AKA-NGNUJ, Guy CLERC, Issouf Fofana; 1: Univ. Lyon-Ampère (CRNS UMR 5005), Ecole Centrale Lyon, Univ. Claude Bernard Lyon 1, INSA de Lyon, France; 2: University of Quebec at Chicoutimi (UQAC), Canada

6D-19 Precise Positioning of the Underground Power Cable by Magnetic Field Detection
Xuancheng Huang, Wei Wang, Zepeng Lv, Chao Yuan, Jianbao Feng; 1: Jiangsu Fangtian Electric Technology Co. Ltd, China; 2: Xi'an Jiaotong University, China

Session 6E – Functional Dielectrics

6E-1 Investigation on the Breakdown Strength of Aged Special Layered Silicone Dielectrics under DC Stress
Mirmes Aganbegovic, Peter Werle; Leibniz Universität Hannover, Germany

6E-2 Flash Sintering of BYZ Ceramics under AC Field
Jieming Liu, Yuchen Zhu, Xilin Wang, Zhidong Jia, Liming Wang; Tsinghua University, China

6E-3 Enhancement of dielectric constant of aromatic polyimides by introducing 4,5-diazafluorene structure
Liuqing Yang, Ben Tan, Shijun Li, Yang Feng, Zhao Ge, Liuhao Jiang, Ganlin Mao; Xi'an Jiaotong University, China

6E-4 Reading Local Structure for Ferroelectric Ceramic by Convergent Beam Electron Diffraction and Artificial Intelligence Method
Zhixin He, Wenbo Yan, Jingzhe Xu, Yan Wang, Tongxin Zhao, Jinghu Gao; Xi'an Jiaotong University, China

6E-5 Effect of Micron Thermal Conductive Filler on Thermal Conductivity and Electrical Properties of Epoxy Composites
RUI Tuo, YIRAN ZHANG, WEI YANG, SHAOJIAN HE, QING XIE, XINGMING BIAN; 1: North China Electric Power University, China; 2: State Key Laboratory of Advanced Transmission Technology, Global Energy Interconnection Research Institute Co., Ltd, China

6E-6 Cryogenic Characteristics and Relaxation Polarization Mechanism of NaCl Aqueous Solutions
Xiaoyuan Song, Lisheng Zhong, Jiaxi He, Minchen Qiu, Jinghu Gao, Qinxue Yu; Xi'an Jiaotong University, China

6E-7 Global Proteomic Analysis of Breast Cancer Cell Plasma Membrane Electroporation
Lakshya Mittal, Uma K. Aryal, Ignacio G. Camarillo, Raji Sundararajan; Purdue University, USA

15:30-16:00 Break

16:00-18:00 Session 7 (Oral): Gold Session with Extended Discussions
Chair: Thomas Andritsch, University of Southampton, UK
Co-chair:

7-1 Effect of Core-shell Particles on the Dielectric Properties of Epoxy Nanocomposites
Sunny Chaudhary, Thomas Andritsch, Alun Vaughan; University of Southampton, UK

7-2 The Role of Nano-sized Alumina Tri-hydrate and Fumed Silica on the Erosion of Silicone Rubber under DC Voltage
Alhaytham Yousef J Alqudsi, Refat Atef Ghunem, Eric David; 1: École de technologie supérieure; 2: National Research Council Canada

7-3 Discharge Behavior of the Nanostructured Insulation Material for High Torque Density Electrical Propulsion
Hiep Nguyen, Yifei Wang, JoAnne Rozello, Jack Chapman, Yang Cao; 1: Univ. of Connecticut, USA; 2: Electric Boat, A General Dynamic Company, Groton, CT, USA

7-4 A Non-destructive Testing Method for Moisture Content of Oil-paper Insulation Based on Terahertz Dielectric Response
Hangjing Wang, Jing Yin, Li Cheng, Ruijin Liao, Lijun Yang; Chongqing University, China

18:30-21:00 Banquet

Wednesday, October 23, 2019

8:15-10:00 Session 8 (Oral) Numerical Analysis and Simulation
Chair:
Co-chair:

8-1 Investigation of Charge Stability in Amorphous Fluorinated Polymer Using Quantum Chemical Analysis
Seonwook Kim, Yucheng Zhang, Kuniko Suzuki, Yuji Suzuki; The University of Tokyo, Japan

8-2 Estimation of Electron Trap in Hydrocarbon-Based Thermosetting Resin/Fullerene Composite by Computational Science
Kotaro Ohzuno, Kazuma Abe, Masahiro Kozako, Masayuki Hikita, Nobuhito Kamet; 1: Kyushu Institute of Technology, Japan; 2: RIMTEC Corporation

8-3 First-Principle Based Modeling of Electron and Hole Transfer in Amorphous Polyethylene Terephthalate Oligomer
Masahiro Sato, Akiko Kumada, Kunihiro Hidaka; The University of Tokyo, Japan

8-4 Heat Transfer in BNNT-Polymer Nanocomposites from Non-equilibrium Molecular Dynamics
Yuanyang Ren, Yang Wu, Zheng Zong, Xin Yang, Bing Xiao, Kai Wu; Xi'an Jiaotong University, China

8-5 Identification a Unique Set of Parameter for the Charge Transport Model in LDPE Based on Inverse Methods and Experimental Data
Khaled Hallak, Fulbert Baudoin, Virginia Griseri, Florian Bugarin, Stéphane Segonds; 1: LAPLACE - University of Toulouse, France; 2: ICA - University of Toulouse, France

8-6 A Study of Diffusion of O2 in Polyethylene Poly(Urea Formaldehyde) Composites Using Molecular Dynamics Simulations
Yanfang Zhang, Youyuan Wang, Zhanxi Zhang, Yudong Li; Chongqing University, China

8-7 The Influence of the Cathode Radius on Microgap Breakdown in Air Based on PIC/MCC Simulation
Guodong Meng, Qi Ying, Kejing Wang, Xinyu Gao, Yonghong Cheng; Xi'an Jiaotong University, China
10:00-10:30 Break

10:30-12:15 Session 9 (Oral) HVDC Insulation and Space Charges
Chair: Co-chair:

9-1 Influence of Shish-Kebab Crystal on Electrical and Mechanical Properties for Polypropylene/Elastomer Blends
Yu Gao, Jing Li, Zheng Song, Tao Han, Yong Liu, Boxue Du; Tianjin University, China

9-2 Tailoring Polymeric Insulation Materials for DC Cable Dielectrics
Matthewos Tefferi¹,², Lihua Chen¹,³, Shamima Nasreen¹, Hiroaki Uehara¹, Rampi Ramprasad¹,³, Yang Cao¹,²; 1: NSF Industrial University Collaborative Research Center on High Voltage/Temperature Materials and Structures; 2: Department of Electrical and Computer Engineering, University of Connecticut, USA; 3: School of Materials Science and Engineering, Georgia Institute of Technology, USA; 4: Department of Science and Engineering Kanto Gakuin University Yokohama, Japan

9-3 Implantation of Electrons in Gamma Irradiated PET Films at Different Doses
Sarah MOUACI¹, Nadia SAIDI-AMROUN¹, Virginie GRISERI², Laurent BERQUEZ², Gilbert TEYSSEDRE², Nassiba BELKAHLA¹, Mohamed SAIDI¹; 1: Material Physics Laboratory, Physics Faculty, University of Sciences and Technology (USTHB), Algeria; 2: LAPLACE, Université de Toulouse and CNRS, France

9-4 Electric Field Enhancements due to Space Charge in Thin Polymide Film
Kunihiko Tajiri¹, Hirotaka Muto¹, Flora Carrasco², Laurent Berquez³, Didier Marty-Dessus³, Marie-Laure Locatelli², Sombel Diaham², Virginie Griseri², Thierry Lebey², Gilbert Teysseire³; 1: Mitsubishi Electric Corporation, Japan; 2: LAPLACE, CNRS, INPT, UPS Toulouse, France

9-5 The Conductivity Characteristics of Different Oils and Papers and Their Effects on the Interface Charge of Oil-paper
Yajie Fan, Kai Wu, Chuanhui Cheng; Xi’an Jiaotong University, China

9-6 Dynamic Space Charge Oscillations and Charge Packages in Poly(ethylene oxide)
Kapil Faliya, Herbert Kliem; Institute of Electrical Engineering Physics, Saarland University, Germany

9-7 Space Charge Accumulation Characteristics in Super Engineering Plastics under DC Stress at High Temperature
YUKI TANAKA, MAIMI MIMA, YUKI NARITA, HIROAKI MIYAKE, YASUHIRO TANAKA; Tokyo City University, Japan

12:15-12:30 Remarks

12:30-16:00 Catered Lunch and Technical Tours

12:45-17:00 CEIDP Board Meeting

SEE YOU NEXT YEAR!