

2017 IEEE CEIDP
IEEE CONFERENCE ON ELECTRICAL
INSULATION AND DIELECTRIC
PHENOMENA

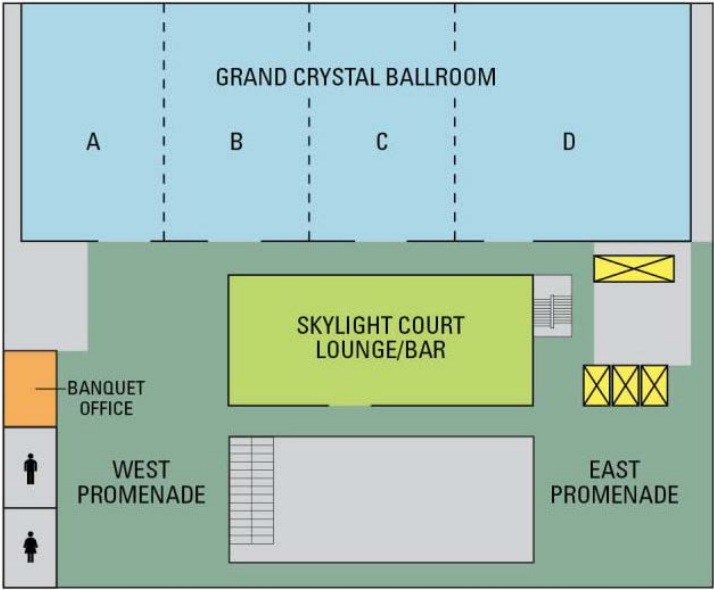
October 22 – 25, 2017

Hilton Fort Worth
815 Main Street, Ft. Worth, Texas, USA 76102

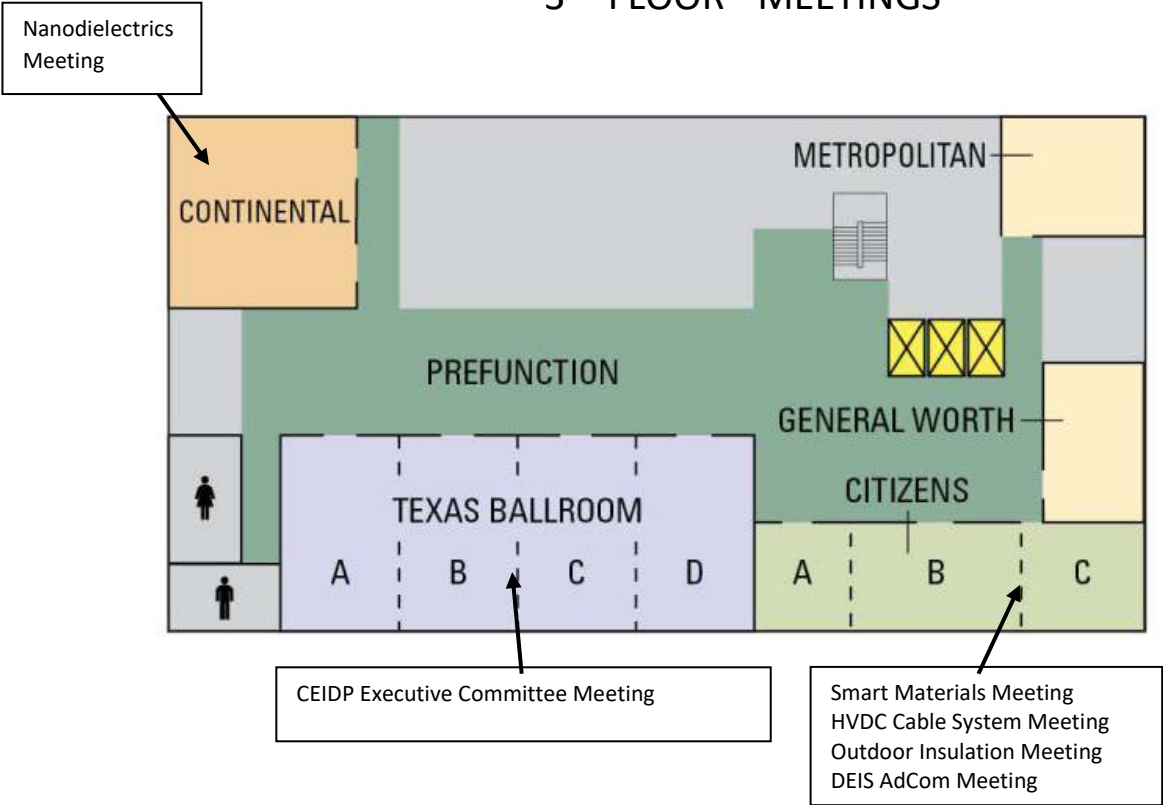
CONFERENCE PROGRAM



2ND FLOOR – GENERAL AND POSTER SESSIONS; BANQUET; RECEPTIONS



3RD FLOOR - MEETINGS



Welcome from the Conference Chair

I welcome all to the 2017 IEEE Conference on Electrical Insulation and Dielectric Phenomenon held at the Hilton Ft. Worth hotel in Ft. Worth, Texas. Just to give you some history on the conference, it was a unit of the Division of Engineering of the National Academy of Sciences—National Research Council before 1981 and now it is fully supported by the Dielectrics and Electrical Insulation Society (DEIS) of IEEE. It was established in 1920 and continues the original schedule of having an annual meeting of researchers in the field of dielectric materials and electrical insulation challenges to present papers and exchange information on their latest research activities. The conference rotates between cities in North America and occasionally in Mexico, with the exception of one Asian conference held in Shenzhen China. It should not be forgotten that CEIDP's main topics include materials related contributions, while other IEEE conferences involve other aspects of the electrical equipment design and electro-technical challenges.

The conference will open with the Whitehead Lecture by Prof. Steven A. Boggs, who has been an active researcher in the field of electrical insulation. He spent 12 years with the Research Division of Ontario Hydro and 6 years as Director of Engineering and Research for Underground Systems, Inc. After 20 years at the University of Connecticut, Steve recently retired from his position as Director of the Electrical Insulation Research Center and Research Professor of Materials Science, Physics, and Electrical Engineering, although he is still working on a number of projects at the University. Until recently, he was also an Adjunct Professor of Electrical Engineering at the University of Toronto and Advisory Professor at Southwest Jiaotong University in China. He has published widely in the areas of partial discharge detection, high frequency phenomena in power apparatus, high field phenomena in solid dielectrics, nonlinear materials, capacitor technology, and

SF6 insulated systems. He was elected a Fellow of the IEEE for his contributions to the field of SF6 insulated systems and received the 2010 IEEE Thomas W. Dakin "Distinguished Technical Contributions" award. The Whitehead Lecture is named after the late pioneer in a series of experimental investigations dealing with dielectric theory and the dielectric properties as related to high voltage insulation.

The CEIDP executive committee was instrumental in preparing the conference and I am very grateful to each one of them for their work. Technical content of the conference is the most challenging task, and Prof. George Chen is the Technical Chair who ran the abstract collection and review and determined the contributions for full paper submissions with his technical committee members. The outline of the Technical Program was also planned by him. The finances of the conference are managed by Prof. Nicola Bowler and she is also the Vice Chair of the conference. The Publicity Chair, Dr. Howard Penrose, needs to be mentioned for his timely responses and updating the conference information on the web. Dr. Virginie Griseri, the Nomination Chair, handles the Whitehead Lecture nominations, as well as the future of the executive committee, which needs new members nominated for the board each year. The Conference Secretary, Prof. Ruy Altafim, is thanked for his support in the communications. I would like to thank the Local Chair, Ms. Resi Zarb for her support, the excellent venue and preparing us for the event. There are many others involved in conference organization and also deserve special thanks.

We all wish you a great conference and hope you enlarge your network in the Dielectrics Community.

Enis Tuncer, PhD
Conference Chair CEIDP 2017

Conference Overview

The 2017 Conference on Electrical Insulation and Dielectric Phenomena (CEIDP) is sponsored by the IEEE Dielectrics and Electrical Insulation Society to provide an international forum for the discussion of current research on electrical insulation, dielectric phenomena and related topics. The conference provides an opportunity for specialists from around the world to meet and to discuss insulation, surface flashover, polarization phenomena, measurement techniques, partial discharge measurements, nanodielectrics, flow electrification, charge storage and transport, electrohydrodynamics, high-field effects, charge and field mapping, treeing, prebreakdown and breakdown in solids, liquids, gases, and vacuum.

Sunday, October 22nd – CEIDP Executive Board Meeting, Texas C&D, 2:00 – 5:00

Sunday, October 22nd – Nanodielectrics Meeting, Continental, 9:00 – 12:30

Sunday, October 22nd – Smart Materials Meeting, Citizen B&C, 8:00 – 12:00

Sunday, October 22nd – Outdoor Insulation Meeting, Citizen B&C, 2:00 – 3:00

Sunday, October 22nd – HVDC Cable Systems Meeting, Citizen B&C, 5:00 – 6:00

Tuesday, October 24th - TECHNICAL TOUR to Texas Instruments — bus will depart at 13:00 – assembly point: front lobby

Tuesday, October 24th – CULTURAL TOUR to Fort Worth Museums — bus will depart at 13:00 – assembly point: front lobby

Tuesday, October 24th – DEIS AdCom Meeting, Citizen B&C, 12:00 – 6:00 (lunch at 12:00)

Executive Committee

Enis Tuncer, *Conference Chair*
Texas Instruments, USA

George Chen, *Technical Program Committee Chair*
Southampton University, UK

Howard Penrose, *Publication, Publicity, Website Chair*
Motordoc, USA

Virginie Griseri, *Nominating Committee Chair*
University of Toulouse, FRANCE

Nicola Bowler, *Vice Chair / Treasurer*
Iowa State University, USA

Resi Zarb, *2017 Local Arrangements Chair*
Qualitrol-Iris Power, CANADA

Ruy Alberto Pisani Altafim, *Conference Secretary*
Sao Paolo University, BRAZIL

Davide Fabiani, *DEIS Meetings Committee Chair*
University of Bologna, ITALY

Elected Board Members

Term Expiring 2017

Éric David	ETS, CANADA
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Reimund Gerhard (*)	University of Potsdam, GERMANY
Thomas Andritsch	University of Southampton, UK
Virginie Griseri	University of Toulouse, FRANCE
George Chen	University of Southampton, UK
Stanislaw Gubanski	Chalmers University, SWEDEN

Term Expiring 2018

Simon Rowland	University of Manchester, UK
Issouf Fofana	University of Quebec at Chicoutimi, CANADA
Greg Stone	Qualitrol-Iris Power, CANADA
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Term Expiring 2019

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Giovanni Mazzanti	University of Bologna, ITALY
Masahiro Kozako	Kyushu Institute of Technology, JAPAN
Shesha Jayaram	University of Waterloo, CANADA
Yang Cao	University of Connecticut, USA
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(*) Board members currently serving the 2nd consecutive 3-years term

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Mahmoud Abou-Dakka	NRC, CANADA
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Vishnu K. Lakdawala	Old Dominion University, USA
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Edward Sacher	CANADA
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G. Edward Johnson	USA
Martin G. Broadhurst	USA
Louis J. Frisco	USA

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Nicola Bowler	Iowa State University, USA
Yang Cao	University of Connecticut, USA
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Virginie Griseri	University of Toulouse, France
Frank Hegeler	Naval Research Lab, USA
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Shesha Jayaram	University of Waterloo, Canada
Hulya Kirkici	University of South Alabama, USA
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Yuriy Serdyuk	Chalmers University of Technology, Sweden
Raji Sundarajan	Purdue University, USA
Toshikatsu Tanaka	Waseda University, Japan
Chao Tang	Southwest University, China
Gilbert Teyssedre	University of Paul Sabatier, France
Kazuyuki Tohyama	Numazu National College of Technology, Japan
Enis Tuncer	Texas Instrument, USA
Liming Wang	Tsinghua University, China
Kai Wu	Xi'an Jiaotong University, China
Weijun Yin	GE GRC, USA
Karim Younsi	GE, US
Kai Zhou	G&W Electric, USA

Reviewers

Nikola Chalashkanov	All the members of TPC plus
Ed Cherney	University of Leicester, UK
Alfredo Contin	University of Waterloo, Canada
Villgot Englund	University of Trieste, Italy
Leo Fifield	Borealis Group, Sweden
Michel Fréchette	PNNL, USA
Mingli Fu	IREQ, Canada
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Miao Hao	Chongqing University, china
Stephane Hole	University of Southampton, UK
Hiroya Homma	ESPCI, France
Bo Huang	CRIEPI, Japan
	University of Southampton, UK

Roman Kochetov	ABB, Switzerland
Masahiro Kozako	Kyushu Institute of Technology, Japan
Clive Reed	Consultant, USA
Yoshimichi Ohki	Waseda University, Japan
Toshihiro Takahashi	CRIEPI, Japan
Yashuiro Tanaka	Tokyo City university, Japan
Mikael Unge	ABB, Switzerland
Peng Wang	Sichuan University, China
Jiandong Wu	Shanghai Jiaotong University, China
Zhiqiang Xu	University of Southampton, UK
Junwei Zha	Tsinghua University, China

Session Chairs and Co-Chairs

Thomas Andritsch	University of Southampton, UK
Abderrahmane Beroual	Ecole Centrale de Lyon, France
Yang Cao	University of Connecticut, USA
Andrea Cavallini	University of Bologna, Italy
Eric David	ETS, Canada
Jinghi Gao	Xi'an Jiaotong University, China
Frank Hegeler	Naval Research Lab, USA
Huseyin Hiziroglu	Kettering University, USA
Shesha Jayaram	University of Waterloo, Canada
Hulya Kirkici	University of South Alabama, USA
Akiko Kumada	The University of Tokyo, Japan
Paul Lewin	University of Southampton, UK
Giovanni Mazzanti	University of Bologna, Italy
Hitoshi Okubo	Aichi Institute of Technology, Japan
Simon Rowland	University of Manchester, UK
Chao Tang	Southwest University, China
Kai Wu	Xi'an Jiaotong University, China
Weijun Yin	GE GRC, USA

The Whitehead Lecture

The Whitehead Memorial Lecture is named in honor of Dr. John Boswell Whitehead, a pioneer in electrical insulation and dielectrics and a long-time contributor to the CEIDP. The Conference opens each year with the Lecture and it is the keynote session of the Conference. The 2017 Whitehead Memorial Lecture will be given by Dr. Steven A. Boggs.

Steven Boggs (F '93) was graduated with a B.A. in physics from Reed College and received his Ph.D. (physics) and MBA degrees from the University of Toronto in 1972 and 1987, respectively. He spent 12 years with the Research Division of Ontario Hydro and 6 years as Director of Engineering and Research for Underground Systems, Inc. After 20 years at the University of Connecticut, Steve recently retired from his position as Director of the Electrical Insulation Research Center and Research Professor of Materials Science, Physics, and Electrical Engineering, although he is still working on a number of projects at the University. Until recently, he was also an Adjunct Professor of Electrical Engineering at the University of Toronto and Advisory Professor at Southwest Jiaotong University in China. He has published widely in the areas of partial discharge detection, high frequency phenomena in power apparatus, high field phenomena in solid dielectrics, nonlinear materials, capacitor technology, and SF6 insulated systems. He was elected a Fellow of the IEEE for his contributions to the field of SF6 insulated systems and received the 2010 IEEE Thomas W. Dakin "Distinguished Technical Contributions" award. Presently, Steve spends most of his time doing computational and theoretical research, electronic instrumentation design, and experimental design for a range of companies in the US and Asia through his company, Nonlinear Systems, Inc.

Registration

All Conference attendees must register for the Conference.

Pre-registration is encouraged but not required. A registration desk will be available at the Conference.

ALL FEES IN US \$	Early Registration Fee Before October 1, 2017	Registration Fee	On-site	Included with Registration
DEIS Member	\$525	\$575	\$600	One copy of Conference Proceedings; Technical Sessions; Reception; Banquet
IEEE Member	\$550	\$600	\$625	
Non-Member	\$650	\$700	\$725	
IEEE Life Member	\$375	\$425	\$450	
IEEE Student Member	\$375	\$425	\$450	
Non-Member Student	\$425	\$475	\$500	
Companion Registration	\$150	\$150	\$150	
Companion registrations include access to all social events but will not have technical program access, will not receive a copy of the conference proceedings, and cannot be an author or presenter of an accepted abstract in the technical program.				

Optional Items

Technical Tour – Texas Instruments– \$60
Cultural Tour of Museum District - \$60
Additional Pages – \$100
Additional Banquet Ticket – \$70
Proceedings on USB - \$50

Cancellation Policy

All refund/cancellation requests must be provided in writing and received by October 2nd, 2017. There will be an administrative fee of **\$100** deducted from each refund.

Hotel

All sessions and activities of the 2017 CEIDP will be held at the Hilton Fort Worth Hotel, 815 Main Street, Ft. Worth, Texas, USA.

See the conference or hotel website for information on the lodging rates. Be sure to mention that you are attending the 2017 IEEE/CEIDP when making your reservation to receive the conference room rate. Preferred rate cut-off date is OCTOBER 1st.

<http://ceidp.org>

<http://www3.hilton.com/en/hotels/texas/hilton-fort-worth-FTFWWHF/index.html>

For local arrangements and further information, please contact Ms. Resi Zarb, resi.zarb@qualitrolcorp.com.

Travel to the Hotel from Dallas/Fort Worth Airport

Hilton Fort Worth Hotel, 815 Main Street, Fort Worth, Texas, is conveniently located in the downtown area and is accessible via taxi or transit from the city's major international airport.

By Taxi or Shuttle

DFW Airport is approximately 20 miles and 30 minutes from the Hotel. Taxis are available at approximately \$60 and a Super Shuttle will cost approximately \$20.

Driving from DFW Airport

Take South exit of airport
Take Hwy 183 West
Take Downtown Fort Worth / Hwy 121 South exit
Exit Belknap Street
Take a left on Calhoun Street
Take a right on 8th Street (that is our front drive)

Technical Tour – Texas Instruments

CEIDP 2017 is pleased to offer interested registrants a tour of the Texas Instruments Incorporated RFAB in Richardson TX, which is a state-of-the-art wafer fabrication facility. The fee is \$60.

Cultural Tour – Museums of Forth Worth

CEIDP 2017 is pleased to offer interested registrants a tour of the Museums in Fort Worth, TX. The fee is \$60.

IEEE/DEIS Technical Meetings

DEIS committee chairs or other individuals interested in arranging auxiliary meetings for working groups, technical committees or other related organizations should contact the Technical Program Committee Chair or the Local Arrangements Chair.

2017 Annual Report

One copy of the 2017 Annual Report in USB format will be provided with the registration. While supplies last, additional copies may be obtained at the Conference at a cost of US\$50 each. Following the Conference, the Annual Report will be available from:

IEEE Service Center
Single Publication Sales Department
445 Hoes Lane
Piscataway, NJ 08854, USA
Tel: 800-675-4333

Sunday, October 22, 2017

16:00 –

21:00 Registration

09:00 – 12:30 Nanodielectrics Technical Meeting
Continental, 3rd Floor

08:00 – 12:00 Smart Materials Technical Meeting
Citizen B&C, 3rd Floor

14:00 – 15:00 Outdoor Insulation Technical Meeting
Citizen B&C

17:00 – 18:00 HVDC Cable Systems Technical Meeting
Citizen B&C

14:00 – 18:00 Executive Board Meeting
Texas C&D, 3rd Floor

18:00 – 19:30 Welcome Reception
East Promenade, 2nd Floor

ALL ORAL SESSIONS IN CRYSTAL BALLROOM – 2nd Floor

ALL POSTER SESSIONS IN EAST PROMENADE – 2nd Floor

Monday, October 23, 2017

07:00- **Continental Breakfast**

08:00 East Promenade

08:00- **Welcome** - Enis Tuncer, Conference Chair

08:15

08:15- **Whitehead Lecture**

09:30 **Research in the age of numerical simulation**

Steven A Boggs, Nonlinear Systems, Inc. USA

09:30- **Break**

10:00

10:00- **Session 1 (Oral): Numerical Analysis and Simulation
Dielectric Research**

Chair: Frank Hegeler, Naval Research Lab, USA

Co-Chair: Hitoshi Okubo, Aichi Institute of Technology, Japan

1-1 Modeling the Electric Field in Polymeric Insulation
Including Nonlinear Effects due to Temperature and
Space Charge Distributions
*C. Jörgens, M. Clemens, University of Wuppertal,
Germany*

1-2 A PIC-MCC Numerical Approach for Studying the Effect
of Pulse Steepness on Vacuum Flashover
*Jiale Mao, Yonghong Cheng, Lei Bai, State Key
Laboratory of Electrical Insulation and Power Equipment,
Jiaotong University, China; Shuang Wang, Jingshen Wu,
The Hong Kong University of Science and Technology,
China*

1-3 Mathematical Modeling of Dielectrophoresis Single-Cell
Capture in a Microfluidic Device
A. Buke Hiziroglu, University of Michigan, USA

1-4 High Field Saturation of Nonlinear Field Grading
Materials Used in AC Applications

Göran Eriksson, ABB Corporate Research, Sweden

1-5 Computer Simulations of Discharges along Insulator
Surfaces

*Y. V. Serdyuk, S. M. Gubanski, Chalmers University of
Technology, Sweden*

1-6 Ion Drift Simulations of the DC Electric Field in Air
around a High Voltage Bushing

*Henrik Löfås, N. Lavesson ABB Corporate Research
Sweden*

1-7 Typical defects simulation and their partial discharge test
for the joint of 10kV cable

*Xinming Song, Yunfeng Xia, Dongguan Power Supply
Bureau of Guangdong Power Grid Corporation, China;
Can Chen, Zhidong Jia, Graduate School at Shenzhen,
Tsinghua University, China*

12:20 – Lunch (on your own)

14:00

14:00- **Session 2 (Oral): Advanced Materials, Charge Storage
and Transport**

Chair: Paul Lewin, University of Southampton, UK

Co-Chair: Yang Cao, University of Connecticut, USA

2-1 Towards building a structure-properties prediction tool
for nanodielectrics

*Aditya S. Prasad, Linda Schadler, Rensselaer Polytechnic
Institute, USA; He Zhao, Xiaolin Li, Wei Chen, L. C.
Brinson, Northwestern University, USA*

2-2 Anisotropy on Electrical Insulation Performance of 3D
Printed Nylon 12

*Hua Li, Zijian Li, Jiandong Rao, Yi Liu, Li Li, Yuan Pan,
Chunze Yan, Fuchang Lin, State Key Laboratory of
Advanced Electromagnetic Engineering and Technology,
Huazhong University of Science and Technology, China*

2-3 Electric Field Relaxation Effect of Functionally Graded
Materials (FGM) with Conductive Multilayer Coating

*Ryota Oishi, Hiroki Kojima, Naoki Hayakawa, Nagoya
University, Japan; Katsumi Kato, Niihama College, Japan*

2-4 Space charge accumulation behavior in fluorinated
Polymer Films Irradiated by Proton under DC stress

*Shugo Yoshida, Hiroaki Miyake, Takuma Mori, Ushio
Chiba, Yasuhiro Tanaka, Tokyo City University, Japan*

2-5 Study of Epoxy Resins Composites Doped with Nonlinear
Fillers and its Electrical Properties

*Xilin Wang, Juyi Guo, Jun Wang, Youwei Yao, Zhidong
Jia, Tsinghua University, China*

2-6 Current-transient Simulation of Polyethylene by First
Principles

*M. Sato, A. Kumada, K. Hidaka, T. Hirano, F. Sato, The
University of Tokyo, Japan*

16:00- **Break**

16:30

16:30- **Session 3 (Posters)**

18:30 Chair: Giovanni Mazzanti, University of Bologna, Italy
Co-Chair: Jinghui Gao, Xi'an University, China

Session 3A – Conduction, Polarization, Charge Storage and Transport

- 3A-1 Laser Charging Effect on Metallic Particle Inserted between Positive DC Sphere and Plane in Air Gap
Ryo Sasamoto, Ryoji Nomiyama, Yasuji Izawa, Kiyoto Nishijima Fukuoka University, Japan
- 3A-2 The Influence of Water Membrane on Charge Accumulation Characteristics of Insulating Dielectric Film
Bo Chen, Donglai Wang, Tiebing Lu, Xuebao Li, Qinyuan Li, North China Electric Power University, China
- 3A-3 Ferroelectricity in Al-doped HfO₂ on Highly Doped Si Substrate
Lei Bai, Xin Liu, Yonghong Cheng, Jiale Mao, Xi'an Jiaotong University, China
- 3A-4 Effect of Temperature gradient on Space Charge in Multilayers Pressboard Oil and Pressboard system
Bo Huang, Miao Hao, Zhiqiang Xu, George Chen, University of Southampton, UK; Xia Wang, Xi'an Jiaotong University, China; Chao Tang, Southwest University, China; Hao Jian, Chongqing University, China; Qian Wang, Chongqing Electric Power Research Institute, China
- 3A-5 A novel aromatic polyurea for high energy density capacitors
Zongze Li, Gregory M. Treich, Sydney K. Scheirey, Gregory A, Sotzing, Yang Cao, University of Connecticut, USA
- 3A-6 Approach to measure of space charge distribution in Alumina material using PEA method under DC electric stress
Masakazu Taira, Takuya Kurihara, Hiroaki Miyake, Yasuhiro Tanaka, Measurement and Electric Machine Control Laboratory, Tokyo City University, Japan
- 3A-7 High-Field Dielectric Properties of LDPE, PP and PS Films under AC Ramp Electric Field Application
Takeshi Noda, Kazuyuki Tohyama, Numazu Institute of Technology, Japan
- 3A-8 Nonlinear Dielectric Property for (1-x) Ba(Sn_{0.12}Ti_{0.88})O₃-x(Ba_{0.7}Ca_{0.3})TiO₃ Ceramics
Xinghao Hu, Jinghui Gao, Yongbin Liu, Yuting He, Yan Wang, Lisheng Zhong, Xi'an Jiaotong University, China
- 3A-9 Surface Trap and Carrier Transport of Aged Oil-paper under Harmonics by Surface Potential Decay
Shijun Li, Wei Yan, Chenyu Yan, Huize Cui, Yuanwei Zhu, Daomin Min, Shengtao Li, Xi'an Jiaotong University, China; Wenbin Kang, China Electric Power Research Insutitute, China
- 3A-10 Simulation of fast space charge packets
Zepeng Lv, Simon M Rowland, University of Manchester, UK; Kai Wu, Xi'an Jiaotong University, China
- 3A-11 Analysis and characterization of the surface charge decay patterns of corona polarized insulating polymers
Jia-Wei Zhang, Feng-Kai Gao, Northeast Electric Power University, China; Chatchai Putson, Prince of Songkla University, Thailand; Rui-tong Liu, State Grid Liaoning Province Power Company Limited Power Research Institute, China

- 3A-12 Physicochemical Analysis for fluorinated Polymer Films Irradiated by Proton
Hiroaki Miyake, Takuma Mori, Yasuhiro Tanaka, Tokyo City University, Japan; Virginie Griseri, Gilbert Teysedre, Christian Laurent, Université de Toulouse, LAPLACE, France
- 3A-13 The influence of temperature on the surface potential decay of polyimide films
Jia-wei Zhang, Chinese Academy of Sciences, China; Guo-an Xue, Northeast Electrical Power University; Chatchai Putson, Prince of Songkla University, Thailand; Rui-tong Liu, State Grid Liaoning Province Power Company Limited Power Research Institute, China
- 3A-14 Different Space Charge Behavior of Materials used in AC and DC Systems
M. De Araujo Andrade, R. Candela, L. De Rai, E. Riva Sanseverino, Prysmian Group, Italy; A. Imburgia, P. Romano, University of Palermo, Italy
- 3A-15 A Method for Improving Temperature Stability of Dielectric Permittivity for BaTiO₃ Ceramics
Y. Wang, Z.X. He, R.F. Yao, Y.B. Liu, X.H. Hu, J.H. Gao, L.S. Zhong, Xi'an Jiaotong University, China
- 3A-16 Moisture Effects of Oil-Paper insulation on Extended Debye Model Parameters
Liman Ran, Lin Du, Feng Yang, Chongqing University, China; Haibo Jiang, Guizhou Electrical Company, China
- 3A-17 Characteristic Quantities of Moisture in Oil-Paper Insulation Based on FDS
Haibo Jiang, Changhong Liu, Guizhou Electrical Company, China; Lin Du, Liman Ran, Feng Yang, Chongqing University, China
- 3A-18 Energy Loss of Oil-Paper Insulation Subjected to Impulse Voltages
Chao Wei, Caibo Liao, Yuncai Lu, Jiangsu Electric Power Company Research Institute, China; Lin Du, Feng Yang, Liman Ran, Chongqing University, China
- 3A-19 Influence of Moisture on Dielectric Responses of Oil Impregnated Paper Condenser Bushings
Chao Wei, Caibo Liao, Yuncai Lu, Jiangsu Electric Power Company Research Institute, China
- 3A-20 The Accumulation Characteristics for Surface Charge on the Insulator under Nanosecond Pulse Voltage in Vacuum
Rui Guo, Jinzhong Li, Shuqi Zhang, China Electric Power Research Institute, China; Chunjia Gao, Bo Qi, Dong Zhen, Chengrong Li, North China Electric Power University, China
- 3A-21 Analysis of the relationship between amount of electron-hole pairs and relaxation time after electronbeam irradiation in polymeric sample
Shugo Yoshida, Kenta Iwama, Hiroaki Miyake, Yasuhiro Tanaka, Tokyo City University, Japan

Session 3B - Aging

- 3B-1 Physics-Based Model of the Degradation of Cable Insulation Subject to Radiation and Heat
Y.S. Chang, A. Mosleh, University of California, USA

- 3B-2 Temperature Dependent Mechanical Properties of Pressboard in Transformer Winding Structure
Lakshitha Naranpanawe, Tapan Saha, The University of Queensland, Australia; Chandima Ekanayake, Griffith University, Australia
- 3B-3 Selecting Appropriate Machine Learning Classifiers for DGA Diagnosis
Jose Ignacio Aizpurua, Victoria M. Catterson, Brian G. Stewart, Stephen D. J. McArthur, University of Strathclyde, UK; Brandon Lambert, Bismark Ampofo, Bruce Power, Canada; Gavin Pereira, James G. Cross, Kinectrics Inc., Canada
- 3B-4 Similarity in Degradation Behavior Between Ethylene-propylene-diene Rubber and Silicone Rubber
Yoshimichi Ohki, Hiromichi Kotani, Daichi Fujishima, Naoshi Hirai, Waseda University, Japan
- 3B-5 Quantitative Characterization and Mechanism of Color Fading Phenomenon of HTV Silicone Rubber Used for Composite Insulators
Yunfeng Xia, Xinming Song, Dongguan Power Supply Bureau of Guangdong Power Grid Corporation, China; Can Chen, Zhidong Jia, Chi Xu, Tsinghua University, China
- 3B-6 Condition Assessment of HV Cable Based on Broadband Dielectric Spectroscopy
Hang Wang, Qiufang Li, Wenjun Zhou, Wuhan University, China; Yuchuan Bao, Hongfei Yang, Zhi Tian, Wuhan Power Supply Company, China State Grid, China; Chengke Zhou, Wuhan University and Glasgow Caledonian University, UK
- 3B-7 A Study on the Hydrothermal Aging of Inter-turn Insulation of Dry-type Air-core Reactor
Li Hao, Jia Zhidong, Tsinghua University, China; Wang Jing, Shenzhen Power Supply Bureau Limited, China; Zou Lin, Southern Power Grid Scientific Research Institute, China
- 3B-8 Dielectric Spectroscopy on Intact Poly-vinyl Chloride/Ethylene Propylene Rubber (PVC/EPR) Multipolar Cables
Mario V. Imperatore, Davide Fabiani, University of Bologna, Italy; Leonard S. Fifield, Pacific Northwest National Laboratory, USA; Nicola Bowler, Iowa State University, USA
- 3B-9 MV Cable Lifetime Improvement Analysis through Transformer Tap Changes
B. Sheng, F. P. Mohamed, W. H. Siew, B. G. Stewart, University of Strathclyde, UK
- 3B-10 Thermal Field Calculation in Gas Insulated Busbars Based on Fluid Multiple Species Transport
Shupin Liu, Hongyang Zhou, Guoming Ma, Shusheng Zheng, Chengrong Li, North China Electric Power University, China; Zengbin Wang, Hong Lv, Lihuo Wang, Yilong Chen, Ying Tang, Zhangquan Rao, Ji Wu, Electric Power Research Institute of Guangdong Power Grid Co., China
- 3B-11 Accumulative Insulation Characteristics of 110kV GIS Spacer Under Repeated Impulse Voltages
Zengbin Wang, Hong Lv, Lihuo Wang, Yilong Chen, Ying Tang, Zhangquan Rao, Ji Wu, Electric Power Research Institute of Guangdong Power Grid Co., Ltd., China; Shupin Liu, Hongyang Zhou, Guoming Ma, Shusheng Zheng, Chengrong Li, North China Electric Power University, China
- 3B-12 Condition Monitoring of Oil-filled Transformers using Unsupervised Classification Techniques
Samuel Eke, Thomas Aka-Ngnui, Guy Clerc, Univ. Lyon – Ampère, France; Issouf Fofana, Univ. du Québec à Chicoutimi, Canada
- 3B-13 High Field Dielectric Properties of Low Density Polyethylene with Rough Surface Under AC Ramp Electric Field Application
Yurika Sano, Kazuyuki Tohyama, Numazu College, Japan
- 3B-14 Microscopic Investigation of the Chalking Layer and Inner Layer of LSR sheds
Chi Xu, Zhidong Jia, Can Chen, Tsinghua University, China
- 3B-15 Research on the Swelling of Silicone Rubber Caused by Silicone Grease
Bin Zhu, Zhi-dong Jia, Zhi Li, Peng Zhou, Zhi-cheng Guan, Tsinghua University, China; Wei-wei Li, De-gang Gan, State Grid Sichuan Electric Power Research Institute, China
- 3B-16 Thermal Aging Estimation with Load Cycle and Thermal Transients for XLPE-insulated Underground Cable
Y.J. Han, H. M. Lee and Y.-J. Shin, Yonsei University, Korea
- 3B-17 Concentrated winding machines fed by PWM inverters: insulation design helped by simulations based on equivalent circuits
Daniel Roger, Mustapha Toudji, Stéphane Duchesne, Guillaume Parent, Univ. Artois, France
- 3B-18 Physical/ Dielectric Response Tests of XLPE Cables Aged by High Frequency Impulse Voltage
Xuefeng Zhau, Jing Liu, Zeli Ju, Shaanxi Electric Power Research Institute, China; Xu Li, Tao Lin, Shaanxi Electric Power Company, China; Aixuan Zhao, Xing Zheng, Long Xu, Junbo Deng, Guanjun Zheng, Xi'an Jiaotong University, China
- 3B-19 Study of Frequency Domain Dielectric Spectroscopy of XLPE Cable Based on Havriliak-Negami Model under Different Temperatures
Xing Zhang, Long Xu, Aixuan Zhao, Junbo Deng, Guanjun Zhang, Xi'an Jiaotong University, China; Xue-Feng Zhao, Pu Lu, State Grid Shaanxi Electric Power Research, China
- 3B-20 Influence of Frigid Conditions on the Mechanical Properties of Transformer Insulation Spacers
Pan Zhiyuan; Ji Shengchang; Zhang Fan; Cui Yanjie, Xi'an Jiaotong University, China
- 3B-21 Study on Aging Characteristics of Silicone Rubber Material in Running UHVDC Wall Bushing
Zhipeng Yan, Xidong Liang, Weining Bao, Shaohua Li, Tsinghua University, China; Zilan He, Luo Bing, Electric Power Research Institute, China

- 3B-22 Optimal Dissolved Gas Analysis Data Set Selection Based on Phase Space Reconstruction
Peng Zhang, Bo Qi, Zhihai Rong, North China Electric Power University, China; Xiuwei Li, State Grid Shandong Electric Power Research Institute, China
- 3B-23 The Characteristics of Switching Impulses in Cable OHL Mixed Network
Jiankang Zheng, Xiaoyu Yang, State Grid Xi'an Electric Power Supply Company, China; Long Xu, Aixuan Zhao, Xing Zhang, Junbo Deng, State key Laboratory of Electrical Insulation and Power Equipment, China
- 3B-24 Condition Assessment Method of Power Transformer Based on the Classification of Component and Performance
Wenpu Li, Bo Qi, Zhihai Rong, Peng Zhang, North China Electric Power University, China; Yi Yang, State Grid Shandong Electric Power Research Institute, China
- 3B-25 A Method for Optimizing Cable Service Life via Redistributing Circuit Current in an Underground Cable Trench
Qiufang Li, Hang Wang, Wenjun Zhou, Wuhan University, China; Yuchuan Bao, Hongfei Yang, Zhi Tian, Wuhan Power Supply Company, China State Grid, Wuhan, China; Chengke Zhou, Glasgow Caledonian University, UK
- 18:30-19:30 Dinner – on your own
- 19:30-21:30 **Session 4 (Poster)**
Chair: Andrea Cavallini, University of Bologna, Italy
Co-Chair: Akiko Kumada, The University of Tokyo, Japan
- Session 4A – Measurement Techniques**
- 4A-1 Preparation of Thermal Conductive PET/h-BN Electrical Insulating Composite Material Using Electrostatic Adsorption Method
N. Hamasaki, S. Yamaguchi, T. Kawashima, H. Muto, N. Hozumi, Y. Murakami, Toyohashi University of Technology, Japan
- 4A-2 Simulation and Experiment on SF6 Gas Decomposition Detection Based on Infrared Absorption Spectroscopy
Rixin Ye, Ming Dong, Ao Ma, Jiacheng Xie, Jierui Zhou, Wenguang Huang, Ming Ren, Xi'an Jiaotong University, China; Rixin Ye, State Grid Shaanxi Maintenance Company, China
- 4A-3 Dielectrophoresis-assisted SPRF Illumination Biosensor for Selective Detection of Biological Substances
Chiaki Kuroda, Yoshimichi Ohki, Waseda University, Japan; Makoto Fujimaki, National Institute of Advanced Industrial Science and Technology, Japan
- 4A-4 Design of On-line Monitor for 10 kV MOA Used in Substation
Xinming Song, Yunfeng Xia, Dongguan Power Supply Bureau of Guangdong Power Grid Corporation, China; Yueqi Zou, Chongqing University, China; Can Chen, Zhidong Jia, Tsinghua University, China
- 4A-5 Measurements of Carrier Mobility in Oil Immersed Paper Insulation by the Means of Pulsed ElectroAcoustic Method
Chuanhui Cheng, Kai Wu, Rui Su, Yang Wu, Yajie Fan, Xi'an Jiaotong University, China
- 4A-6 High Temperature and Ageing Test Methods to Characterize the Dielectric Properties of BOPP Capacitor Films
Mikael Ritamäki, Ilkka Rytöluoto, Kari Lahti Tampere, University of Technology Electrical Energy Engineering, Finland
- 4A-7 Adjustment of Wave Front Time and Overshoot in Lightning Impulse Test for Transformer Insulation
YuanXi'ang Zhou, Zhongliu Zhou, Xi'angyu Zhang, Shaohua Li, Tsinghua University, China; Huafeng Xu, Changzhou Toshiba Transformer Company Limited, China; Xi'angjun Zeng, Electric Power Research Institute, China Southern Power Grid Company, China
- 4A-8 Approach to Measure In-Plane Thermal Conductivity of Thin Polymer Films
Steven A. Boggs, Nonlinear Systems, Inc., USA; Bo Li, Pennsylvania State University, USA; Shihai Zhang, PolyK Technologies, USA
- 4A-9 Detection of Sulfur Corrosion in Transformer Insulation Oils Using an Interdigitated Capacitive Sensor Based on Printed Circuit Board Technology
M.S. Ahmad Khair, Universiti Teknikal Malaysia, Malaysia; P.L. Lewin, The Tony Davies High Voltage Laboratory, University of Southampton, UK; R.C.D. Brown, University of Southampton, UK
- 4A-10 Application of ultrasonic visualization technology to corona discharge detection
Ao Ma, Ming Dong, Ming Ren, Chongxing Zhang, Xi'an Jiaotong University, China
- 4A-11 Two Methods to Calculate the Thickness of HTV Surface with Laser-induced Breakdown Spectroscopy
Lin Zou, Ruihai Li, Electric Power Research Institute, China Southern Power Grid Co.Ltd, China; Xiao Hong, Xilin Wang, Ping Chen, Can Chen, Han Wang, Zhidong Jia, Tsinghua University, China
- 4A-12 Condition Monitoring of Cable Aging via Time Frequency Domain Reflectometry in Real-Time
C.-K. Lee, S.J. Chang, M.K. Jung, and Y.-J. Shin, Yonsei University, Korea
- 4A-13 Measurements of Electroluminescent Performances of Silicon Carbide Coatings for Stress Grading of HV Electric Machines
Shuang Liu, Xuezhong Liu, Shijin Tian, Xi'an Jiaotong University, China; Yue Zhang, Zhiming Liang, Bo Hu Dongfang Electric Machinery, China
- 4A-14 Development of a High Voltage Steep-sided Nanosecond Pulse Generator
Rui Guo, Shuqi Zhang, Jinzhong Li, China Electric Power Research Institute, China; Chunjia Gao, Bo Qi, Dong Zhen, Chengrong Li, North China Electric Power University, China
- 4A-15 A New Technique for Partial Discharges Measurement Under DC Stress
P. Romano, A. Imburgia, G. Presti, E. Riva Sanseverino, F. Viola, University of Palermo, Italy; R. Candela, Prysmian Group S.p.A., Italy

Session 4B Partial Discharge Measurements

- 4B-1 Partial discharge characteristics in motor insulations under exposure to multi-level inverters
T. J. Å. Hammarström, T. Bengtsson, S. M. Gubanski, Chalmers University of Technology, Sweden
- 4B-2 Critical issues in the PD testing methodology for XLPE-insulated MV cables: an experimental case
Antonino Madonia, Eleonora Riva Sanseverino, University of Palermo, Italy; Ivan Troia, Stefano Franchi Bononi, Prysmian S.p.A., Italy; Simone Giannini, Giovanni Mazzanti, University of Bologna, Italy
- 4B-3 An equivalent circuit for corona discharges caused by a point to plane arrangement at ac, dc and combined voltages
Tobias Dezenzo, Thomas Betz, Darmstadt University of Applied Sciences, Germany; Andreas Schwarzbacher, Dublin Institute of Technology, Ireland
- 4B-4 A Novel Archimedes Spiral Antenna Used for PD Measurement at Repetitive Square Wave Voltages
P. Wang, W. Y. Zhou, Z. J. Zhao, Sichuan University, China; J. W. Zhang, Northeast Electric Power University, China; G. C. Montanari, University of Bologna, Italy
- 4B-5 Partial Discharge Classification of XLPE Cable Insulation Defects Using Non-subsampled Contourlet Entropy and CS-MSVM
Yongpeng Xu, Yong Qian, Xue Qin, Gehao Sheng, Xiuchen Jiang, Shanghai Jiao Tong University, China
- 4B-6 The Comparison Between Results of UV Detection and Leakage Current Based on the Artificial Pollution Test of Hydrophilic Insulators
Xiaoguang Shang, Zhidong Jia, Linjun Wang, Tsinghua University, China; Haipeng Zhao, Qianqian Gu, Huan Zhou, State Grid Xinjiang Electric Power Company Maintenance Company, China
- 4B-7 Effect of Voltage Reduction in Minimising Partial Discharge Activity in Cables – Experimental Study
Faisal Peer Mohamed, W H Siew, Bojie Sheng, Brian Stewart, University of Strathclyde, UK
- 4B-8 Classification of Partial Discharge Signals by Combining Adaptive Local Iterative Filtering and Entropy Features
I. Mitiche, G. Morison, M. Hughes-Narborough, A. Nesbitt, Glasgow Caledonian University, UK; P. Boreham, Doble Engineering, UK; B. G. Stewart, University of Strathclyde, UK
- 4B-9 Comparison of Air Corona PD Characteristics under Low and Power Frequency Voltage by Impulse Current Method
YuanXi'ang Zhou, Zhongliu Zhou, Shaohua Li, Tsinghua University, China; Shaowei Guo, Zheng Niu, North China Electric Power Research Institute, China; Meng Huang, North China Electric Power University, China
- 4B-10 Evaluation of Cable PD Detection System Based on Fuzzy Theory
Jun Xiong, Jian-tao Wang, Yong Wang, Guangzhou Power Supply Bureau, China; Nai-qiang Mao, Guo-ming Ma, Wei Wang, Cheng-rong Li, North China Electric Power University, China
- 4B-11 Power Cable Length Measurement Method Based on Dispersion Phenomena
Jun Xiong, Jian-tao Wang, Yong Wang, Guangzhou Power Supply Bureau, China; Nai-qiang Mao, Guo-ming Ma, Wei Wang, Cheng-rong Li, North China Electric Power University, China
- 4B-12 Study on Non-contact Detection Method for Arcextinguish and Reignition Feature of Switchgear
Wei Wang, Fangyi Li, Lin Wang, North China Electric Power University, China; Hongming Ma, Zhenchao Li, Yunnan Electric Power Research Institute, China
- 4B-13 Comparison of Three Insulation Condition Detection Methods for 35kV XLPE Power Cable Joint
Mengxin Song, Bin Zhu, Hao Li, Tsinghua University, China
- 4B-14 Study on Antenna for Detecting the Corona Discharge of Transmission Line
Song Xinming, Xia Yunfeng, Wei Haikun, Dongguan Power Supply Bureau of Guangdong Power Grid Co., China; Jia Zhidong, Tsinghua University, China; Qi Jinfeng, Xu Zheng, State Key Laboratory of Power Transmission Equipment & System Security and New Technology, China
- 4B-15 Comparison of Conducted and Irradiated PD Acquisition Systems
F. Guastavino, D. Cordano, C. Gianoglio, F. Rossi, E. Torello, University of Genova, Italy
- 4B-16 PDIV and RPDIV on Different Temperatures on Different Kind of Type I Insulating System
F. Guastavino, F. Rossi, C. Gianoglio, E. Torello, D. Cordano, University of Genova, Italy
- 4B-17 Relevance of Quantization in PDs Activity Measurements in Presence of Environmental Noise
F. Guastavino, D. Cordano, F. Rossi, C. Gianoglio, E. Torello, University of Genova, Italy
- 4B-18 Dielectric Parameters Study of Potting Resins
S. Ait-Amar, G. Velu, Univ. Artois, France; P. Frezel, Green Isolight International, France
- 4B-19 Detection of acoustic emissions from partial discharges in distribution transformers with piezoelectret transducers
Daniel Augusto Pagi Ferreira, Ruy Alberto Correa Altafim, Felipe Schiavon Inocencio de Sousa, Thamyres Tamula Cavalcante Palit, Yuri Andrey Olivato Assagra, University of Sao Paulo, Brazil; Ruy Alberto Pisani Altafim, Federal University of Para'iba, Brazil
- 4B-20 On-line Monitoring of Partial Discharge In High Voltage Switchgear Using a Differential Electric Field Sensor
Xiaoming Zeng, Hongjie Li, Yuxin Lu, Yufei Chen, Xi'an Jiaotong University, China
- 4B-21 Partial discharge detection and localization along medium voltage cables
M. A. Andrade, R. Candela, L. De Rai, E. Riva Sanseverino, I. Troia, Prysmian Group S.p.A., Italy; A. Calamera, A. Imburgia, P. Romano, F. Viola, University of Palermo, Italy

- 4B-22 Partial Discharge Behavior Under Half-Wave and Double-Wave DC Power Supply
M. A. Andrade, Candela, L. De Rai, I. Troia, Prysmian Group S.p.A., Italy; F. Burgio, A. Imburgia, E. Riva Sanseverino, P. Romano, F. Viola, University of Palermo, Italy
- 4B-23 Partial Discharge Characteristics of Needle-Plane Defect in Oil-Paper Insulation under Actual Stress in Converter Transformers
Li Xining, Cui Yanjie, Ji Shengchang, Zhu Lingyu, Xi'an Jiaotong University, China; Sun Jiantao, China Electric Power Research Institute, China
- 4B-24 Detection of Series DC Arc Fault using Rogowski Coil
Shiyong Chen, Lingyu Zhu, Shengchang Ji, Xiaojun Liu, Xi'an Jiaotong University, China
- 4B-25 Surface Tracking along the Interphase Barrier of a Large Transformer
W.Thansiphraserth, P. L. Lewin, The Tony Davies High Voltage Laboratory, University of Southampton, UK
- 4B-26 Transmission Path of Acoustic Emission (AE) Signal Generated by GIS Partial Discharge
Wei Wang, Fangyi Li, Lin Wang, Da Jiang, Wenyan Dong, North China Electric Power University, China; Shiqiang Wang, Haiyan Hu, SINOPEC Research Institute of Safety Engineering, China

Tuesday, October 24, 2017

- 07:00-08:00 **Continental Breakfast**
East Promenade
- 08:00 – 10:00 **Session 5 (Oral) Outdoor Insulation, Partial discharges and Measurement Techniques**
Chair: Simon Rowland, University of Manchester, UK
Co-chair: Hulya Kirkici, University of South Alabama, USA
- 5-1 Research on Partial Discharge Characteristics of Typical Insulation Defects in XLPE Cable Systems under DC Voltage
Fengyuan Yang, Gehao Sheng, Shanghai Jiao Tong University, China; Yaowei Xuan, Xinlong Zheng, State Grid Zhoushan Power Supply Company, China
- 5-2 Application of Deep Convolutional Neural Network in Partial Discharge Pattern Recognition Under Big Data Background
Hui Song, Jiejie Dai, Gehao Sheng, Xiuchen Jiang, Department of Electrical Engineering, Shanghai Jiao Tong University Shanghai, China
- 5-3 A testing procedure for RTV pre-coated glass cap and-pin and composite insulators sampled from field
Massimo Marzinotto, TERNA Engin.Department, Italy; Giovanni Mazzanti, University of Bologna, Italy; Edward A. Cherney, Consultant, Canada; Giovanni Pirovano, RSE, Italy
- 5-4 Three dimensional imaging of electrical trees in multiple stages
S. Chen, Z. Lv, S. M. Rowland, J. Carr, P. J. Withers, The University of Manchester, UK
- 5-5 Terahertz Absorption Spectra of Polyphenylene Sulfide Sheets with Different Degrees of Crystallinity
Chisato Azeyanagi, Yoshimichi Ohki, Waseda University, Japan
- 5-6 An Enhanced Operational Definition of Dielectric Breakdown for DC Voltage Step-up Tests
Allen Andersen, JR Dennison, Utah State University, USA
- 10:00-10:30 **Break**
- 10:30-12:30 **Session 6 (Poster)**
Chair: Thomas Andritsch, University of Southampton, UK
Co-chair: Chao Tang, Southwest University, China
- Session 6A Innovative Dielectric Materials**
- 6A-1 Doped dielectric polymers with Low Dielectric Constant Nanofillers
Tian Zhang, Yash Thakur, Q. M. Zhang, The Pennsylvania State University, USA
- 6A-2 Particle Porosity and Relative Permittivity of Epoxy/Hollow Silica Nanocomposites
T.Yoshida, M.Kurimoto, Y.Manabe, T.Funabashi, T.Kato, Nagoya University, Japan; Y.Suzuoki, Aich Institute of Technology, Japan
- 6A-3 Modeling of Interfaces using Electron Force Microscopy
Asha Sharma, Sumit Basu, Nandini Gupta, Indian Institute of Technology, India
- 6A-4 In-situ Observation of Electric Field Assisted Alignment of Titanium Dioxide Nanowires in Epoxy Resin
Siyu Chen, Qian Xie, Zhengdong Wang, Mengmeng Yang, Jingya Liu, Jiale Mao, Yonghong Cheng, Xi'an Jiaotong University, China
- 6A-5 Nonlinear Conductive Behaviors of Multilayer Graphene Nanosheets/Epoxy Composite below the Percolation Threshold
He Li, Zihao Guo, Ziyu Zhou, Lilan Liu, Huidong Tian, Chuang Wang, Zongren Peng, Xi'an Jiaotong University, China
- 6A-6 Dielectric Properties of POSS/LDPE and MgO/LDPE Nanocomposites Compounded by Different Techniques
J. Castellon, H. Yahyaoui, O. Guille, Université de Montpellier, France; E. David, M. Guo, École de Technologie Supérieure (ETS), Canada; M. Fréchette, Institut de recherche d'Hydro-Québec, Canada
- 6A-7 A superior nanolaminate dielectric barrier coating for high breakdown strength
Boya Zhang, Zongze Li, Jingjing Liu, Thomas Moran, Bryan Huey, Luyi Sun, Yang Cao, University of Connecticut, USA; Boya Zhang, Tsinghua University, China; Ming Ren, Xi'an Jiaotong University, China
- 6A-8 Dielectric Measurements on Polypropylene Nanocomposites Filled with Natural and Synthetic Nanoclay
Y. Hadjadj, R. A. Ghunem, National Research Council Canada, Canada
- 6A-9 On Water Absorption and its Impact on the Dielectric Spectra of Epoxy Network with Different Stoichiometries
F. N. Alhabill, T. Andritsch, A. S. Vaughan, Tony Davies High Voltage Laboratory, University of Southampton, UK
- 6A-10 Behavior of Polyethylene-based nanocomposites containing multi-layer graphene filler
G.F. Rosi, D.Fabiani, University of Bologna, Italy; M. Fréchette, Institut de recherché d'Hydro, Canada; E. David, Ecole de Technologie Superieure (ETS), Canada

- 6A-11 Pre-processing of BaTiO₃ Nanofillers in Improving Dielectric Response of Epoxy Nanocomposites at Higher Filler Concentrations
Romana Zafar, Nandini Gupta, Indian Institute of Technology, India
- 6A-12 Dielectric properties of Polyethylene with Graphene-like additive: effect of the fabrication technique
G.F. Rosi, D.Fabiani, University of Bologna, Italy; M. Fréchet, Institut de recherche d'Hydro, Canada; E. David, Ecole de Technologie Supérieure (ETS), Canada
- 6A-13 Surface Potential Decay on LDPE and its Nanocomposites
Xi'anrong Chen, Zhejiang University, China; Anh T. Hoang, Yuriy V. Serdyuk, Stanislaw M. Gubanski, Chalmers University of Technology, Sweden
- 6A-14 Investigation of the Electrical Properties of LDPE/SiO₂ Nanocomposites Under Tensile Condition
Jun Liu, You-yuan Wang, Zhan-xi Zhang, Kun Xiao, Can Wang, Chongqing University, China
- 6A-15 Breakdown of Synthetic-Clay-Filled Nanocomposite Polypropylene
H.R Hiziroglu, I.E. Shkolnik, Kettering University, USA
- 6A-16 Anti-thermal Aging Ability of Low Density Polyethylene Enhanced by MgO Nanoparticles
Youyuan Wang, Can Wang, Zhanxi Zhang, Kun Xiao, Chongqing University, China
- 6A-17 The Dielectric Response of Polyethylene/Polyhedral Oligomeric Silsesquioxanes Composites at Various Temperatures
Michel Fréchet, Institut de recherche d'Hydro-Québec (IREQ), Canada; Meng Guo, Éric David, École de technologie supérieure (ÉTS), Canada; Daomin Min, Shengtao Li, Xi'an Jiaotong University, China
- 6A-18 Effects of High Thermal Conductivity on Power Cable Ampacity with LDPE/BN Composites
Xiaoxiao Kong, Boxue Du, Jin Li, Meng Xiao, Tianjin University, China; Jing Mu, State Grid Jibei Electric Power Company Limited Management Training Center, China
- 6A-19 On the effect of solvent method processing on epoxy resin systems: A molecular dynamics study
O. Vryonis, T. Andritsch, A. S. Vaughan, P. L. Lewin, The Tony Davies High Voltage Laboratory, University of Southampton, UK
- 6A-20 Influence of Interface on the Electrical Properties of Silicone Nanocomposites
Faisal Aldawsari, Chitral J Angamma, Shesha H Jayaram, University of Waterloo, Canada
- 6A-21 Influence of PMMA and h-BN Particles Size on Electrical and Thermal Properties of PMMA/h-BN Composite Materials Produced by Electrostatic Adsorption Method
S. Yamaguchi, N. Hamasaki, S. Use, T. Kawashima, H. Muto, M. Nagao, N. Hozumi, Y. Murakami; Toyohashi University of Technology, Japan
- 6A-22 Electrical and Thermal Properties of Low-density Polyethylene/Graphene-like Composite
S. Azizi, C. Ouellet-Plamondon, E. David, École de technologie supérieure, Canada; M. F. Fréchet, Hydro-Québec (IREQ), Canada

Session 6B – Pre-breakdown and Breakdown in Solids, Liquids, Gases and Vacuum

- 6B-1 In-situ investigation on the microscale breakdown in air atmosphere by an optical diagnosis method
Guodong Meng, Yonghong Cheng, Kejing Wang, Dujiao Zhang, Chengye Dong, Xi'an Jiaotong University, China
- 6B-2 Spark Discharge Inception Voltage under Surge Voltage Application Influenced by Air Gap Length
H. Takahagi, T. Kawashima, N. Hozumi, Y. Murakami, Toyohashi University of Technology, Japan
- 6B-3 Pattern Identification of Dielectric Breakdown of Polypropylene Film for Dielectric Failure Prediction of High Energy Density Capacitor
Qun Gao, Yong Liu, Yu Gao, B. X. Du, Tianjin University, China; Qian Wang, Kuan Ye, State Grid Beijing Electric Power Research Institute, China
- 6B-4 Fault Diagnosis for Power Transformer With Dissolved Gas Analysis Based on Deep Belief Network
Jiejie Dai, Hui Song, Gehao Sheng, Xiuchen Jiang, Shanghai Jiao Tong University, China
- 6B-5 Optimized Contact Geometries for High Speed Disconnect Switches
Gyu Cheol Lim, Seoul National University, Korea; T. Damle, L. Grabe, Georgia Institute of Technology, USA
- 6B-6 Influence of Interface Pressure and Angle on Interfacial Breakdown between Two Solid Dielectrics
H. Masui, N. Osawa, Y. Yoshioka, Kanazawa Institute of Technology, Japan; H. Yanase, K. Okamoto, Fuji Electric, Japan
- 6B-7 Influence of the Solid Material Nature on the Inception of Creeping Discharges in Air
L. Trémas, O. Lesaint, N. Bonifaci, Univ. Grenoble Alpes, France; B. Ohl, F. Gentils, Schneider Electric, France
- 6B-8 Insulation Characteristics of Deformed Transformer Winding under Transient Impulse
Haifeng Ye, Xi'ang Tian, Hao Wu, Electric Power Research Institute of Guangdong Power Grid Co., Ltd, China; Yabo Li, Zhen Wu, Guoming Ma, North China Electric Power University, China
- 6B-9 Interfacial Breakdown between Dielectric Surfaces Determined by Gas Discharge
Emre Kantar, Frank Mauseth, Erling Ildstad, Norwegian University of Science and Technology, Norway
- 6B-10 Dielectric breakdown of high-k epoxy-based anisotropic composites
Guillaume Belijar, Elena Samartean, Zarel Valdez-Nava, Sombel Diahm, hierry Lebey, LAPLACE Université de Toulouse, France
- 6B-11 Decomposition Characteristics of SF₆-N₂ Gas Mixtures under Corona Discharge
Zhanyu Wu, Ming Dong, Weidong Ding, Ming Ren, Chongxing Zhang, Yang Li, Xi'an Jiaotong University, China
- 6B-12 Relative Permittivity and Coefficient of Thermal Expansion of TiO₂/SiO₂ Epoxy Composite with Different Filling Ratio of TiO₂ and SiO₂
H. Ozaki, M. Kurimoto, T. Sawada, T. Funabashi, T. Kato, Nagoya University, Japan; Y. Suzuoki, Aichi Institute of Technology, Japan

- 6B-13 The Effect of Slime Pulp on Electrical Properties of Insulation Pressboards
Lilan Liu, Huidong Tian, Fuping Zhao, Ran Shi, Zongren Peng, Xi'an Jiaotong University, China
- 6B-14 The role of air pressure in the variation of compound electric field due to negative corona discharge in a rod to plane electrode
Junyu Zhu, Xingming Bian, Tiebing Lu, Xuebao Li, North China Electric Power University, China; Chanyuan Wang, Third Institution of China Aerospace Science & Industry, China; Xuemei Dong, Tsinghua University Shenzhen, China
- 6B-15 Tangential AC Breakdown Strength of Solid-Solid Interfaces Considering Surface Roughness
Emre Kantar, Erling Ildstad, Norwegian University of Science and Technology, Norway
- 6B-16 HVDC Partial Discharge Mechanisms and Flashover Characteristics with Charging Activities on Solid Insulators in Air
K. Takabayashi, R. Nakane, H. Okubo, Aichi Institute of Technology, Japan
- 6B-17 Numerical Simulation of Charging and Discharging of Particles in Contaminated Transformer Oil
Shekhar Mahmud, Igor O. Golosnoy, George Chen, University of Southampton, UK; Gordon Wilson, Paul Jarman, National Grid, UK; *Military Technological College, Sultanate of Oman*
- 6B-18 Modelling and Calculation of Negative DC Corona Plasma in Coaxial Cylindrical Electrode
Zhengying Chen, Liming Wang, Yong Yi, Tsinghua University Shenzhen, China

Session 6C Bio-dielectrics

- 6C-1 Synergy of Micro and Nanosecond Electrical Pulses with Chemotherapeutics on Human Cancer Cell Viability
Lakshya Mittal, Vishak Raman, Ignacio G. Camarillo, Allen L. Garner, Andrew J. Fairbanks, Gregory A. Dunn, Raji Sundararajan, Purdue University, USA

No Sessions in the afternoon

- 13:00-17:00 Technical Tour & Cultural Tour
Buses Depart at 13:00 from the Front Lobby
- 13:00-18:00 DEIS ADCOM Meeting
Citizens B&C, 3rd floor (lunch at 12:00)
- 18:00-21:00 Reception & Banquet
Crystal Ballroom D

Wednesday, October 25, 2017

- 07:00-08:00 **Continental Breakfast**
East Promenade
- 08:00-10:00 **Session 7 (Oral) Dielectric Materials for HVDC and GIS**
Chair: Eric David, ETS, Canada
Co-chair: Kai Wu, Xi'an Jiaotong University, China

- 7-1 Electric Field Distribution with Dynamic Charge Activity in Composite Insulation Systems under HVDC and DC-Polarity Reversal Conditions
H. Okubo, R. Nakane, K. Takabayashi, Aichi Institute of Technology, Japan; K. Kato, Niihama College, Japan
- 7-2 Space Charge Dynamics and Electric Field Distortion in the Laminated insulation for HVDC Cable
Zhiqiang Xu, Miao Hao, Bo Huang, George Chen, Matt Praeger, Paul Lewin, University of Southampton, UK
- 7-3 HVDC Flashover Performance of Fibreglass Reinforced (FRP) Hot Sticks Considering Space Charges
J. Laninga, M. Amer, B. Kordi, University of Manitoba, Canada; D. R. Swatek, W. McDermid, Manitoba Hydro, Canada
- 7-4 Measurement of Space Charge Distribution in Alumina-filled Epoxy Resin for Application in HVDC GIS
P.S. Mbolu Noah, S. Agnel, P. Notinger, J.C. Laurentie, O. Guille, University of Montpellier, France; L. Zavattoni, P. Vinson, A. Girodet, SuperGrid Institute, France
- 7-5 Characterization of Space Charge and DC field distribution in XLPE and EPR during Voltage Polarity Reversal with Thermal Gradient
Mattewos Tefferi, Zongze Li, Yang Cao, University of Connecticut, USA; Hiroaki Uehara2, Kanto Gakuin University, Japan; Qin Chen, GE Global Research Center, USA
- 7-6 Electrical Insulation Performance of HVDC-GIS Spacer Under Various Testing Conditions
R. Nakane, K. Takabayashi, H. Okubo, Aichi Institute of Technology, Japan; K. Kato, Niihama College, Japan

10:00-10:30 **Break**

10:30-12:30 **Session 8 (Poster)**

Chair: Shesha Jayaram, University of Waterloo, Canada
Co-chair: Weijin Yin, GE GRC, USA

Session 8A Outdoor Insulation

- 8A-1 Comparative Analysis of the Influence of Climate Factors on Flashover of Contaminated Insulators
Chuyan Zhang, Junyi Hu, Meijiang Gui, China University of Geosciences, China
- 8A-2 Effects of Surface States of Insulators on RTV Coating before Application
Zhi Li, Zhidong Jia, Tsinghua University, China; Cuiru Yang, Guangdong Electric Power Research Institute, China; Huijie Liu, Xiaoli Wang, Junfeng Lu, Wei Gao, Liaoning Hualong Electric Power Technology Incorporated Company, China
- 8A-3 Test on Adhesion of Modified RTV for Hot and Humid Environment
Zhi Li, Zhidong Jia, Tsinghua University, China; Cuiru Yang, Guangdong Electric Power Research Institute, China; Huijie Liu, Xiaoli Wang, Junfeng Lu, Wei Gao, Liaoning Hualong Electric Power Technology Incorporated Company, China

- 8A-4 Effect of Soluble Constituents on Water Droplet Distribution and Discharge Characteristics of Silicone Rubber Insulator
Yafeng Wu, Yong Liu, B. X. Du, Tianjin University, China; Kai Zhou, Hongjing Liu, Kuan Ye, State Grid Beijing Electric Power Research Institute, China
- 8A-5 Study on interfacial property of composite insulator
Yishan Li, Zhidong Jia, Xilin Wang, Tsinghua University, China
- 8A-6 Study on Pollution Classification and External Insulation Configuration of Zhalute-Qingzhou ±800 kV DC Transmission Line
Tian Liang, Huang Rui-ping, Zhou Jun, Liu Bo, Wang Xi, China Electric Power Research Institute, China
- 8A-7 Research on pollution accumulation characteristic of high voltage composite insulators
Ruiping Huang, Jun Zhou, Yu Deng, Bo Liu, Liang Tian, China Electric Power Research Institute, China
- 8A-8 Stress Intensity Factor Calculation of Surface Crack on Porcelain Post Insulator Using Finite Element Method
Lishuai Liu, Hongwei Mei, Chenlong Zhao, Liming Wang, Tsinghua University, China; Chenjun Guo, Electric Power Research Institute, Yunnan Power Grid Co., China
- 8A-9 Hydrophobicity of Algae Accumulated RTV Coating in Different Humidity Environments
S.F. Yang, Z.D. Jia, X.G. Ouyang, Tsinghua University, China; H. Bai, State Grid of Sichuan Electric Power Research Institute, China; R.T. Liu, State Grid of Liaoning Electric Power Research Institute, China
- 8A-10 Performance Evaluation of XLPE Materials for 90°C HVDC Applications
D. Li, T.J. Person, The Dow Chemical Company, USA
- 8A-11 A Study on the Effect of Inorganic Fillers on the DryBand Arcing Erosion of Silicone Rubber Composites
Refat Atef Ghunem, Yazid Hadjadj, National Research Council Canada, Canada; Ayman H. El-Hag, American University of Sharjah, UAE; Edward A. Cherney, University of Waterloo, Canada
- 8A-12 The Salt Migration Phenomena in Snow on Insulators
Shunnan Liu, Zhidong Jia, Jingwei Xu, Peng Zhou, Tsinghua University, China
- 8A-13 Comparison between Dynamic Drop Test and other Methods in Hydrophobicity Evaluation
Zhipeng Yan, Xidong Liang, Hao Shen, Shaohua Li, Tsinghua University, China; Zilan He, Bing Luo, Electric Power Research Institute, China
- 8A-14 Streamer Propagation Characteristics of Non-uniform Electric Field in Low Temperature Environment
Yong Yi, Wenxi Tang, Zhengying Chen, Liming Wang, Tsinghua University, China
- 8A-15 Electric Heating Performance of Soot/SiliconOxide/Fluorocarbon Super-hydrophobic Thin Film
Qi Zhao, Feipeng Wang, Gang Wen, Zhengyong Huang, Jian Li, Chongqing University, China
- Session 8B – High Fields and High Frequency Phenomena**
- 8B-1 Electric Fields in Multi-layer Dielectrics under High DC Stresses in Plane-Parallel Geometry
Purnabhishek Muppala, C.C. Reddy, Indian Institute of Technology, India
- 8B-2 Measurement-Setup for Frequency Measurements of the Dielectric Properties of Semiconductive Layers
T. Maier, T. Leibfried, Karlsruhe Institute of Technology, Germany
- 8B-3 Frequency Measurement of the Dielectric Properties of Semiconductive Layers in Xlpe-Cables
T. Maier, T. Leibfried, Karlsruhe Institute of Technology, Germany
- 8B-4 Research on Electrical Field Distribution of Tri-post Insulator and Distortion Effect by Defects
Huidong Tian, Lilan Liu, Zihao Guo, He Li, Ran Shi, Zongren Peng, Xi'an Jiaotong University, China
- 8B-5 Influence of Nonstandard Voltage Stresses on Transformer Insulation Paper
Martin Knenicky, Radek Prochazka, Ondrej Sefl, Czech Technical University, Czech Republic
- 8B-6 Performance of an optimized XLPE material for controlling space charge in HVDC transmission cable system
Saki Kikuchi, Hiroki Mori, Anna Mori, Takahiro Sakurai, Yukihiro Yagi, Furukawa Electric Co., Ltd., Japan
- 8B-7 Identification of Particle Parameters through Matching of Computed and Measured Trajectories
Takanori Yasuoka, Kenichi Nojima, Manaho Matsubara, Yuta Abe, Motoharu Shiiki, Masafumi Takei, Toshiba Corp., Japan; Steven A. Boggs, Nonlinear Systems, Inc., USA
- 8B-8 Electrical Properties of Polytetrafluoroethylene with Mineral Fillers under High DC Electric Field
H. Yahyaoui, P. Notingher, S. Agnel, Université de Montpellier, France; Ch. Perrier, Y. Kieffel, General Electric Grid Solutions, France
- 8B-9 High-Field Saturation of Nonlinear Field Grading Materials Used in AC Applications
G. Eriksson, ABB AB, Corporate Research, Sweden
- 8B-10 Electric Field Measurement in Liquid Dielectrics using Kerr Effect
Z.N. Zakaria, T. Andritsch, P.L. Lewin, The Tony Davies High Voltage Laboratory, University of Southampton, UK (*Universiti Malaysia, Malaysia)*
- 8B-11 The Recognition of Dissolved Gas Abnormality Based on High Dimensional Support Vector Machine
ShuangJing Zhu, Bo Qi, Peng Zhang, Meng Huang, ZhiHai Rong, North China Electric Power University, China; Ying Lin, State Grid Shandong Electric Power Research Institute, China
- 8B-12 Effect of high-frequency pulse ageing on dielectric response of paper/oil insulation
Mahdi Khanali, Shesha H. Jayaram, University of Waterloo, Canada
- Session 8C Treeing and Surface Flashover**
- 8C-1 Effect of Release Agent on Arc Ablation Resistance of Epoxy Resin
Zihao Guo, Huidong Tian, He Li, Haoran Wang, Qingyu Wang, Zongren Peng, Xi'an Jiaotong University, China

8C-2	Research on Discharge Path on Dielectric Surfaces Under Steep-front Impulse Voltage <i>Deng Tao*, Liang Xi-dong, Yao Yi-ming, Ding Jia-jing, Tsinghua University, China (*China Electric Power Research Institute)</i>	8C-13	Effect of Repetitive Rates of Impulse Voltage on Electrical Treeing in Epoxy and Barrier Compositated Insulations <i>Rui Zhang, Xuezhong Liu, Meng Wang, Xi'an Jiaotong University, China; Changzhi Xue, Hongsheng Chen, Yanqin Li, CCRC Zhuzhou Electric Co., China</i>
8C-3	Electrical Treeing Characteristics near Multi-layer Interface <i>Shinnosuke Abe, Tomohiro Kawashima, Masayuki Nagao, Naohiro Hozumi, Yoshinobu Murakami, Toyohashi University of Technology, Japan; Naruto Miyakawa, Hiroki Shiota, Takao Tsurimoto, Mitsubishi Electric Corporation, Japan</i>	8C-14	Electrical tree growth and partial discharges analyzed by fractal and correlation dimensions <i>Roger Schurch, Pablo Donoso, Pablo Aguirre, O'Bryan Cardenas, Marcos Zuniga, Universidad Tecnica Federico Santa Maria, Chile; Simon M. Rowland, The University of Manchester, UK</i>
8C-4	Investigation of Dielectric Properties of Microtextured Surfaces with Silver PVD and under Short Circuit Conditions <i>Salah Faik, Schneider Electric USA Inc., USA; Michel Rapeaux, Marc Rival, Schneider Electric, France</i>	8C-15	Surface Charging Characteristics of Fiberglass Reinforced Plastic (FRP) Hot Sticks under HVDC Operating Conditions <i>M. Amer, J. Laninga, B. Kordi, University of Manitoba, Canada; D. R. Swatek, W. McDermid, Manitoba Hydro, Canada</i>
8C-5	Developing Speed of Surface Discharge on Quartz Glass Plate Having Backside Electrode <i>D. Aoyagi, R. Sasamoto, Y. Izawa, K. Nishijima, Fukuoka University, Japan</i>	8C-16	Study on Dynamics of Bubble Breakdown in Silicone Rubber under High Frequency Voltage <i>Ming Chen, YuanXi'ang Zhou, Qiong Nie, Tsinghua University, China</i>
8C-6	The Impact of Harmonic Frequencies on Electrical Tree Growth in Epoxy Resin <i>I. Iddrissu, S. M. Rowland, The University of Manchester, UK</i>	8C-17	Effect of the Surface Charge on the Flashover Voltage for GIS Basin Insulator under Switching Impulse Voltage <i>Chunjia Gao, Bo Qi, Chengrong Li, North China Electric Power University, China; Shuqi Zhang, Jinzhong Li, China Electric Power Research Institute, China</i>
8C-7	A PIC-MCC Numerical Approach for Studying the Effect of Pulse Steepness on Vacuum Flashover <i>Jiale Mao, Yonghong Cheng, Lei Bai, Xi'an Jiaotong University, China; Shuang Wang, Jingshen Wu, The Hong Kong University of Science and Technology, China</i>	12:30-14:00	Lunch (on your own)
8C-8	Suppression of Electrical Tree Initiation by Antioxidant and Ultraviolet Absorber, Using A Density-Functional Study <i>H. Uehara, Kanto Gakuin University, Japan; Y. Sekii, Sekii PE Laboratory, Japan; S. Iwata, Osaka Research Institute of Industrial Science and Technology, Japan; T. Takada, Tokyo City University, Japan; Y. Cao, University of Connecticut, USA</i>	14:00-16:00	Session 9 (Oral) Pre-breakdown and breakdown phenomena and ageing Chair: Abderrahmane Beroual, Ecole Centrale de Lyon, France Co-chair: Huseyin Hiziroglu, Kettering University, USA
8C-9	Electrical treeing in a glassy epoxy resin – the filamentary tree and the PD tree <i>Hualong Zheng, Simon M. Rowland, The University of Manchester, UK</i>	9-1	Surface charging of dielectric barriers under positive lightning impulse stress <i>Hans Kristian Meyer, Frank Mauseth, Martine Husøy, Norwegian University of Science and Technology, Norway; Atle Pedersen, SINTEF Energy Research, Norway</i>
8C-10	Influence of electrode separation on electrical treeing in a glassy epoxy resin <i>Hualong Zheng, Simon M. Rowland, Ningyu Jiang, The University of Manchester, UK</i>	9-2	AC Gas Breakdown Scaling Laws <i>A. M. Loveless, A. L. Garner, Purdue University, USA</i>
8C-11	Development of an Experimental Setup to Study Carbon/Epoxy Composite Subjected to Simulated Lightning Current <i>Pedram Gharghabi, Juhyeong Lee, Michael Mazzola, Thomas Lacy, Joni Kluss, Mississippi State University, USA</i>	9-3	Voltage Endurance Test at Increasing Voltage as a Tool to Express Determinations of Mathematical Model Parameters of Electrical Aging <i>Aleksandr Khazanov, Anna Gegenava, Bill Moore, National Electric Coil, USA; Boris Vakser, HV Insulation Consulting, Russia</i>
8C-12	X-ray Phase Imaging of Electrical Treeing in Filled Epoxy <i>T. Nakamura, M. Tokuhiro, A. Kumada, K. Hidaka, The University of Tokyo, Japan; T. Kato, T. Yamagiwa, Hitachi Ltd., Japan</i>	9-4	On the Tangential AC Breakdown Strength of Polymeric Interfaces Considering Elastic Modulus <i>Emre Kantar, Frank Mauseth, Erling Ildstad, Norwegian University of Science and Technology, Norway; Sverre Hvidsten, SINTEF Energy Research, Norway</i>
		9-5	Thermal Ageing and Its Impact on Charge Trapping Parameters in LDPE <i>Ziyun Li, Ning Liu, Steve Gabriel, George Chen, University of Southampton, UK</i>

9-6 Electro-Thermal Model for Calculating the Space Charge
around Defects in a 2-D Thin Film Sample
A. A. Mulla, S. J. Dodd, N. Chalashkanov, L. A. Dissado,
University of Leicester, UK

16:00- **Closing**
16:15 Enis Tuncer, 2017 IEEE CEIDP Chair

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CEIDP 2018

LOCATION TO BE ANNOUNCED

Chair: Dr. Nicola Bowler

Iowa State University, USA

nbowler@iastate.edu

IEEE CEIDP 2017 PROGRAM

REGISTRATION - Sunday - 16:00 - 21:00; Monday & Tuesday - 07:00 - 13:00

ALL ORAL SESSIONS IN CRYSTAL BALLROOM; ALL POSTER SESSIONS IN EAST PROMENADE

	Sunday, Oct 22	Monday, Oct 23	Tuesday, Oct 24	Wednesday, Oct 25
7:00		Continental Breakfast - East Promenade		
8:00	Smart Materials TC to 12:00; Citizen B&C	Conference Welcome and Whitehead Lecture	Session 5 (Oral): Outdoor Insulation, Partial Discharges and Measurement Techniques	Session 7 (Oral): Dielectric Materials for HVDC and GIS
9:00	Nanodielectrics TC to 12:30; Continental			
9:30		Break		
10:00		Session 1 (Oral): Numerical Analysis and Simulation Dielectric Research	Break	Break
10:30			Session 6 - Poster	Session 8 - Poster
11:00			NO AFTERNOON SESSIONS DEIS AdCom Meeting to 18:00; Citizens B&C	
12:00				
12:30		Lunch on your own		Lunch on your own
13:00			Technical Tour & Cultural Tour	
14:00	Outdoor Insulation TC to 15:00; Citizen B&C	Session 2 (Oral): Advanced Materials, Charge Storage and Transport		Session 9 (Oral): Pre-breakdown and Breakdown Phenomena and Ageing
15:00	Executive Board Meeting to 18:00; Texas C&D			
16:00		Break		Conference Closing
16:30		Session 3 - Poster		
17:00	HVDC Cable Systems TC to 18:00; Citizen B&C			
18:00	Welcome Reception to 19:30; East Promenade		Reception & Banquet; Crystal Ballroom	
18:30		Dinner Break on your own		
19:00				
19:30		Session 4 - Poster		

