2018 IEEE CEIDP
IEEE CONFERENCE ON ELECTRICAL INSULATION AND DIELECTRIC PHENOMENA

October 21-24, 2018
IBEROSTAR Hotel & Resort Cancun
Boulevard Kukulcan Km. 17, Cancun Q. Roo MX 77500

CONFERENCE PROGRAM
# IEEE CEIDP 2018 Program

## Registration
- **Sunday**: 12:30-20:00
- **Monday**: 07:30-18:00
- **Tuesday**: 07:30-12:30
- **Wednesday**: 07:30-12:30

## Sessions
- Oral sessions in Foyer Miramar
- Poster sessions in Isla 1-4

<table>
<thead>
<tr>
<th>Time</th>
<th>Sunday, Oct 21</th>
<th>Monday, Oct 22</th>
<th>Tuesday, Oct 23</th>
<th>Wednesday, Oct 24</th>
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<tbody>
<tr>
<td>08:00</td>
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<td>Conference Welcome and Whitehead Lecture</td>
<td>Session 5 (Oral)</td>
<td>Session 7 (Oral)</td>
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<td>08:30</td>
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<td>Outdoor insulation, Surface Flashover and GIS</td>
<td>Partial Discharge and Measurement Techniques</td>
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<tr>
<td>09:00</td>
<td>Tutorial (9:00-17:00): Optimization and Sensitivity Analysis</td>
<td>Break and Photograph</td>
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<td>09:30</td>
<td>Workshop (9:00-13:00): Nanodielectrics</td>
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Sponsored by:
Welcome from the Conference Chair

It is my great pleasure to welcome you, colleagues and experts from all over the world, to the 2018 Conference on Electrical Insulation and Dielectric Phenomena (CEIDP) in Cancun, Mexico. The CEIDP was established within the Division of Engineering and Industrial Research of the National Academy of Sciences-National Research Council in 1920 and is now in its 98th year. The conference continues to provide opportunity for specialists from around the world to meet annually for exchange of expertise relevant to the properties of insulation materials and is now fully sponsored by the Dielectrics and Electrical Insulation Society of the IEEE.

The conference opens with the Whitehead Memorial Lecture, to be given this year by Prof. Dr.-Ing.-Habil. Herbert Kliem of Saarland University, Germany (details below). Thereafter begins an extensive program that includes nine oral and eight poster sessions on topics ranging from nanodielectrics to material aging. For those not involved in committee meetings on Tuesday afternoon there promises to be a most memorable cultural tour to the archeological site of Tulum, that will be followed by the conference banquet on Tuesday evening.

I am indebted to all members of the Technical Program Committee, to members of the CEIDP Board and to the Executive Committee who have worked diligently in preparing the conference venue and program. I also thank the session chairs and co-chairs for their work.

I am grateful to Dr. Steve Boggs who donated his honorarium from the 2017 Whitehead Memorial Lecture for the purpose of encouraging student participation in CEIDP 2018, by which the registration fee for all students was reduced.

If you are new to CEIDP, I encourage you to attend Sunday’s Board meeting, introduce yourself to a Board member, and look for a role in the organization of this prestigious conference as we look forward to celebrating the 100th year of CEIDP in 2020. We can be justly proud of the heritage of our conference and look forward to many more successful meetings to come.

Dr. Nicola Bowler
Chairperson, CEIDP 2018
Iowa State University, USA

Executive Committee

Nicola Bowler, Conference Chair, Iowa State University, USA
George Chen, Vice-Chair/Treasurer, Southampton University, United Kingdom
Kai Wu, Technical Program Committee Chair, Xi’an Jiaotong University, China
Rodolfo García-Colón, 2018 Local Arrangements Chair, Instituto Nacional de Electricidad y Energías Limpias INEEL, Mexico
Thomas Andritsch, Conference Secretary, Southampton University, United Kingdom
Virginie Griseri, Nominating Committee Chair/Registration Assistance, University of Toulouse, France
Sombel Diaham, Publication and Publicity Committee Chair, University of Toulouse, France
Davide Fabiani, DEIS Meetings Committee Chair, University of Bologna, Italy

Assisted by:
Jane Hegeler, DEIS Webmaster, Evergreen Labs, USA
Isaias Ramírez Vázquez, 2018 Local Arrangements Assistant, INEEL, Mexico
Elected Board Members

Term Expiring 2018
Sombel Diaham  
University of Toulouse, FRANCE
Issouf Fofana  
University of Quebec at Chicoutimi, CANADA
Frank Hegeler  
Naval Research Lab, USA
Simon Rowland*  
University of Manchester, UK
Greg Stone*  
Qualitrol-Iris Power, CANADA
Gilbert Teyssèdre  
University of Paul Sabatier, FRANCE
Kai Wu  
Xi’an Jiaotong University, CHINA

Term Expiring 2019
Yang Cao  
University of Connecticut, USA
Shesha Jayaram  
University of Waterloo, CANADA
Masahiro Kozako  
Kyushu Institute of Technology, JAPAN
Giovanni Mazzanti  
University of Bologna, ITALY
Axel Mellinger  
University Central Michigan, USA
Yuriy Serdyuk  
Chalmers University of Technology, SWEDEN
Brian G. Stewart*  
University of Strathclyde, SCOTLAND

Term Expiring 2020
Thomas Andritsch*  
University of Southampton, UK
Éric David*  
L’École de Technologie Supérieure (ETS), Canada
Jerome Castellon  
University of Montpellier, France
Virginie Griséri*  
University of Toulouse, France
Nandini Gupta  
IIT Kanpur, India
Akiko Kumada  
The University of Tokyo, Japan
Feipeng Wang  
Chongqing University, China

*Board members currently serving their second consecutive 3-year term

Living Past Chairs

Voting Members
Michel Fréchette  
L’École de Technologie Supérieure (ETS), Canada
Mahmoud Abou-Dakka  
NRC, Canada
Vijendra Agarwal  
USA
Soli S. Bamji  
Canada
Reuben Hackam  
University of Windsor, Canada
Huseyin R. Hiziroglu  
Kettering University, USA
Vishnu K. Lakdawala  
Old Dominion University, USA
J. Keith Nelson  
Rensselaer Polytechnic Institute, USA
Non-voting Members

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Daniel Berg</td>
<td>USA</td>
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<tr>
<td>Lynn L. Hatfield</td>
<td>USA</td>
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<tr>
<td>Marshall Pace</td>
<td>USA</td>
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<tr>
<td>Edward Sacher</td>
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<td>P. Keith Watson</td>
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<td>Roy E. Wooton</td>
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<td>G. Edward Johnson</td>
<td>USA</td>
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<td>Martin G. Broadhurst</td>
<td>USA</td>
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<td>Louis J. Frisco</td>
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Technical Program Committee

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Kai Wu (Committee Chair)</td>
<td>Xi’an Jiaotong University, China</td>
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<tr>
<td>Krivda Andrej</td>
<td>ABB Switzerland Ltd, Corporate Research, Switzerland</td>
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<td>Thomas Andritsch</td>
<td>University of Southampton, UK</td>
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<td>Abderrahmane Beroual</td>
<td>Ecole Centrale de Lyon, University of Lyon, France</td>
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<td>University of Connecticut, USA</td>
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<td>University of Montpellier, France</td>
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<td>Andrea Cavallini</td>
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<td>Nikola Chalashkanov</td>
<td>University of Leicester, UK</td>
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<td>George Chen</td>
<td>University of Southampton, UK</td>
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<td>Tony Lujia Chen</td>
<td>University of Manchester, UK</td>
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<td>Eric David</td>
<td>ETS, Canada</td>
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<td>Ming Dong</td>
<td>Xi’an Jiaotong University</td>
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<td>Davide Fabiani</td>
<td>DEI - University of Bologna, Italy</td>
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<td>Issouf Fofana</td>
<td>University of Quebec at Chicoutimi (UQAC), Canada</td>
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<td>Michel Frechette</td>
<td>ETS/XJF, Canada</td>
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<td>Mingli Fu</td>
<td>Electric Power Research Institute of Southern Grid, China</td>
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<td>Rodolfo Garcia Colon</td>
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<td>Huseyn Recai Hiziroglu</td>
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<td>Stephane Hole</td>
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<td>Shesha Jayaram</td>
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<td>Zhidong Jia</td>
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<td>Akiko Kumada</td>
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<td>Muneaki Kurimoto</td>
<td>Nagoya University, Japan</td>
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June-Ho Lee
Hoseo University, Korea

Peng Liu
Xi’an Jiaotong University, China

Qiang Liu
The University of Manchester, UK

Yong Liu
Tianjin University, China

Giovanni Mazzanti
University of Bologna, Italy

Yoshimichi Ohki
Waseda University, Japan

Hitoshi Okubo
Aichi Institute of Technology, Nagoya

Cheng Pan
Wuhan University, China

Bao Toan Phung
University of New South Wales, Australia

Simon Rowland
The University of Manchester, UK

Yuriy Serdyuk
Chalmers University of Technology, Sweden

Raji Sundararajan
Purdue University, USA

Toshikatsu Tanaka
Waseda University, Japan

Chao Tang
Southwest University, China

Gilbert Teyssedre
CNRS/University of Toulouse, France

Mikael Unge
ABB Corporate Research, Sweden

Feipeng Wang
Chongqing University, China

Liming Wang
Tsinghua University, China

Peng Wang
Sichuan University, China

Xilin Wang
Tsinghua University, China

Hugh Zhu
Doble Engineering Company, USA

Session Chairs and Co-chairs

Thomas Andritsch
University of Southampton, UK

Abderrahmane Beroual
University of Lyon, France

Eric David
ETS, Canada

Huseyin Recai Hiziroglu
Kettering University, USA

Boxue Du
Tianjin University, China

Akiko Kumada
The University of Tokyo, Japan

Cristian Laurent
University de Toulouse, France

Giovanni Mazzanti
University of Bologna, Italy

Jinliang He
Tsinghua University, China

Naoki Hayakawa
Nagoya University, Japan

Yuriy Serdyuk
Chalmers University of Technology, Sweden

Masayuki Kozako
Kyushu Institute of Technology, Japan

Refat Ghunem
National Research Council, Canada

Rodolfo Garcia Colon
INEEL, Mexico
The Whitehead Memorial 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 2018 Whitehead Memorial Lecture will be given by Prof. Dr.-Ing.-Habil. Herbert Kliem.

Herbert Kliem received the diploma in electrical engineering with the subject area solid state electronics and the degree Dr.-Ing., both at the University of Technology Aachen, Germany. In 1991 he joined the Technical University Hamburg-Harburg and achieved the qualification as a university lecturer. Since 1996 he has been a full-time professor and head of the Institute of Electrical Engineering Physics at the Saarland University. In 1982 he attended the CEIDP for the first time. Since then he has contributed 29 manuscripts to the Annual Report.

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. Registration includes one copy of Conference Proceedings, Technical Sessions, Reception, and Banquet; companion registration includes welcome reception and banquet only.

<table>
<thead>
<tr>
<th>ALL FEES IN USD</th>
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<td>Tutorial - Optimization and Sensitivity Analysis</td>
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<td>Workshop - Nanodielectrics</td>
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A note on student registration fees:

It was voted at the CEIDP board meeting two years ago that CEIDP would offer reduced registration fee for all students and discontinue the system of applying for stipends, by which some but not all students benefited from conference support. Therefore, the registration fee for ALL students is relatively lower this year and it is not necessary to apply for a stipend to benefit from the reduced student registration fee. At CEIDP 2018 there is an additional reduction in the student registration fee due to Steve Boggs having given his honorarium for the 2017 Whitehead Memorial Lecture for the purpose of supporting student attendance at CEIDP 2018. All students, please register at the advertised rates.
**Hotel**

The conference hotel, the Iberostar hotel, is located in the hotel area of Cancun, directly by the sea, in a very safe part of Cancun, controlled 24 hours per day by private security guards. For reservations that begin between October 15th-19th or end between October 26th-30th, please use the below link to book the hotel. The full tax rate will apply.

http://booking.iberostar.com/groups/Home.aspx?groupid=819&hash=3b5dca501ee1e6d8cd7b905f4e1bf723

**Travel to the Hotel from the Cancun International Airport**

The conference will also organize transportation of each participant from the Airport to the Iberostar hotel and vice-versa, included in the registration fee.

**Culture Tour – Archaeological Site of Tulum**

(12:30-18:00, October 23, 2018)

Tulum, the only archaeological city on the coast of Quintana Roo, where, as well as discovering one of the most iconic ruins in Mayan culture. You can enjoy one of the best views of the Mexican Caribbean. Discover Mayan culture, dive into the blue waters of the Caribbean Sea and return home to tell everyone how you experienced Tulum. The fee is $77.

**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.

**2018 Annual Report**

One copy of the 2018 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 21, 2018

9:00-13:00 Workshop: Nanodielectrics
9:00-17:00 Tutorial: Optimization and Sensitivity Analysis
12:30-17:00 CEIDP Board Meeting
12:30-20:00 Registration
18:00-19:30 Welcome Reception

Monday, October 22, 2018

8:00-8:15 Welcome
Nicola Bowler, Iowa State University, USA

8:15-9:30 Whitehead Lecture
Dielectric Relaxation and Ferroelectric Imprint
Herbert Kliem, Saarland University, Germany

9:30-10:00 Break and Conference Photograph

10:00-12:20 Session 1 (Oral) Polarization and Charge Characteristics
Chair: Cristian Laurent, University de Toulouse, France
Co-chair: Thomas Andritsch, Uni. of Southampton, UK

1-1 Schottky Barrier Height Quantification of Plasma Treated P(VDF-TrFE) Thin Films
Vecchio, Michael Anthony1; Meddeb, Amira Barhoumi2; Lanagan, Michael T.3; Ounaies, Zoubeida2; Shallenberger, Jeff4; 1: Penn State University, Materials Science and Engineering Department, USA; 2: Penn State University, Nuclear and Mechanical Engineering Department, USA; 3: Penn State University, Engineering Science and Mechanics Department, USA; 4: Penn State University, Materials Research Institute, USA

1-2 Piezoelectric Nanofibers for Integration in Multifunctional Nanomaterials
Fabiani, Davide1; Grolli, Filippo1; Speranza, Marco2; Suraci, Simone1; Brugio, Tommaso2; Maccaferri, Emanuele3; Zucchelli, Andrea4; 1: DEI - University of Bologna, Italy; 2: DIN - University of Bologna, Italy; 3: DIC - University of Bologna, Italy

1-3 Permittivity Calculation Model for Low Permittivity Characteristic of Epoxy/Hollow Silica Nanocomposites
Kurimoto, Muneaki1; Yoshida, Takuma1; Kato, Chiharu1; Kato, Takeyoshi1; Sato, Masahiro2; Li, Shaohua1; Liang, Xidong1; Prasad, Aditya1; Nelson, J. Keith2; Schadler, Linda S.3; Gao, Yanfeng3; 1: Dept. of Electrical Engineering, Tsinghua University, China; 2: Dept. of Materials Science and Engineering, Rensselaer Polytechnic Institute, USA; 3: State Grid Jibei Electric Power Co. Ltd. Research Institute, North China Electric Power Research Institute Co. Ltd, China

1-5 From Polyethylene to Polystyrene: First Principles
Prediction of temperature and field dependent carrier mobility
Sato, Masahiro1; Kumada, Akiko1; Hidaka, Kunihiko1; The University of Tokyo, Japan

1-6 Measurement of Carrier Mobility in Polyethylene Based on the Pulsed Electro-Acoustic Method
Su, Rui1; Wu, Kai1; Cheng, Chuanhui1; Wu, Yang1; Xi’an Jiaotong University, China

1-7 Space Charge Analysis of Multi-Structure Polyimide Films using TSM
Akram, Shakeel1; Castellon, Jérôme2; Agnel, Serge1; Khan, M. Zeeshan2; 1: University of Montpellier, France; 2: Chongqing University, China

12:20-14:00 Lunch

14:00-16:00 Session 2 (Oral): Advanced Materials
Chair: Eric David, ETS, Canada
Co-chair: Jinliang He, Tsinghua University, China

2-1 Organometallic-Organic Hybrid System as Flexible Dielectric Material
Nasreen, Shamima1,2; Tefferi, Mattewos1; Baczkowski, Matthew1; Sotzing, Gregory1; Cao, Yang1,2; 1: Department of Chemistry, University of Connecticut, USA; 2: Institute of Materials Science, University of Connecticut, USA; 3: Department of Electrical and Computer Engineering, University of Connecticut, USA

2-2 Interfaceal Compatibility on Dielectric Properties of Polypropylene/Polyhedral Oligomeric Silsesquioxane Composite
Xie, Dongri1; Liu, Wenfeng1; Wu, Kangning1; Min, Daomin1; Li, Shengtao1; Xi’an Jiaotong University, China

2-3 The Correlation and Balance of Critical Material Properties for DC Cable Dielectrics
Tefferi, Mattewos1; Li, Zongze1; Uehara, Hiroaki2; Cao, Yang1; 1: University of Connecticut, United States of America; 2: Kanto Gakuin University, Japan

2-4 DC Cable and Pulsed Field Surface Charge Properties of SiR/SiC Composites in DC and Pulsed Combined Field
Yang, Zhurong1; Du, Boxue1; Li, Zhonglei1; Tianjin University, China

2-5 Effect of the Non-linear Electric Conductivity of Mineral Insulating Oil on the Dielectric Strength at High DC Voltage Stress
Gabler, Tobias1; Backhaus, Karsten1; Götz, Thomas1; Fritsche, Ronny2; Großmann, Steffen2; 1: Technische Universität Dresden, Germany; 2: SIEMENS AG, Nuremberg, Germany

2-6 Electrical Characterization of Dibenzyltoluene Liquid at High Temperatures up to 350°C
MUSLIM, Joko1,2; LE SAINT, Olivier1; HANNA, Rachelle1; REBOUD, Jean-Luc1; SINISUKA, Ngapuli Irmea1; 1: Univ. Grenoble Alpes, CNRS, Grenoble INP, Laboratoire de génie électrique - G2Elab, France; 2: PLN Indonesia; 3: Institut Teknologi Bandung (ITB), Indonesia

16:00-16:30 Break

16:30-18:30 Session 3 (Poster)
Chair: Giovanni Mazzanti, University of Bologna, Italy

Session 3A – Polarization, Charge Storage and Transport
3A-1 Electric Response and Thermal Properties of Ethylene Vinyl Acetate/Graphene-based Composite
Azizi, Sohrab; Ouellet-Plamondon, Claudiane; David, Eric; Fréchette, Michel; 1: École de technologie supérieure, Canada; 2: Xi’an Jiaotong University, China

3A-2 Electrical field-strength dependent space charge and charge decay characteristics at silicone rubber / silicone grease interfaces
Spelzhausen, Simon; Ionian, Mario-Rafael; Plath, Ronald; TU-Berlin, Germany

3A-3 Dielectric Frequency Measurement of Semiconductive Layers in XLPE Cables
Maier, T.; Leibfried, T.; Schmehl, K.; KIT-IEH, Germany

3A-4 Influence of Ion Species in Electrolyte on Capacitance of EDLC
Matsubara, Shinji; Murakami, Yuichi; Muramoto, Yuji; Meijo University, Japan

3A-5 Relative Permittivity of TiO2/Silicone Elastomer Composite Stretched in Uniaxial Direction
Naya, Kento; Kurimoto, Munenori; Kato, Takeyoshi; Yasuo, Suzuko; 1: Nagoya University, Japan; 2: Aichi Institute of Technology, Japan

3A-6 Modeling the effect of particles electrostatic interaction on the dielectric response of BT/PVDF composites
Zhong, Shao-Long; Dang, Zhi-Min; Wang, Si-Jiao; Zha, Jun-Wei; 1: Department of Electrical Engineering, Tsinghua University, China; 2: College of Biological and Chemistry Engineering, University of Science & Technology Beijing, China

3A-7 Time-Dependent Electric Field Distribution during Load Cycle Test for HVDC Mi Cable
Kwon, Ik-Soo; Kim, Sun-Jin; Koo, Jae-Hong; Lee, Bang-Wook; Hanyang University, Korea

3A-8 Arrangement Strategy of Particle Trap in DC GIL
Wang, Jian; Wang, Jingrui; Ni, Xiaoru; Chang, Yanan; North China Electric Power University, China

3A-9 Role of Holes in Conduction Phenomenon of Low Density Polyethylene at High Fields
Upadhyay, Avnish Kumar; Reddy, Chandupatla Chakradhar; IIT Ropar, India

3A-10 Influence of Crosslinking Byproducts on DC Conductivity of HVDC XLPE Cable Insulation
Ren, Haiyang; Zhong, Lisheng; Zhao, Wei; Liu, Minghao; Yang, Xiaoyu; Li, Yingze; Yu, Qinxxue; Cao, Liang; Xi’an Jiaotong University, China

3A-11 Excited States Analysis of Polyethylene Molecule with Carbynol Defects Based on Time-dependent Density Functional Theory
Pu, Lu; Chen, Xi; Zhu, Lei; Zhao, Xuefeng; Liu, Jian; Zheng, Jiankang; Wang, Yanbo; Zhao, Aixuan; Deng, Junbo; Zhang, Guanjun; 1: Research Institute of State Grid Shaanxi Electric Power Company, China; 2: State Key Laboratory of Electrical Insulation and Power Equipment, Xi’an Jiaotong University, China; 3: State Grid Weinan Power Supply Company, China; 4: State Grid Xi’an Electric Power Supply Company, China

3A-12 Ferroelectrets Filled with High Breakdown-Strength Gas
Joysey, William D.; Mellinger, Axel; Central Michigan University, USA

3A-13 Improving the charge/discharge efficiency and dielectric breakdown in high temperature polymer dielectrics
Chen, Xin; Zhang, Tian; Zhang, Qiming; Penn State University, USA

3A-14 Interpretation of PEA Output Signal in a Multilayer Specimen
Andrade, Marcelo De Araujo; Candela, Roberto; De Rai, Luca; Franch Bononi, Stefano; Imburgia, Antonino; Riva Sanseverino, Eleonora; Romano, Pietro; Viola, Fabio; 1: Prysmian Group, Milan, Italy; 2: University of Palermo, Italy

3A-15 Characteristics of Space Charge Accumulation in Polypropylene-Based Insulating Materials under DC Stress
Kanai, Takehiro; Miyake, Hiroaki; Tanaka, Yasuhiro; Tokyo City University, Japan

3A-16 Influence of moisture absorption on space charge behavior of thermostetting resin
Konishi, Soichiro; Kohuji, Ryohei; Miyake, Hiroaki; Tanaka, Yasuhiro; Tokyo City University, Japan

3A-17 Space charge behavior and electrical breakdown strength of XLPE film sandwiched between semiconducting layers
Ogura, Kotaro; Kasuga, Hiroki; Miyake, Hiroaki; Tanaka, Yasuhiro; Tokyo City University, Japan

Session 3B – Nanocomposites

3B-1 Mica Insulating Tape for Large Generators with High Thermal Conductivity
Takahashi, Ryoh; Takezawa, Yoshitaka; Fukushima, Keiji; Saito, Koichi; Hitachi Chemical Co., Ltd., Japan

3B-2 Electro-mechanical and chemical strength analysis of thermally aged nanofluid impregnated kraft paper
Maharana, Mrutyunjay; Baruah, Niharika; Nayak, Sisir Kumar; Sahoo, Niranjan; 1: Centre for Energy, Indian Institute of Technology Guwahati, India; 2: Department of Electronics and Electrical Engineering, Indian Institute of Technology Guwahati, India; 3: Department of Mechanical Engineering, Indian Institute of Technology Guwahati, India

3B-3 Breakdown characteristics of C60 modified transformer oil
Sima, Wenxia; Chen, Jiaq; Sun, Potao; Zhang, Huajian; Ye, Lian; He, Jiahui; Yin, Ze; Shao, Qianqiu; Chongqing University, China

3B-4 Space Charge Accumulation Characteristics of LDPE/TiO2 Nanocomposites under Thermal Aging
Wang, Youyuan; Li, Yudong; Zhang, Zhanxi; Chongqing University, China

3B-5 Improvement of Space Charge Behaviors of PP/ULDPE Blends by Nano Graphene for HVDC Cable
Hou, Zhaohao; Du, Boxue; Li, Jin; Li, Zhonglei; Han, Chenlei; Xu, Ranran; Wang, Mingyang; Fu, Mingli; Hou, Shua; Hui, Baojun; 1: Tianjin University, China; 2: Electric Power Research Institute Co. Ltd. of CSG, China

3B-6 Effects of TiO2-nanoparticle size on dielectric properties of transformer oil
Ge, Yang; Niu, Mingkang; Wang, Lei; Huang, Meng; Lv, Yuzhen; Li, Chengrong; North China Electric Power University, China

3B-7 The dielectric properties of PP nanocomposites doped with mesoporous silica nanoparticles
Yang, Yang; Li, Qi; He, Jinliang; Tsinghua University, China

3B-8 Preparation of New Acrylic-based Dielectric Elastomers based on Complexation of Ca2+ Ions with Carboxyl Groups Displaying Excellent Performance
Zhao, Yu; Zha, Junwei; Zhong, ShaoLong; Wang, Si-Jiao; Dang, Zhi-Min; 1: University of Science and Technology Beijing, China; 2: Tsinghua University, China

3B-9 Space Charge Characteristics of CB/LDPE Composites at Different Temperatures
Chen, Bingying; Wu, Jie; Yi, Chengqian; Fan, Linzheng; Tu, Youping; Ding, Lijian; Qin, Sichen; 1: North China Electric Power University, China; 2: Hefei University Of Technology, China
3B-10 Conductivity Characteristics of CB/LDPE Composites at Different Temperatures
Chen, Bingying1; Wu, Je1; Yi, Chengqian1; Fan, Linzhen1; Tu, Youping1; Ding, Lijian2; Qin, Sichen1; 1: North China Electric Power University, China; 2: Hefei University Of Technology, China

3B-11 Electrical ageing tests on conventional and nanofilled impregnation resins
Guastavino, Francesco1; Ferraris, Mattia2; Gianelli, Walter2; Torello, Eugenia1; 1: University of Genova, Italy; 2: Elantas Europe S.r.l.

3B-12 Partial Discharge Erosion on Gamma-Ray Irradiated Epoxy/Al2O3 Nanocomposites
Gao, Yu1,2; Wang, Xiaofang1; Wang, Jilong1; Xu, Bangbang1; Du, Boxue1; 1: Tianjin University, China; 2: University of Southampton, UK; 3: State Grid Tianjin Electric Power Company, China

3B-13 Variation of Current-Density as a Function of Electric-Field Intensity in Synthetic Nanoclay-filled Polypropylene
Hiziroglu, Huseyn Recai; Shkolnik, Iosif E.; Kettering University, USA

3B-14 Electric Field Relaxation Effect of Micro-varistor/epoxy Composite
Abe, Kazuma1; Harada, Shota1; Nakano, Yusuke1; Kozako, Masahiro1; Hitaka, Masayuki1; Yamamoto, Takashi2; Okabe, Shigemitsu2; 1: Kyushu Institute of Technology, Japan; 2: Tokyo Electric Power Company Holdings, Inc, Japan

3B-15 Discharge Resistant Epoxy/Clay Nanocomposite for High Torque Density Electrical Propulsion
Nguyen, Hiep Hoang1; Ronzello, Joanne1; Caio, Yang1; Mirza, Arshiah1; Chen, Weiqiang1; Bazzi, Ali1; Chapman, Jack2; Nasreen, Shamima1; 1: University of Connecticut, USA; 2: Electric Boat, A General Dynamic Company, Groton, CT, USA

3B-16 Dielectric Properties of LLDPE/MgO Nanocomposites Micro-extruded from a Masterbatch
Couderc, Hugues1; Grisien, Virginie2; David, Eric1; Mary, Dominique1; 1: ETS, Canada; 2: Université Paul Sabatier, Laboratoire Laplace, France

3B-17 Micro-nanostructured silicone surfaces for high voltage application
Magsoudi, Khosrow; Momen, Gelareh; Jafari, Reza; Farzaneh, Masoud; UQAC, Canada

3B-18 Discharge Resistant Nano-coatings
Xia, Jing1,2; Li, Zhengyu1,2,3; Nasreen, Shamima1,2; Ronzello, JoAnne1,2; Jacobs, Linda4; Caio, Yang1,2,3; 1: NSF Industrial University Collaborative Research Center on High Voltage/ Temperature Materials and Structures; 2: Electrical Insulation Research Center, Institute of Materials Science, University of Connecticut; 3: Electrical and Computer Engineering, University of Connecticut; 4: GE Industrial Solutions

3B-19 Space Charge Suppression of Oil Impregnated Insulation Pressboard by Surface Sputtered ZnO and PTFE Film
Li, Yangqing; Hao, Jian; Liu, Cong; Liao, Ruijin; Yang, Lijun; Chongqing University, China

Session 3C – Biodielectrics

3C-1 Relationship between Size of Leaked Nucleic Acid of Escherichia coli and Survival ratio by High Electric Field Pulse Application
Sato, Takunao; Yamashita, Ryo; Yoshikawa, Daiki; Murakami, Yuichi; Muramoto, Yuji; Meijo University, Japan

3C-2 Development of Selective Sterilization System of Bacteria in Aqueous Solution by High Electric Field Pulse Application
Murakami, Yuichi; Sato, Takunao; Muramoto, Yuji; Meijo University, Japan

18:30-19:30 Dinner

19:30-21:30 Session 4 (Poster)
Chair: Refat Ghunem, National Research Council, Canada

Session 4A – Outdoor Insulation and Surface Flashover

4A-1 Study on Electrical Field Distortion Effect by Linear Defects of Tri-post Insulator
Wu, Zehua1; Wang, Haoran1,2; Tian, Huidong1; Cui, Boyuan2; Zhou, Shiyi1; Peng, Zongren1; 1: Xi’an Jiaotong University, China; 2: China Electric Power Research Institute, China

4A-2 Electrical Power Dissipation on the Surface of a Ceramic Insulator Under Pollution Condition
Ilomuanya, Chibuike; Farokhi, Shahab; Nekahi, Azam; Glasgow Caledonian University, United Kingdom

4A-3 Effects of Suspension Pattern on Operation Reliability of Anti-Icing Polymer Insulators in HVAC Transmission Lines
Kong, Xianghuan1; Liu, Yong1; Li, Longji2; Du, Boxue1; 1: School of Electrical and Information Engineering, Tianjin University, China; 2: Electric Power Research Institute, State Grid Tianjin Electric Power Company, China

4A-4 The research of alternative EHV mineral transformer oils for the replacement of SHELL Diala Oil
Fu, Qiang; Peng, Lei; Lin, Musong; Lv, Wangyan; Zhao, Yaohong; Qian, Yihua; Guangdong Power Grid Co., Ltd., China

4A-5 Influence of VFTO Characteristics to Electric Field Distribution of Basin-type Insulator with Transient Method
Wu, Zehua1; Tian, Huidong1; Wang, Haoran1; Yang, Xi2; Zhou, Shiyi1; Zhang, Pengfei2; Peng, Zongren1; 1: Xi’an Jiaotong University, China; 2: Hefei University of Technology; 3: State Grid Corporation of China

4A-6 Dynamics of ion concentrations in air affected by applied dc electric field and humidity
Schisseling, Joachim1; Mikiver, Anders2; Serydjak, Yuri2; 1: ABB Corporate Research, Västerås, Sweden; 2: Chalmers University of Technology, Gothenborg, Sweden

4A-7 Water absorption of high-temperature Vulcanized silicone rubber
Wang, Zhong1; Zhang, Wei2; Zhao, Lihua1; 1: Sichuan University, China; 2: State grid Hubei electric power company limited, China

4A-8 Electrolytic Corrosion Charge Monitoring on the Hardware of Porcelain and Glass Insulators on HVDC Overhead Lines
Yang, Daiming1; Mei, Hongwei2; Wang, Liming3; Guo, Chengjun1; 1: Graduate School at Shenzhen, Tsinghua University, China; 2: Electric Power Research Institute, Yunnan Power Grid Co. Ltd., China

4A-9 Grading the Potential Distribution of DC Cable Terminals Using Field Grading Material
Zhao, Xiaolei; Yang, Xiao; Hu, Jun; Li, Qi; Tsinghua University, China

4A-10 Numerical Research on Heat Transfer Mechanism of Electrical Ceramic Materials in Pulsed Thermography Detection
Guo, Chenjun1; Liu, Lishua2; Yu, Hong1; Ma, Yi1; Mei,
4A-11 Research on the Influence of Charge Quantity of Particles on Contamination Accumulation Characteristics
Liao, Yifan; Li, Minzhe; Cao, Bin; Mei, Hongwei; Wang, Liming; 2: Institute of Science and Technology of China Southern Power Grid, China; 2: School of Electric Power, South China University of Technology, China; 3: Graduate School at Shenzhen, Tsinghua University, China

4A-12 Influence of Plasma Jet Treatment on the Adhesion between the existing and re-applied RTV coating
Zhang, Ruobing; Wang, Shanshan; Li, Shuang; Graduate School at Shenzhen, Tsinghua University, China

4A-13 Temperature Dependence of Nonlinear Conducting Behavior for Field Grading Materials
Yang, Xiao; Zhao, Xiaofei; Li, Qi; Hu, Jun; Zhang, Bo; He, Jinning; Tsinghua University, China

4A-14 Analysis of Surface Flashover Characteristics of Epoxy Resin/SB Insulation Material
Kan, Yuqiang; Bian, Ximing; 1: North China Electric Power University, Baoding, China; 2: North China Electric Power University, Beijing, China

4A-15 Influence of Aluminum Foil and External Conductor on the Temperature Distribution of RIP Condenser Converter Transformer Bushings
Yang, Xi; Wang, Qingyu; Peng, zongren; 1: Hefei university of technology, China; 2: Xi'an Jiaotong University, China

4A-16 Characteristic properties of High Consistency Rubber and Liquid Silicone Rubber
Guo, Jingang; Wang, Liming; Wang, Yanwei; Yin, Fanghui; Liu, Tianqi; Lin, Ying; 1: State Grid East Inner Mongolia Electric Power Company Research Institute, China; 2: Graduate School at Shenzhen, Tsinghua University, Shenzhen, China

4A-17 Characteristics of Transient Sheath Overvoltage in 110kV Underground Cable Network
Li, Jianming; Chen, Xi; Xu, Long; Zhao, Aixuan; Liu, Jian; Zhao, Xuefeng; Deng, Junbo; Zhang, Guanjun; 1: Xi'an Jiaotong University, China; 2: Electric Power Research Institute of State Grid Shaanxi Electric Power Company, China

4A-18 Transient Electric Field Computation for GIS insulator Under Switching Impulse Voltage
Yang, Xi; Zhan, Xuhai; 1: Hefei university of technology, China; 2: State Grid Anhui Electric Power CO., LTD., China

4A-19 Transient Electric Field Calculation of Zinc oxide arrester under Lightning Impulse Voltage
Zhou, Shiyi; Wang, Haoran; Tian, Huidong; Wu, Zehua; Cheng, Jianwei; Liu, Peng; Peng, Zongren; 1: Xi'an Jiaotong University, China; 2: China Southern Power Grid Science Research Institute Co. Ltd.

4A-20 Research on wetting characteristics of insulator in ultrasonic fog
Cao, Bin; Ma, Xudong; Li, Minzhe; Wang, Liming; Mei, Hongwei; Kang, Jun; 1: Tsinghua University, China; 2: Electric Power Research Institutes of State Grid Qinghai Electric Power Company, China

4A-21 Wetting and Self-cleaning Properties of Silicone Rubber Surfaces treated by atmospheric plasma jet
Vazirinasab, Elham; Jafari, reza; Momen, Gelareh; UQAC, Canada

4A-22 Effect of UV Radiation Aging on Creepage Discharge Characteristics of HTV Silicon Rubber at High Altitude
Jin, Fubao; QingHai University, China

4A-23 Pattern Analysis of Discharge Characteristics for Condition Evaluation of Polymer Insulators in Fog-Haze Environment
Zhou, Kai; Liu, Yong; Ye, Kuan; Li, Chunsheng; Wang, Qian; Cai, Yingming; Yang, Liang; Zhang, Rui; 1: State Grid Beijing Electric Power Research Institute, China; 2: School of Electrical and Information Engineering, Tianjin University, China

4A-24 An Insulator's Pollution Flashover Model Based on the Formation Mechanism of Dry Bands
Kai, Gao; Huang, Hua; Wang, Heng; Li, Xue-wen; Jin, Li-Jun; 1: State Grid Shanghai Electric Power Research Institute, State Grid Municipal Electric Power Company, China; 2: School of Electronic and Information Engineering, Tongji University, China

4A-25 Simulation of Composite Insulator Interface Defects in Partial Discharge
Huang, Zhen; Zhang, Zhonghao; Wang, Rui; Huang, Xinyu; Peng, Xiangyang; Wang, Liming; Nie, Zhangxiang; Yang Daiming; 1: Guangdong Electric Power Research Institute, China; 2: Graduate School at Shenzhen, Tsinghua University, China

4A-26 Suppression of Dry-Band Arcing Erosion by Silica Filler in Silicone Rubber Composites
Kone, Daouda; Ghunem, Refat Atef; EI-Hag, Ayman H.; Hadjadj, Yazid; Cisse, Ladji; Bangash, Kashif Naeem; 1: University Felix Houphouët-Boigny, Côte d'Ivoire; 2: National Research Council Canada, Canada; 3: University of Waterloo, Canada; 4: American University of Sharjah, United Arab Emirates

4A-27 Enhancement of Hydrophobicity for Polymeric Insulator with Zirconia Nanofillers
S, Subashini; Ramesh, Rahul; Sugumar, C Pugazhendhi; College of Engineering Guindy, India

4A-28 Study on the Influence of Electric Field Distribution on Insulator Surface Flashover
Liu, Lin; Li, Xiaoqiang; Zhang, Qiaogen; Xian Jiaotong University, China

Session 4B – Measurement Techniques

4B-1 Design of High Voltage Dielectric Spectroscopy Measurement System for Bushing Moisture Detection
Zeng, Zipeng; Qi, Bo; Dai, Quanming; Li, Chengrong; North China Electric Power University, China

4B-2 Standard Evaluation for the Determination of the Power Frequency Breakdown Voltages in Insulating Liquids
Pompili, Massimo; Calcaro, Luigi; Sangiovanni, Silvia; Baur, Martin; Knauel, Jens; 1: University of Roma "La Sapienza", Italy; 2: BAUR GmbH, Sulz, Austria

4B-3 Effects of Sample Adhesives Acoustic Properties on Spatial Resolution of Pulsed Electroacoustic Measurements
Gibson, Zachary; Dennison, JR; Pearson, Lee; Griffiths, Erick; Pearson, Anthony; Griseri, Virginie; 1: Utah State University; 2: Box Elder Innovations, LLC; 3: Université de Toulouse

4B-4 Frequency Response of the Transformer Winding: a Case Study based on a Laboratory Model
Mohamed Youssouf, Roda; Ferreira, Regiel S. A.; Meghnefi, Fethi; Ezzaidi, Hassan1; Picher, Patrick; Fofana, Issouf; 1: University of Quebec at Chicoutimi (UQAC), Canada; 2: Institut de recherche d'Hydro-Québec
Tuesday, October 23, 2018

8:00-10:00 Session 5 (Oral) Outdoor insulation, Surface Flashover and GIS
Chair: Huseyin Recai Hiziroglu, Kettering University, USA
Co-chair: Yuriy Serdyuk, Chalmers Univ. of Tech., Sweden

5-1 Comparison of Different Residual Resistance Calculation Methods used in Predictive Insulator Flashover Models
Jabbari, Marouane; Volat, Christophe; Fofana, Issouf; Université du Québec à Chicoutimi, Canada

5-2 Preliminary Study on Nondestructive Testing Method for Composite Insulators Based on Digital Shearography
Liu, Lishuai; Guo, Chenjun; Mei, Hongwei; Wang, Liming; Yu, Hong; Ma, Yi; 1: Graduate School at Shenzhen, Tsinghua University, China; 2: Electric Power Research Institute, Yunnan Power Grid Co., Ltd., China

5-3 Evidencing of the Capacitive Effects on the Development of Creeping Discharges at Solid/Fluid Interfaces
Beraou, Abderrahmane; Khaled, Usama; 1: Ampere Lab CNRS UMR 5005, Ecole Centrale de Lyon, University of Lyon, France; 2: College of Engineering, King Saud University

5-4 Electric Field Grading by Functionally Graded Materials (FGM) for HVDC Gas Insulated Power Apparatus
Hayakawa, Naoki; Oishi, Ryota; Kojima, Hiroki; Kato, Katsumi; Zebouchi, Nabil; 1: Nagoya University, Japan; 2: National Institute of Technology, Nihama College, Japan; 3: Cardiff University, UK

5-5 On the Electrical Characteristic and Heat Dissipation of High Voltage Surface Arcs
Kuehnel, Stefan; Kornhuber, Stefan; Lambrecht, Jens; 1: University of Applied Sciences Zittau/Goerlitz, Germany; 2: Wacker Chemie AG, Germany

5-6 Low-Voltage Arc Interruption Computational: the Effect of Stefano
Huo, Jindong; Seleznева, Svetlana; Jacobs, Linda; Cao, Yang; 1: Institute of Materials Science, University of Connecticut, USA; 2: GE Global Research Center, USA; 3: ABB Industrial Connections & Solutions LLC, USA; 4: Electrical and Computer Engineering, University of Connecticut, USA

10:00-10:30 Break

10:30-12:30 Session 6 (poster)
Chair: Boxue Du, Tianjin University, China

Session 6A – Aging and Treeing

6A-1 Estimation of a Stress-Strength Insulation Reliability Model By Means of a New Bayes Method
Chiado, Elio; Di Noia, Luigi; Mazzanti, Giovanni; Mottola, Fabio; 1: Department of Industrial Engineering, University of Naples Federico II, Italy; 2: Department of Electrical Engineering and Information Technology, University of Naples Federico II, Italy; 3: Department of Electrical, Electronic and Information Engineering, University of Bologna, Italy; 4: Department of Engineering, University of Naples Parthenope, Naples, Italy

6A-2 Ageing of Undergroundpower cables: species migration from semi-conductive layers to insulation layer
Pelzer, Quentin; EDF / LEPMI, France

6A-3 A Novel Furfural-detection-method for the Aging Prediction of Paper Insulation in Power Transformer
Peng, Lei; Fu, Qiang; Lin, Musong; Zhao, Yaohong; Qian, Yihua; Li, Shengli; 1: Guangdong Power Grid Co.,
6A-4 Acquiring Polarization and Depolarization Current with less Interference by Translating Dielectric Response from Frequency to Time Domain
Li, Hua; Xu, Qingchuan; Lin, Fuchang; Tao, Xiantao; School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, China

6A-5 Effectiveness of Stress Grading System Builds on the Heat Production in a Form-Wound Coil of an Inverter-fed Rotating Machine
Naeini, Alireza; Cherney, Edward A.; Jayaram, Shesha; University of Waterloo, Canada

6A-6 Influence of Silica Filler Particle Size in Epoxy Resins on the Electrical Treeing Characteristic
Yamada, Daichi; Kawashima, Tomohiro; Hozumi, Naohiro; Murakami, Yoshinobu; Toyohashi University of Technology, Japan

6A-7 Electrical tree growth under very low frequency (VLF) voltage excitation
Schurc, Roger; Donoso, Pablo; Ardila-Rey, Jorge; Montana, Johny; Angulo, Alejandro; Universidad Tecnica Federico Santa Maria, Chile

6A-8 Effect of sheath plastic deformation on Electric field in three core submarine cables
Hamdan, Mohammad; Pilgrim, Dr. James; Lewin, Prof. Paul; University of Southampton, United Kingdom

6A-9 Determination of the Effects of Accelerated Ageing on the Dielectric Properties of LLDP and LLDPE/HNT Composites
Kadlec, Petr; Polansky, Radek; Prosr, Pavel; 1: UWB in Pilsen, Czech; 2: UWB/RICE in Pilsen, Czech

6A-10 The effect of the method of transport to the processing of PVC granules
Prosr, Pavel; Chudoba, Vit; Polansky, Radek; Pihera, Josef; 1: UWB/RICE in Pilsen, Czech; 2: Kablo Vrchlabi s.r.o., Czech

6A-11 Chemical Structure and Breakdown Behaviors of a New AC 500kV XLPE Submarine Cable Insulation with Different Thermal Aging Conditions
Wang, Xiaojian; Gao, Zhen; Zhu, Zhigang; Li, Shiqiang; Liu, Zhiquan; Hao, Jian; 1: State Grid Zhejiang Electric Power Supply Company, China; 2: Zhoushan Power Supply Company of State Grid Zhejiang Electric Power Supply Company, China; 3: State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, China

6A-12 The influence of bending stress on the sulfur corrosion of copper winding
Wei, Chao; Lu, Yuncai; Yuan, Yuan; Zhou, Jiang; Jiang, Youdong; 1: Electric Power Research Institute of State Grid Jiangsu Electric Power Grid Co., Ltd., Nanjing, China; 2: School of Materials Science and Engineering, Chongqing University, China; 3: School of Electrical Engineering, Chongqing University, China

6A-13 Discharge-induced ignition of combustibles on ac power-supply cords
Ishikawa, Yusuke; Takenaka, Kyoto; Mizuno, Yukio; Yoshida, Atsushi; 1: Nagoya Institute of Technology, Japan; 2: Kawamura Electric Inc., Japan

6A-14 Molecular Dynamics Simulation and Density-Functional Analysis on Suppression Effect of Electrical Tree in Antioxidant-added Polyethylene
Uehara, Hiroaki; Iwata, Shinya; Wang, Weiwang; Sekii, Yasuo; Takada, Tsatsu; Cao, Yang; 1: Kanto Gakuin University, Japan; 2: Osaka Research Institute of Industrial Science and Technology, Japan; 3: Xi’an Jiaotong University, China; 4: Sekii PE Laboratory, Japan; 5: Tokyo City University, Japan; 6: University of Connecticut, USA

6A-15 Genesis, Identification and Bayes Estimation of the Inverse Power Model for Insulation Reliability Assessment
Chiodo, Elio; Di Noia, Luigi Pio; Mazzanti, Giovanni; Mottola, Fabio; 1: Department of Industrial Engineering, University of Naples Federico II, Italy; 2: Dept. Electr. Engineering and Information Technology, University of Naples Federico II, Italy; 3: Department of Electrical, Electronic and Information Engineering, University of Bologna, Italy; 4: Department of Engineering, University of Naples Parthenope, Naples, Italy

6A-16 Effects of heat and radiation aging and burning on the surface physical properties of polymer-insulated cables
Ito, Seitaro; Hirai, Naoshi; Minakawa, Takefumi; Kuroda, Chiaki; Ohki, Yoshimichi; Waseda University, Japan

6A-17 Trap Characteristic and Potential Trap Model of Water Trees in XLPE
Tao, Xiantao; Li, Hua; Rao, Jiandong; Zhang, Qin; Tu, Jingyun; Yan, Gen; Xu, Qingchuan; Liu, Yi; Lin, Fuchang; Huazhong University of Science and Technology, China

6A-18 Effect of electric field on methanol generation in transformer
Li, Chong; Wu, Kai; Li, Zhi; Yang, Yong; Qian, Kang; Kang, Xiaohua; 1: Xi’an Jiaotong University, China; 2: Electric Power Research Institute, Gansu Power Grid Co., Ltd., China

6A-19 The Impact of Crevice Corrosion on Copper Winding in Insulating Oil with Corrosive Sulfur
Yuan, Yuan; Jiang, Youndong; Zhou, Jiang; Liu, Guoyong; Liao, Ruijing; Chongqing University, China

6A-20 Monitoring cable current and laying environment parameters for assessing the aging rate of MV cable joint insulation
Peretto, Lorenzo; Tinarelli, Roberto; Ghaderi, Abbas; Mingotti, Alessandro; Mazzanti, Giovanni; Valtorta, Giovanni; Amoroso, Giuseppe; Danesi, Stefano; 1: Department of Electrical, Electronic and Information Engineering - Alma Mater Studiorum - University of Bologna, Italy; 2: e-distribuzione S.p.A., Roma, Italy

6A-21 Study on Gaseous Products in the Aging Process of Silicone Oil in Cable Terminals
Zhang, Ruibing; Qiu, Zhihun; Wu, Jun; Graduate School at Shenzhen, Tsinghua University, China

6A-22 Sulfur Corrosion in Bushing and Its Effect on The Property of Oil
Liu, Guoyong; Yuan, Yuan; Zhou, Jiang; Jiang, Youdong; Liao, Ruijien; Chongqing University, China

6A-23 Validity Evaluation Method of DGA Monitoring Sensor in Power Transformer Based on Chaos Theory
Zhou, Zhengqin; Xiao, Li; Nie, Dixin; Qi, Bo; Zhang, Peng; Gao, Chunjia; Li, Chengrong; 1: Wuhan NARI Limited Liability Company of State Grid Electric Power Research Institute; 2: North China Electric Power University, China

6A-24 Combination Prediction Method of Power Transformers Based on Feature Gas Arrangement Diagram and Grey Model
Xu, Xiaolu; Cheng, Lin; Nie, Dixin; Wang, Yiming; Qi, Bo; Zhang, Peng; Gao, Chunjia; Li, Chengrong; 1: Wuhan NARI Limited Liability Company of State Grid
Electric Power Research Institute, China; 2: North China Electric Power University, China

6A-25 State Prediction Method of Power Transformer Based on the Grey Differential Threshold
Feng, Zhenxin1; Jiang, Yi1; Nie, Dexion1; Wang, Yiming2; Qi, Bo2; Zhang, Peng2; Gao, Chunjia2; Li, Chengrong2; 1: Wuhan NARI Limited Liability Company of State Grid Electric Power Research Institute, China; 2: North China Electric Power University, China

6A-26 The relationship between moisture content in XLPE cable and differential depolarization current
Zhao, Aixuan1; Chen, Xi1; Xu, Long1; Li, Jiaming1; Zhao, Xuefeng2; Pu, Lu2; Deng, Junbo2; Zhang, Guanjun2; 1: Xi’an Jiaotong University, China; 2: State Grid Shaanxi Electric Power Research, Xi’an, China

6A-27 Effect of Short Circuit Currents on thermo-mechanical properties of insulated cables
Hamdan, Mohammad Anan1; Pilgrim, James; Lewin, Paul; University of Southampton, United Kingdom

6A-28 Uplift Diffusion of Antioxidant in Cross-Linked Polyethylene
Chang, Yuan-Shang; Mosleh, Ali; University of California, Los Angeles (UCLA), USA

6A-29 Moisture Ingress of Metallized Film Capacitor under High Temperature and Different Humidity Condition
Chen, Qiren1; Li, Hua1,2,3; Li, Liwei1; Li, Lu2; Jiang, Haoyu2; Liu, Yi2; Zhang, Qin1; Lin, Fuchang1,2,3; 1: School of Electrical and Electronic Engineering, Huazhong University of Science & Technology, China; 2: State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science & Technology, China; 3: Key Laboratory of Pulsed Power Technology, Huazhong University of Science and Technology, China

6A-30 Comparison of mineral oil behavior with and without the presence of catalysts during accelerated thermal aging
Hahn, Pavel; Polansky, Radek; Faculty of Electrical Engineering, Czech

6A-31 Analysys of gamma irradiation effect on PTFE films by FTIR and DSC
Saidi, Nadjia1; GRISEIRI, Virginie2; Mouaci, Sarah1; Mezouar, Ali1; Teyssedre, Gilbert2; Saidi, Mohamed1; 1: University USIHB, Algeria; 2: University UPS, France

6A-32 Investigation on thermal degradation phenomena on low density polyethylene(LDPE) through dielectric spectroscopy
Suraci, Simone1; Fabiani, Davide1; Mazzocchetti, Laura2; Maceratesi Vittorio2; Merighi Stefano2; 1: DEI - University of Bologna, Italy; 2: Dept. of Industrial Chemistry, University of Bologna, Italy

6A-33 How Far are Furan Compounds Reliable Indicators for Thermal Aging of Oil Impregnated Cellulose Insulation?
Imani, Mohammad Taghi1; Homeier, Kristin1; Werle, Peter2; Dräger, Gerald1; 1: Leibniz Universität Hannover, Institute of Electric Power Systems, Division of High Voltage Engineering and Asset Management, Schering-Institute; 2: Leibniz Universität Hannover, Institute of Organic Chemistry

6A-34 Qualitative Energy Analysis of treeing in XLPE as a function of the frequency of the applied voltage
Poblanito, Gabino1; Calva, Primo Alberto2; Azcarraga, Carlos1; 1: Instituto Nacional de Electricidad y Energias Limpias, Mexico; 2: Instituto Politécnico Nacional

6B-1 Time and Space Dependent Characteristics of HVDC Electric Field Stress in Oil-pressboard Composite Insulation Systems
Nakane, Ryuichi1; Kato, Katsumi2; Okubo, Hitoshi1; 1: Aichi Institute of technology, Japan; 2: National Institute of Technology, Nihama College, Nihama, Japan

6B-2 Calculation of three 3-D ion flow field near the ±500kV HVDC transmission tower
Zhang, Qian; Li, Yinfen; Li, Xuebao; Lu, Tiebing; North China Electric Power University, China

6B-3 Insulation system design and insulting material requirement analysis of a novel rolling-ring electric rotary joint
Liu, Zili1; Hou, Xinxin1; Min, Daomin2; Li, Shengtao2; Liu, Wenfeng2; 1: China Academy of space technology, China; 2: Xi’an jiaotong university, China

6B-4 Study on elementary insulting properties of PEEK available for aerospace rolling-ring electric rotary joint
Liu, Zili1; Hou, Xinxin1; Wang, Wei2; Min, Daomin2; Li, Shengtao2; Chang, Yanan1; 1: China Academy of space technology, China; 2: Xi’an jiaotong university, China; 3: North China Electric Power University, China

6B-5 DC Conductivity and Joule Heat Effect in the 320kV XLPE Cables
Zhang, Chong1,2; Li, Wenpeng3; Li, Weikang4; Zhao, Weijia5; Yan, Hongda6; Shi, Xiaoning5; Chen, Xin2; Cao, Liang3; 1: University of Science and Technology Beijing, China; 2: State Grid, China; 3: Xi’an Jiaotong University, China

6B-6 Experimental investigation on the influence of AC voltage on the positive corona current pulses from DC conductor parallel with AC conductor
Li, Yinfen; Li, Xuebao; Zhang, Qian; LU, Tiebing; North China Electric Power University, China

6B-7 Comparison of the Volume and Surface approaches to compute Temperature and Electric Field along the Stress-Grading on Stators Bars
Kone, Gbah1; Volat, Christophe1; Université du Québec à Chicoutimi, Canada

6B-8 Surface Charge Tailoring Strategy Based on Temperature Field Regulation
Lin, Chuangjie1; Li, Qi1; Li, Chuanyang; He, Jiliang; Tsinghua University, China

6B-9 Study on High Temperature Heating Characteristics of Degraded Composite Insulators
Peng, Xiangyang1; Huang, Xinyu2; Zhang, zhonghao3; Nie, zhangxiang4; Yang, Cuirui5; Huang, Zhen1; Wang, Liming1; 1: Guangdong Electric Power Research Institute, China; 2: Xi’an jiaotong university, China; 3: State Grid, China; 4: Xi’an jiaotong university, China; 5: Electric Power Research Institute, China
Co-chair: Rodolfo Garcia Colon, INEEI, Mexico

7-1 Dependence of the Field and Charge Distribution at Semicon/Polyethylene Interface on the Press-molding Process Derived from Kelvin Probe Force Microscopy


7-2 Issues in Space Charge Measurements with the PEA Technique in HVDC Cables: Applicative Case Studies

Albertini, Marco; Franch Bononi, Stefano; Giannini, Simone; Troia, Ivan; Sica, Gerardo; Mazzanti, Giovanni; Pini, Dario; 1: Pysmian Cables & Systems, R&D Headquarters, Milano, Italy; 2: Department of Electrical, Electronic and Information Engineering, University of Bologna, Italy

7-3 Surface Discharge Behaviour of Coated Electrodes in Gas-Insulated systems under DC Voltage Stress

Götz, Thomas; Esmaeil Moghadam, Dadvoud; Simka, Philipp; Riechert, Uwe; Speck, Joachim; Backhaus, Karsten; Gabler, Tobias; Grotzmann, Steffen; 1: Technische Universität Dresden, Germany; 2: ABB Switzerland Ltd., Switzerland

7-4 Partial Discharge Inception Characteristics in Air with Solid Dielectrics under HVDC and Polarity Reversal Conditions

Oh, DongHun; Lee, HoYoung; Kim, SunJin; Lee, YungGun; 1: The Tony Davies High Voltage Laboratory, University of Southampton, UK.; 2: Communications, Signal Processing and Control, University of Southampton, UK.

7-5 Tree Propagation and Partial Discharge Phenomena of Nanocomposite Epoxy

Nakamura, Takahiro; Yokoi, Takaki; Kumada, Akiko; Hidaka, Kunihiko; Hirai, Hiromitsu; Imai, Takahiro; Yoshimitsu, Tetsuo; 1: Toshiba Mitsubishi-Electric Industry Corporation, Japan; 2: The University of Tokyo, Japan; 3: Toshiba Corporation, Japan

7-6 Effect of Temperature Changes on Thin Film Sacrificial Copper Strips due to Sulfur Corrosion

Ahmad Khier, Mohd Shahni Bin; Lewin, Paul L.; Brown, Richard C.D.; 1: The Tony Davies High Voltage Laboratory, University of Southampton, United Kingdom; 2: Universiti Teknikal Malaysia Melaka (UTeM), Malaysia; 3: Department of Chemistry, University of Southampton, United Kingdom

10:00-10:30 Break

10:30-12:30 Session 8 (poster)

Chair: Masayuki Kozako, Kyushu Institute of Tech., Japan

Session 8A –Partial Discharge

8A-1 Methods of Characterisation of DC Partial Discharge in Polymeric Cable Insulation

Morris, Euan Andrew; Siew, W H; Given, Martin; 1: EPSRC CDT in Future Power Networks and Smart Grids; 2: University of Strathclyde, United Kingdom

8A-2 A Novel Wavelet Selection Scheme for Partial Discharge Signal Detection under Low SNR Condition

Liu, Jiajia; Morris, Euan; Siew, Wah Hoon; Soraghan, John; University of Strathclyde, United Kingdom

8A-3 A Novel Archinedes Spiral Antenna Used for PD Measurement at Repetitive Square Wave Voltages

Gong, Yuanquan; Wang, Peng; Zhou, Wanyi; Zhang, Jiawei; Cavallini, Andrea; 1: Shanghai Electric Wind Power Group Co., Ltd, China; 2: Sichuan University, China; 3: Northeast Electric Power University, China; 4: University of Bologna, Italy

8A-4 The Influence of Relative Humidity on Partial Discharge and Endurance Features under Short/Repetitive Impulsive Voltages

Wang, Peng; Li, Ying; Cavallini, Andrea; Zhang, Jiawei; Xiang, Enxin; Wang, Ke; 1: Sichuan University, China; 2: University of Bologna, Italy; 3: Northeast Electric Power University, China; 4: Yunnan Electric Power Research Institute, Yunnan Power Co., Ltd, China

8A-5 Partial Discharge Detection in SF6 Gas with a SiPM Sensor

Zhou, Jierui; Ren, Ming; Wang, Siyun; Hou, Yunting; Zhang, Chongxing; Dong, Ming; Zhuang, Tianxin; Xi’an Jiaotong University, China

8A-6 Feature Parameters Extraction of GIS Partial Discharge Signals Based on Multiple Scale Higher-order Cumulants Matrix Singular Value Decomposition

Liu, Yushun; Cheng, Dongfeng; Yin, Qiaoling; Xie, Qian; 1: Anhui Grid Co., Anhui Electric Power Research Institute, China; 2: Anhui Grid Co., Hefei Power Company, China; 3: Sichuan Grid Co., Sichuan Electric Power Research Institute, China

8A-7 Multiple Partial Discharge Signal Decomposition using Mathematical Morphology

Nik Ali, Nik Hakimi; Rapisarda, Paola; Lewin, Paul; 1: The Tony Davies High Voltage Laboratory, University of Southampton, UK.; 2: Communications, Signal Processing and Control, University of Southampton, UK.

8A-8 Correlation between Partial Discharge Inception Voltage and Breakdown Voltage Characteristics of Butt-gap in HVDC Mass Impregnated PPLP Cable

Li, Jinhong; Le, HoYoung; Kim, SunJin; Lee, BangWook; Hanyang University, Korea

8A-9 Optimized Arrival Time Determination of UHF Pulses for Localization of Partial Discharge in Power Transformers

Akbari Azirani, Mohamad; Ariannik, Mohamadreza; Werle, Peter; Akbari, Asghar; 1: Leibniz Universität Hannover, Germany; 2: K. N. Toosi University of Thechnology, Tehran, Iran

8A-10 Breakdown Tests on Polyester Posts Reinforced with Fiberglass to Certify the Insulation Against Lightning-Type Overvoltages

Quizhpi, Flavio; Mizzquero, Luis; Arias, Henry; Piña, Ramón; Universidad Politécnica Salesiana, Ecuador

8A-11 Partial Discharge Characteristics of SF6/N2 Gas Mixture Based on the Bandroad Time Resolved Measurement

Zhang, Chongxing; Xi’an Jiaotong University, China

8A-12 Research on Familial Defect Recognition Method of Transformer Based on Correlation Analysis

Li, Jinhong; Wang, Jianyi; Zhu, Shuangqing; Qi, Bo; Zhang, Peng; Gao, Chunja; Li, Chongrong; 1: China Electric Power Research Institute, China; 2: State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University, China

8A-13 Feasibility of Partial Discharge Localization in Power Transformers based on a novel Curve Fitting Method

Rahimbakhsh, Mahdi; Mostoofi, Milad; Werle, Peter; Gockenbach, Ernst; Leibniz Universität Hannover, Institute of Electric Power Systems, Division of High Voltage Engineering and Asset Management, Schering-Institute, Germany
Session 8B – Pre-breakdown and Breakdown

8B-1 Electron and Ion Swarm Parameters in Gas Mixtures of Ar, He with Dry Air by Pulsed Laser-Induced Plasma Method
Sasamoto, Ryo; Nomiyama, Ryoji; Tanaka, Naoto; Izawa, Yasuji; Nishijima, Kyoyo; Fukuoka University, Japan

8B-2 Difference of Discharge Phenomena under GFRP and CFRP Insulation Barrier with Steep Impulse Voltage
Tanaka, Naoto; Aoyagi, Daicho; Sasamoto, Ryo; Izawa, Yasuji; Nishijima, Kyoyo; Fukuoka University, Japan

8B-3 Negative Lightning Impulse Breakdown Characteristics of Pure Water with and without N2 Fine Bubbles
Takekuma, Norimitsu; Arakoa, Nobutaka; Kamohara, Seiya; Hino, Yuta; Beppu, Takuya; Otsubo, Takuya; Mizusaki, Masayuki; Hanai, Masahiro; Fukuoka University, Japan

8B-4AC Breakdown Characteristics of Mineral Oil with and without N2 Fine Bubbles
Kamohara, Seiya; Takekuma, Norimitsu; Arakoa, Nobutaka; Hanai, Masahiro; Fukuoka University, Japan

8B-5 Fabrication of Permittivity Graded Materials (ε-FGM) by Flexible Mixture Casting Method
Ochiai, Kenta1; Izu, Atsuhiro1; Oishi, Ryota1; Koijima, Hiroki1; Mitsuakume, Hiroshi2; Yanase, Hironori2; Okamoto, Kenji2; Kato, Katsumi2; Hayakawa, Naoki1; 1: Nagoya University, Japan; 2: Fuji Electric Co., Ltd., Japan; 3: National Institute of Technology, Niigama College, Japan

8B-6 Breakdown Behavior of Metallized BOPP Film under the DC Superimposed Harmonic Condition
Yi, Bosi; Li, Hua; Jiang, Haoyu; Li, Liwei; Li, Lu; Chen, Qiren; Li, Zheng; Zhang, Qin; Lin, Fuchang; Huazhong University of Science and Technology, China

8B-7 Influence of Dicumyl Peroxide Content on DC Performance of Polyethylene for DC Cables
Cao, Liang1; Zhong, Lisheng2; Li, Ying3; Ren, Haiyang4; Gao, Jinghui3; Chen, Guanghu1; Li, Wenpeng2; Li, Weikang3; Zhang, Chong4; 1: Xi’an Jiaotong University, China; 2: Global Energy Interconnection Research Institute Co., Ltd., China

8B-8 Electrical Breakdown Characteristic of Epoxy/Hollow Silica Composite Material
Maosubara, Takayuki; Kawaishima, Tomohiro; Hozumi, Naohiro; Murakami, Yoshinobu; Toyohashi University of Technology, Japan

8B-9 Effect of Temperature and Moisture on AC Breakdown Characteristics of Insulating Paper Impregnated by Three-element Mixed Insulation Oil
Wang, Qian1; Peng, Dawei2; Hao, Jian2; Qiu, Ruijin3; Yang, Lijun2; Hu, Shihong2; Tian, Qiangian2; 1: State Grid Chongqing Electric Power CO. LTD. Chongqing Electric Power Research Institute, China; 2: Chongqing University, China; 3: State Grid Sichuan Electric Power CO. LTD. Sichuan Electric Power Research Institute, China

8B-10 Influence of Cellulosic, Metal Particles and Their Mixture on the DC Breakdown of Natural Ester Developed From Soybean Oil
Zhu, Mengzhao; Hao, Jian; Liang, Shuaiei; Dan, Min; Qin, Wei; Gu, Chao; Chongqing University, China

8B-11 Influence of low temperature on luminous characteristics of positive streamer in air
Tang, Wenxi1; Yi, Yong2; Mei, Hongwei3; Wang, Liming1; Shao, Tianying1; Wu, Dengjin2; 1: Graduate School at Shenzhen, Tsinghua University, Shenzhen, China; 2: Uppsala University – Department of Engineering Sciences, Sweden

8B-12 Development of bubbles and breakdown in liquids under Pulsed Electric Fields
Zhang, Ruoqing; Li, Xin; Wang, Zhiyuan; Graduate School at Shenzhen, Tsinghua University, China

8B-13 Streamer region in long air gaps – Experiments and modeling
Arevalo, Liliana1; Wu, Dong2; Hettiarachchi, Pasan2; Cooray, Vernon2; Lobato, Andre2; Rahman, Mahbub2; Wooi, Chin-Leong2; 1: ABB Power Grids HVDC, Sweden; 2: Uppsala University – Department of Engineering Sciences, Sweden

8B-14 Investigation of Insulating Oils in Presence of Impurities
Ghoneim, Sherif Salama Mohamed1,4; Taha, Ibrahim Bedir Metwally2,3; Sabina, Nehmohd A.3,5; El-Adly, Refaat A.6; 1: Electrical department, Faculty of Industrial Education, Suez University, Egypt; 2: Department of electrical power and machines, Faculty of Engineering, Tanta University, Egypt; 3: Faculty of Engineering, Menoufia University, Egypt; 4: College of Engineering, Taif University, Saudi Arabia; 5: Science Stream, Preparatory Year Deanship, Taif University, KSA; 6: College of Science, Taif University, Saudi Arabia

8B-15 Decision Transformer Fault Diagnostics System Based on Dissolved Gas Analysis
Taha, Ibrahim Bedir Metwally1,3, Juma, Diaa El-Din A.1; Ghoneim, Sherif Salama Mohamed2,3; Al-Harthi, Mosleh
M. 3; 1: Faculty of Engineering, Tanta University, Egypt; 2: Faculty of Industrial Education, Suez University, Egypt; 3: College of Engineering, Taif University, Saudi Arabia

8B-16 Temperature dependent large area breakdown strength of polymeric films
Li, Zongze1,2; Ronzello, JoAnne2; Cao, Yang1,2; 1: Department of Electrical and Computer Engineering, University of Connecticut, USA; 2: Electrical Insulation Research Center, Institute of Materials Science, University of Connecticut, USA

8B-17 Research on Insulation Problems of the Tubular Conductor Cable with Tape Winding Insulation
Liu, Rui1; Ren, Xiang1; Ruan, Ling1; Zheng, Zhong2; Zhu, Sirui1; Li, Wenpei1; 1: State grid Hubei power research institute, China; 2: North China electric power university, China

8B-18 Influence of gas pressure on ionization coefficient of nitrogen at 0.5-2.0 kPa
Wang, Yihang1; Cheng, Yi1; Wu, Jie1; Tu, Youping1; Ding, Lijian2; Qin, Sichen1; 1: North China Electric Power University, China; 2: Hefei University of Technology, China

8B-19 Analysis and Discussion on Cracking Discharge Failure of Epoxy Insulating Bushing in GIS Cable Terminal
Shao, Xianjun1,2; He, Weni2; Li, Wendong1; Liu, Haqun2; Zhang, Guanjun1; 1: Xi'an Jiaotong University, China; 2: Research Institute of State Grid Zhejiang Electric Power Company, China

8B-20 Evaluation of Dielectric Strength of Tricyclopentadiene / Silica Microcomposites
Ookubo, Yusuke1; Kozako, Masahiro1; Hikita, Masayuki1; Kamei, Nobuhiro2; 1: Kyushu Institute of Technology, Japan; 2: RIMTEC corporation

12:30-14:00 Lunch

14:00-16:00 Session 9 (Oral) Aging, Pre-breakdown and Breakdown Phenomena
Chair: Abderrahmane Beroual, University of Lyon, France

16:00-16:15 Closing
Nicola Bowler, Iowa State University, USA

Co-chair: Akiko Kumada, The University of Tokyo, Japan

9-1 Dielectric and Mechanical Behavior of Thermally Aged EPR/CPE Cable Materials
Sriraman, Aishwarya1; Bowler, Nicola1; Glass, S. W. (Bill)1,2; Fifield, Leonard S. 1; 1: Iowa State University, USA; 2: Pacific Northwest National Laboratory, USA

9-2 Ageing State Analysis of Safety-related Cables for Nuclear Power Plants Exposed to Simulated Accident Conditions
Minakawa, Takefumi1,2; Ikeda, Masaaki1; Hirai, Naoshi2; Ohki, Yoshimichi1; 1: Regulatory Standard and Research Department, Secretariat of Nuclear Regulation Authority (S/NRA/R), Japan; 2: Faculty of Science and Engineering, Waseda University, Japan

9-3 A Study of Breakdown Properties of HFO Gas under DC and Impulse Voltage
Lesaint, Olivier1; Bonifaci, Nelly1; Merini, Hocine1; Maladen, Romain2; Gentils, François2; 1: Grenoble University and CNRS, France; 2: Schneider Electric Company, Grenoble, France

9-4 Study on the Preparation and Scratch Repairing of Self-repairing Epoxy Resin
Wang, Youyuan; Zhang, Zhanxi; Li, Yudong; Chongqing University, China

9-5 Correlation between Aging Status and Space Charge Behaviors in Samples Consisting of Oil Immersed Paper and Oil
Cheng, Chuanhui; Wu, Kai; Wu, Yang; Xi'an Jiaotong University, China

9-6 Experimental study on the evolution of the insulation properties of impregnating varnishes with thermal aging
Fetouhi, Louiza1,2; Martinez Vega, Juan1; Manfé, Philippe2; Malec, David1; 1: LAPLACE, University of Toulouse, CNRS, INPT, UPS, France; 2: Moteurs Leroy-Somer, Boulevard Marcelin Leroy, France

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