



**ICEMPE 2023**

**IEEE International Conference on Electrical Materials and Power Equipment**  
**May 7th-10th, 2023**  
**Shanghai, China**

## ORAL SESSIONS

|  |  |      |
|--|--|------|
| Sunday, May 7, 2023                                  |  |      |
| 8:00-18:00   | Registration Buckingham Grand Hotel, Shanghai  |      |
| 18:00-20:00  | Welcome Reception (NO.301,3 <sup>rd</sup> F)   |      |
| Monday, May 8, 2023                                  |  |      |
| Opening Ceremony                                     |  |      |
| Chair: Feihu Zheng (Tongji University, China)        |  |      |
| Venue: NO.301+302, 3 <sup>rd</sup> F                 |  |      |
| 08:30-08:35  | Chairman of ICEMPE 2023  |      |
| 08:35-08:40  | China Electrotechnical Society   |      |
| 08:40-08:45  | Vice President of SJTU   |      |
| Chen Jidan Award & Memorial Lecture                  |  |      |
| Chair: Yi Yin (Shanghai Jiao Tong University, China) |  |      |
| Venue: NO.301+302, 3 <sup>rd</sup> F                 |  |      |
| 08:45-08:50  | Brief Introduction to Prof. Chen Jidan<br>Shengtao Li (Xi'an Jiaotong University, China)   |      |
|  | Chen Jidan Memorial Lecture  |      |
| 08:50-09:30  | Space Charge Measurement Techniques for Practical Insulation Systems<br>Naohiro Hozumi (Toyohashi University of Technology, Japan) |      |
| 09:30-10:00  | Group Photo and Coffee Break   |      |
| Lifetime Achievement Award                           |  |      |
| Jianying Li (Xi'an Jiaotong University, China)       |  |      |
| Venue: NO.301+302, 3 <sup>rd</sup> F                 |  |      |
| 10:00-10:05  | Brief Introduction to Lifetime Achievement Award<br>Kai Wu (Xi'an Jiaotong University, China)                                      |      |
|  | Lifetime Achievement Award   |      |
| 10:05-10:15  | Qingquan Lei (Harbin University of Science and Technology, China)<br>Demin Tu (Xi'an Jiaotong University, China)                   |      |
| Oral Session 1: New Issues & New Theories            |  |      |
| Session Chairs:                                      |  |      |
| Xingyi Huang (Shanghai Jiao Tong University, China)  |  |      |
| Wenfeng Liu (Xi'an Jiaotong University, China)       |  |      |
| Venue: NO.301+302, 3 <sup>rd</sup> F                 |  |      |
| 10:15-10:40  | Flexible Low-frequency AC Transmission<br>Invited Weijiang Chen (State Grid Corporation of China, China)                           | S1-1 |
| 10:40-11:05  | Offshore Wind Power Friendly Integration Solution and Key Electrical Equipment<br>Invited Innovation                               | S1-2 |



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|   | <b>Jian Ban</b> (China Electrical Equipment Group Science and Technology Research Institute Co., LTD., China)  |       |
| 11:05-11:30<br>Invited  | Radiation Effects on Degradation of Polymeric Cable Insulation from Various Viewpoints<br><b>Yoshimichi Ohki</b> (Waseda University, Japan)  | S1-3  |
| 11:30-11:55<br>Invited  | Organic Molecular Grafting Modification based Crosslinked Polyethylene for HVDC Cable Insulation<br><b>Hong Zhao</b> (Harbin University of Science and Technology, China)                      | S1-4  |
| 11:55-12:20<br>Invited  | High Performance Lithium-ion Capacitors: Fabrication and Applications<br><b>Yanwei Ma</b> (Institute of Electrical Engineering, Chinese Academy of Sciences, China)                            | S1-5  |
| <b>Oral Session 2: Performance of Insulating Materials</b><br><b>Session Chairs:</b><br><b>Xiangrong Chen</b> (Zhejiang University, China),<br><b>Guoqiang Gao</b> (Southwest Jiaotong University, China)<br>Venue: NO.301+302, 3 <sup>rd</sup> F |  |       |
| 14:00-14:25<br>Invited  | Insulation Problems of HVDC Cable and GIL/GIS in Electricity Transmission<br><b>Boxue Du</b> (Tianjin University, China)   | S2-1  |
| 14:25-14:50<br>Invited  | Health Management Technology of High Speed Train Traction Power Supply Equipment<br><b>Guangning Wu</b> (Southwest Jiaotong University, China)   | S2-2  |
| 14:50-15:15<br>Invited  | Understanding the Abnormal Ageing Performance of ZnO Ceramics: Phenomena and Insights<br><b>Jianning Li</b> (Xi'an Jiaotong University, China)   | S2-3  |
| 15:15-15:40<br>Invited  | Charge Trapping and Transport in Nanodielectrics<br><b>George Chen</b> (University of Southampton, UK)   | S2-4  |
| 15:40-16:05<br>Invited  | Novel Electrochemical Energy Storage Materials & Technologies<br><b>Kai Jiang</b> (Huazhong University of Science and Technology, China)   | S2-5  |
| 16:05-16:15   | Coffee Break   |       |
| 16:15-16:40<br>Invited  | Correlations between Morphology and Insulating Properties of Bi-axial Oriented Polypropylene Film<br><b>Wenfeng Liu</b> (Xi'an Jiaotong University, China)                                     | S2-6  |
| 16:40-17:05<br>Invited  | Sustainable Application of Dynamic Polyimide Dielectrics<br><b>Junwei Zha</b> (University of Science and Technology Beijing, China)  | S2-7  |
| 17:05-17:30<br>Invited  | Plasma Modification Technology for Optimizing the Performance of Electrical Materials<br><b>Cheng Zhang</b> (Institute of Electrical Engineering, Chinese Academy of Sciences, China)          | S2-8  |
| 17:30-17:55<br>Invited  | A Soft Fault Location Method for Power Cable based on AR Model<br><b>Kai Zhou</b> (Sichuan University, China)  | S2-9  |
| 17:55-18:20<br>Invited  | Construction of a Charge Barrier to Improving the High-temperature Energy Storage Performance of Polymer Composites<br><b>Qingguo Chi</b> (Harbin University of Science and Technology, China) | S2-10 |



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| <b>Tuesday, May 9, 2023</b>  |  |       |
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| <b>Oral Session 3: Performance of Insulating Material</b><br><b>Session Chairs:</b><br><b>Jinghui Gao (Xi'an Jiaotong University, China)</b><br><b>Yalin Wang (Shanghai Jiao Tong University, China)</b><br><b>Venue: NO.301, 3<sup>rd</sup> F</b> |  |       |
| 08:30-08:50<br>Invited   | Effect of Gamma-Ray Irradiation on Dielectric Properties of Polypropylene as Cable Insulation<br><b>Yu Gao</b> (Tianjin University, China)   | S3-1  |
| 08:50-09:10<br>Invited   | Dielectric Response Characteristics of Fluorinated Liquid-Impregnated Paper Insulation<br><b>Weiwang Wang</b> (Xi'an Jiaotong University, China)   | S3-2  |
| 09:10-09:30<br>Invited   | Influence of Cross-linking Characteristics of DC Cable Insulation on DC Performance<br><b>Wenpeng Li</b> (State Grid Smart Grid Research Institute CO., LTD, China)                      | S3-3  |
| 09:30-09:50<br>Invited   | A Method for Tuning the Dielectric Properties of Filled Composites<br><b>Zikui Shen</b> (South China University of Technology, China)  | S3-4  |
| 09:50-10:05  | Improvement of the Electrical Properties of Silicone Rubber Doped with Nano-zirconia Grafted by Voltage Stabilizer<br><b>Xiaoqian Zhu</b> (Tsinghua University, China)                   | S3-5  |
| 10:05-10:20  | Improved Surface Electrical Strength of EPDM Samples by Surface-grafted Voltage Stabilizer<br><b>Chunyang Li</b> (Harbin University of Science and Technology, China)                    | S3-6  |
| 10:20-10:35  | The Dielectric Properties of Polypropylene Grafting with Methyl Methacrylate<br><b>Shangshi Huang</b> (Tsinghua University, China)   | S3-7  |
| 10:35-10:45  | Coffee Break   |       |
| 10:45-11:00  | The Vibration Analysis of HVDC Converter Module Based on Experiment under Working Conditions<br><b>Qinwei He</b> (Global energy interconnection research institute europe gmbh, Germany) | S3-8  |
| 11:00-11:15  | Breakdown Characteristics of Flowing Transformer Oil Contaminated with Cellulose Particles Under Slightly Non-uniform DC Field<br><b>Suyi Xia</b> (Wuhan University, China)              | S3-9  |
| 11:15-11:30  | Thermally Conductive Radiative Cooling Polymer Nanocomposite for Outdoor Thermal Management<br><b>Pengli Li</b> (Shanghai Jiao Tong University, China)                                   | S3-10 |
| 11:30-11:45  | Effect of Antioxidants on Crystalline Structure of Crosslinked Polyethylene for Power Cables<br><b>Yifan Wu</b> (Xi'an Jiaotong University, China)                                       | S3-11 |
| 11:45-12:00  | Study on Charge Characteristics of Silicone Rubber After Swelling Different Silicone Grease<br><b>Xiaodong Li</b> (Tsinghua University, China)   | S3-12 |



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|---|---|-------|
| 12:00-12:15   | Surface Repairing of Damaged EPDM Insulation by Ar/Styrene Plasma Treatment<br><b>Xi Zhu</b> (Nanjing Tech University, China)   | S3-13 |
| 12:15-12:30   | Effect of Plasma on Hydrophobicity Migration of Contaminated HTV Silicone Rubber<br><b>Meng Zhou</b> (Tsinghua University, China)   | S3-14 |
| <b>Tuesday, May 9, 2023</b>   |   |       |
| <b>Oral Session 4: Detection and Assessment</b><br><b>Session Chairs:</b><br><b>Xueqin Zhang</b> (Southwest Jiaotong University, China)<br><b>Xilin Wang</b> (Tsinghua University, China)<br>Venue: NO.302, 3 <sup>rd</sup> F |   |       |
| 08:30-08:50<br>Invited  | Space Charge Characteristics of XLPE at Different Temperatures for Long-time Vulcanization Process<br><b>Xiangrong Chen</b> (Zhejiang University, China)                                    | S4-1  |
| 08:50-09:10<br>Invited  | Corona Resistance Characteristics of Polyimide Films modified by Nano-Al <sub>2</sub> O <sub>3</sub> in LN<br><b>Daosheng Liu</b> (Jiangxi University of Science and Technology, China)     | S4-2  |
| 09:10-09:30<br>Invited  | Aging Mechanism and Characterization of EPR Cable under Nonlinear Torsion Effect<br><b>Shuaibing Li</b> (Lanzhou Jiaotong University, China)  | S4-3  |
| 09:30-09:45   | Experimental Research on Visual UHF Positioning Technology of Space Discharge Sources Based on Electrical Transformer<br><b>Tingyu Gao</b> (China Electric Power Research Institute, China) | S4-4  |
| 09:45-10:00   | Research on Ultrasonic Detection Method for Partial Discharge of Dry Type Transformer<br><b>Yixin Li</b> (Xi'an Jiaotong University, China)   | S4-5  |
| 10:00-10:15   | Acoustic Monitoring Method for Operating Condition of Contaminated Insulator Based on Fuzzy Reasoning<br><b>Feng Zhang</b> (Changsha University of Science & Technology, China)             | S4-6  |
| 10:15-10:30   | Aging Evaluation of Silicone Rubber Composite Insulators with Long-term Operation in the Outdoor<br><b>Lv Li</b> (Institute of Electrical Engineering, Chinese Academy of Sciences, China)  | S4-7  |
| 10:30-10:40   | Coffee Break  |       |
| 10:40-10:55   | Study on the Post-Curing Reaction of Epoxy Resin during Aging<br><b>Jianguo Lang</b> (Xi'an Jiaotong University, China)   | S4-8  |
| 10:55-11:10   | Analysis on Vibration and Noise Characteristics of Epoxy Resin Dry-Type Transformer and Noise Reduction Measures<br><b>Fangchi Qiu</b> (Shenzhen Power Supply Co., Ltd., China)             | S4-9  |
| 11:10-11:25   | Study on the Diffusion Behavior of Moisture in New and Aged Oil-paper Insulation by Terahertz Imaging Technology<br><b>Yuxin He</b> (Chongqing University, China)                           | S4-10 |



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| 11:25-11:40  | The Measurement of the Interface Thermal Resistance of Micron-Thin Film by Dielectric Transient Current Method<br><b>Shijie Chen</b> (Tongji University, China)                                    | S4-11 |
| 11:40-11:55  | Arc Jet Flow Characterized by High-speed Shadow Imaging Technique<br><b>Sude Liu</b> (Nanjing University of Aeronautics and Astronautics, China)   | S4-12 |
| 11:55-12:10  | A Low Background Noise Distributed Detection Method for Cable Partial Discharge Based on Ultraweak Fiber Bragg Grating Array<br><b>Tengjun Guo</b> (North China Electric Power University, China)  | S4-13 |
| 12:10-12:25  | A Novel PD Detection Method for Inverter-fed Motor using Shell as Slot Antenna<br><b>Shijin Ma</b> (Sichuan University, China)   | S4-14 |
| 14:00-17:00  | Technical Visit (Assembly Point: Hotel Lobby at 14:00)   |       |
| Wednesday, May 10, 2023  |  |       |
| Oral Session 5: Discharge and Aging<br>Session Chairs:<br><b>Yu Gao</b> (Tianjin University, China)<br><b>Su Zhao</b> (Shanghai Jiao Tong University, China)<br>Venue: NO.301, 3 <sup>rd</sup> F |  |       |
| 08:30-08:50<br>Invited   | Breakdown in Insulation Layer of 10 kV Overhead Insulated Conductor<br><b>Yuesheng Zheng</b> (Fuzhou University, China)  | S5-1  |
| 08:50-09:10<br>Invited   | Effect of the Rise Edge of the Pulse Voltage on Initiation and Growth Characteristics of the Electrical Tree of the Silicone Rubber<br><b>Dongxin He</b> (Shandong University, China)              | S5-2  |
| 09:10-09:30<br>Invited   | Aromatic Compounds Affecting Electrical Treeing and Partial Discharge Properties of XLPE Insulation under Cyclic Thermal Loading for HVAC Cables<br><b>Zhonglei Li</b> (Tianjin University, China) | S5-3  |
| 09:30-09:45  | Discharges in Wind Turbine<br><b>Xiangdong Xu</b> (Chalmers university of technology, Sweden)  | S5-4  |
| 09:45-10:00  | Deep Understanding of Hydrogen Abstraction Reaction in Liquid Silicone Rubber Under Ultraviolet Radiation<br><b>Ying Lin</b> (Hefei University of Technology, China)                               | S5-5  |
| 10:00-10:15  | Breakdown Analysis of HVDC Cable Accessories during R&D Tests<br><b>Yi Luo</b> (Global Energy Interconnection Research Institute Europe GmbH, Germany)   | S5-6  |
| 10:15-10:30  | Analysis of Thermal Aging Characteristics of Silicone Gel used for IGBT Packaging<br><b>Rirong Chen</b> (Wuhan University, China)  | S5-7  |
| 10:30-10:40  | Coffee Break   |       |
| 10:40-10:55  | The Influence of the Dielectric Effect on the Pulse Sequence Development of Negative Corona<br><b>Lu Fan</b> (Shanghai Jiao Tong University, China)  | S5-8  |
| 10:55-11:10  | Study on Icing Distribution Characteristics of Transmission Lines at Heavy Ice Area and its Influence on Jump Height<br><b>Guizao Huang</b> (Southwest Jiaotong University, China)                 | S5-9  |



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| 11:10-11:25   | Thermal Characteristics of the Polluted Silicone Rubber During the Formation Process of Dry Band and Arc Discharge<br><b>Jikai Bi</b> (South China University of Technology, China)                  | S5-10 |
| 11:25-11:40   | Effects of Mold on the Flashover Characteristics of Silicone Rubber Insulators<br><b>Shifang Yang</b> (North China Electric Power University, China)   | S5-11 |
| 11:40-11:55   | Effect of Rise Time on Partial Discharge and Aging Characteristics of Polyimide under Square Wave Voltage<br><b>Xinyang Zhu</b> (Shanghai Jiao Tong University, China)                               | S5-12 |
| 11:55-12:10   | Analyzing the Arcs Development of 10 kV XLPE Power Cable<br><b>Guangya Zhu</b> (Sichuan University, China)   | S5-13 |
| 12:10-12:25   | Investigation of Non-Local Thermodynamic Equilibrium Effects of Medium Voltage AC Air Arc<br><b>Tong Zhou</b> (Chongqing University, China)  | S5-14 |
| <b>Wednesday, May 10, 2023</b>                                  |  |       |
| <b>Oral Session 6: Modeling and Simulations</b>                 |  |       |
| <b>Session Chairs:</b>  |  |       |
| <b>Peng Wang</b> (North China Electric Power University, China) |  |       |
| <b>Guangya Zhu</b> (Sichuan University, China)                  |  |       |
| Venue: NO.302, 3 <sup>rd</sup> F                                |  |       |
| 08:30-08:50<br>Invited  | External Insulation Design for EMUs' Insulators at High Altitude with Non-uniform Distributed Pollution<br><b>Jixing Sun</b> (Beijing Jiaotong University, China)                                    | S6-1  |
| 08:50-09:10<br>Invited  | Forming Process of Cellulose Impurity Bridges in Oil-Paper Insulation under DC Voltage<br><b>Yuan Li</b> (Sichuan University, China)   | S6-2  |
| 09:10-09:30<br>Invited  | Electrical Stress Simulation of DC Cable in $\pm 100$ kV VSC-HVDC System<br><b>Haitian Wang</b> (Global Energy Interconnection Research Institute Europe GmbH, Germany)                              | S6-3  |
| 09:30-09:45   | A CNN-based Image Reconstruction Scheme for Complex-valued Multi-frequency Electrical Capacitance Tomography<br><b>Yifei Xiong</b> (Shanghai University of Electric Power, China)                    | S6-4  |
| 09:45-10:00   | Electrothermal Coupling Field Calculation of 200 kV Adaptive Bushing<br><b>Zhiwen Huang</b> (Tsinghua University, China)   | S6-5  |
| 10:00-10:15   | Analysis of Interaction between Decomposition Products of C <sub>4</sub> F <sub>7</sub> N/CO <sub>2</sub> Mixture and Epoxy Resin<br><b>Geng Chen</b> (North China Electric Power University, China) | S6-6  |
| 10:15-10:30   | Simulation Characteristics of Liquid Metal flow Limiters with Different Number of Pores<br><b>Aozheng Wang</b> (Southwest Jiaotong University, China)  | S6-7  |
| 10:30-10:40   | Coffee Break   |       |
| 10:40-10:55   | Simulation Study on the Impact of Fog Density on Effectiveness of Infrared Thermography  | S6-8  |



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|   | <b>Zhuojun Jiang</b> (Tsinghua University, SIGS, China)  |       |
| 10:55-11:10   | Study of AC Resistance Calculation in Equivalent Networks of Transformer Windings and Frequency Response Considering Proximity Effect<br><b>Longfei Ma</b> (Shandong University, China)  | S6-9  |
| 11:10-11:25   | Study on the Influence of Lightning Current Waveform on the Impulse Characteristics of Grounding Grid<br><b>Qiheng Ma</b> (Southwest Jiaotong University, China)   | S6-10 |
| 11:25-11:40   | Practical Research on a New Type of Electric Field Sensor<br><b>Kun Ke</b> (Chongqing University, China)   | S6-11 |
| 11:40-11:55   | The Adsorption and Preliminary Degradation Performance of SF6 on Mixed Terminal Ti2CTx: A DFT Study<br><b>Xinnuo Guo</b> (Wuhan University, China)   | S6-12 |
| 11:55-12:10   | Modeling and Testing of Thermoelectric Generator Based Energy Harvester for Powering Sensor Node Used in Condition Monitoring System for HVDC Converter<br><b>Tian Lan</b> (Global Energy Interconnection Research Institute Europe GmbH, Germany) | S6-13 |
| 12:10-12:25   | Stress Simulation Research of Basin-type Insulator for Gas Insulated Switchgear under Hydrostatic Test<br><b>Wenhao Gao</b> (Shandong University, China)   | S6-14 |
| <b>Oral Session 7: Energy Storage and New Materials</b><br><b>Session Chairs:</b><br><b>Dongxin He</b> (Shandong University, China)<br><b>Kangning Wu</b> (Xi'an Jiaotong University, China)<br>Venue: NO.301, 302, 3 <sup>rd</sup> F |  |       |
| 14:00-14:20<br>Invited  | Progress in the Development of a Fully Environmentally Friendly DC Thermoplastic Extruded Insulation Cable System in China<br><b>Mingyu Zhou</b> (Global Energy Interconnection Research Institute Europe GmbH, Germany)                           | S7-1  |
| 14:20-14:40<br>Invited  | Significant Improvement in Dielectric Properties and Energy Density of Polypropylene Films Based on Surface Modification<br><b>Meng Xiao</b> (Tianjin University, China)   | S7-2  |
| 14:40-15:00<br>Invited  | Transition from Non-Arrhenius to Arrhenius Aging of ZnO ceramics<br><b>Kangning Wu</b> (Xi'an Jiaotong University, China)  | S7-3  |
| 15:00-15:20<br>Invited  | High-Temperature Dielectric Energy Storage Performance of MgO/PEI nanocomposites<br><b>Tiandong Zhang</b> (Harbin University of Science and Technology, China)   | S7-4  |
| 15:20-15:35   | Poly (arylene sulfide sulfone) with Excellent Dielectric and Energy Storage Properties for High-temperature Capacitor Applications<br><b>Mingsheng Zheng</b> (University of Science and Technology Beijing, China)                                 | S7-5  |
| 15:35-15:45   | Coffee Break   |       |
| 15:45-16:00   | A Superhydrophobic and Electrical Insulating Film by 3D Printing<br><b>Peng Wang</b> (North China Electric Power University, China)  | S7-6  |



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| 16:00-16:15 | Preparation of Graphene Loaded Cobalt Catalyst and its Oxygen Evolution Performance<br><b>Wenkai He</b> (Chongqing University, China)   | S7-7 |
| 16:15-16:30 | Trapezoidal Polyphenylsilsesquioxane Modified Insulating Paper Cellulose with High Mechanical Performance and Thermal Stability<br><b>Zhenglin Zeng</b> (Southwest University, China) | S7-8 |
| 16:30-17:00 | Excellent Student Paper Awards and Closing Ceremony<br><b>Yi Yin</b> (Shanghai Jiao Tong University, China)   |      |



## POST SESSIONS

| Tuesday, May 9, 2023<br>10:00-12:30  |         |
|--|---------|
| <b>Poster Session 1:</b><br><b>Equipment Aging and Assessment: Transformer and Cable</b><br><b>Session Chairs:</b><br><b>Yushun Zhao (Hefei University of Technology, China)</b><br><b>Danhua Mei (Nanjing Tech University, China)</b><br>Venue: Gallery hall, 3 <sup>rd</sup> F   |         |
| Effects of Oil Filtration Film Types and Superhydrophobic Modification on the Moisture Removal Characteristics of Transformer Oil<br>Zenghui Zhang (Fujian Agriculture and Forestry University, China), Yunxiao Zhang, Tianfeng Zhang, Zhengnan Chi, Wenxin Lin (Fuzhou University, China), Tao Lin (Super High Voltage Branch of State Grid Fujian Electric Power Co., Ltd., China) | P1-01-A |
| Study on the Effect of Amino-modified SiO <sub>2</sub> Nanoparticles on the Diffusion of Water Molecules in Natural Ester Oil-paper Insulation<br>Yingrui Wu, Zhenglin Zeng, Chao Tang (Southwest University, China)   | P1-02-A |
| Identification of Aging Status of Insulating Paper Based on BP Neural Network<br>Boxue Du, Yongping Hou, Xiaoxiao Kong, Chong Zhang, Fan Li (Tianjin University, China), Jing Mu (State Grid Jibei Electric Power Company Limited Management Training Center, China)   | P1-03-A |
| Analysis of Electromagnetic Transient Process Under Lightning Impulse Voltage for Silicone Rubber Cast Dry-type Transformer<br>Xiaohui Chen, Xiaoxiao Kong (Tianjin University, China), Qiang Fu (Electric Power Research Institute of Guangdong Power Grid Co., Ltd., China), Yongping Hou, Chong Zhang, Boxue Du (Tianjin University, China)                                       | P1-04-A |
| Aging State Evaluation of Transformer Oil-paper Insulation Based on PDC Asymmetric Current<br>Mingze Zhang, Shengjie Lei, Yilin Liang (Harbin University of Science and Technology, China), Heqian Liu (Electric Power Research Institute State Grid Heilongjiang Electric Power Company Limited, China), Yunbo Shi, Ji Liu (Harbin University of Science and Technology, China)     | P1-05-A |
| Study on the Photoacoustic Spectrum Characteristics of CO in Transformer Oil<br>Qingming Lin, Xiaocun Wang, Tengfei Li (State Grid Shanghai Electric Power Company, China), Zhou Liping (Shanghai Pashope Electrical Science & Technology Co., Ltd., China) and Wenhui Zhang (Shanghai Hengnengtai Enterprise Management Co., Ltd., China)   | P1-06-A |
| An External Fiber Grating Sensor used for Measurement of Interface Pressure between Cable and Accessory at High Temperature<br>Yanding Wang, Di Zheng, Xia Wang (Xi'an Jiaotong University, China)   | P1-07-A |
| Comparison of Calculation Methods for the Power Cable Distributed Resistance over a Wide Frequency Range   | P1-08-A |



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| <b>Poster Session 1:</b><br><b>Equipment Aging and Assessment: Transformer and Cable</b><br><b>Session Chairs:</b><br><b>Yushun Zhao (Hefei University of Technology, China)</b><br><b>Danhua Mei (Nanjing Tech University, China)</b><br>Venue: Gallery hall, 3 <sup>rd</sup> F   |         |
| Xuefeng Zhao (Electric Power Research Institute of State Grid Shaanxi Electric Power Company Limited, China), Chong Wang, Tao Lin (State Grid Shaanxi Electric Power Company Limited, China), Haofei Sun, Wei Duan, Lu Pu (Electric Power Research Institute of State Grid Shaanxi Electric Power Company Limited, China), Jianfeng Liang, Gangduo Feng, Yu Tian (Xi'an University of Technology, China)     |         |
| Study on the Transfer Impedance of Power Cable Straight Joints<br>Jian Gao, Chong Wang, Yong Sheng (State Grid Shaanxi Electric Power Company Limited, China), Xuefeng Zhao, Haofei Sun, Lu Pu (Electric Power Research Institute of State Grid Shaanxi Electric Power Company Limited, China), Jianfeng Liang, Hanmeng Wang, Gangduo Feng (Xi'an University of Technology, China)                           | P1-09-A |
| Performance Tests on Temperature-Press Composite MEMS Sensor for Transformer Oil<br>Yajun Jia, Chang Shen, Zhijian Jin, Junjie Jiang (Shanghai Jiao Tong University, China)  | P1-10-A |
| Electric Field Strength Influence on Frequency Domain Spectroscopy Characteristics of Transformer Oil-Paper Insulation<br>Zhengqing Zhou, Chuanxian Luo, Shengnan Hu, Lin Cheng (Nanjing NARI Group Corp., China), Zhaoliang Gu (State Grid Shandong Electric Power Research Institute, China), Zhang Jing (Nanjing NARI Group Corp., China)   | P1-11-A |
| Evaluation Method of Oil-paper Insulation Damp State Based on Response Current Value Change<br>Gang Lv, Wei Wang, Zongyuan Luo, Ke Li, Yujin Li (UHV Transmission Company China Southern Power Grid, China), Yuan Xia, Jiajun Li, Hao Yang (Chongqing University, China)   | P1-12-A |
| Trace C <sub>2</sub> H <sub>2</sub> Detection Based on Cantilever Enhanced Photoacoustic Spectroscopy<br>Long Li (Electric Power Research Institute of State Grid Chongqing Electric Power Company, China), Xianzong Chao, Zujian Huang (Wuhan University, China), Chang Liu (Chengdu Power Supply Company State Grid Sichuan Electric Power Company, China), Fuping Zeng, Ju Tang (Wuhan University, China) | P1-13-A |
| Study On Harmonic Response Analysis and Vibration Reduction of Amorphous Metal Alloy Transformer<br>Romaric Kammeugue Noubissi, Daosheng Liu (Jiangxi University of Science and Technology, China), Boxue Du (Tianjin University, China)   | P1-14-A |
| Cross-scene Power Equipment Monitoring Technology Based on DANN<br>Suqin Xiong, Tianyu Gao (China Electric Power Research Institute, China), Zhengyuan Fei, Xushan Zhao (Xi'an Jiaotong University, China)   | P1-15-A |



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| Multi-Fault Integrated Classification and Identification Method Based on LSTM<br>Suqin Xiong, Tianyu Gao (China Electric Power Research Institute, China), Xushan Zhao, Zhengyuan Fei (Xi'an Jiaotong University, China)   | P1-16-A |
| Space Charge Distribution in Submarine Cable Factory Joint Insulation<br>Xiaoning Shi, Wenpeng Li (State Key Laboratory of Advanced Power Transmission Technology State Grid Smart Grid Research Institute, China), Meng Zhang, Yang Liu (Xi'an Jiaotong University, China), Xin Chen, Chong Zhang (State Key Laboratory of Advanced Power Transmission Technology State Grid Smart Grid Research Institute, China), Wei Zhao, Lisheng Zhong, Jinghui Gao (Xi'an Jiaotong University, China) | P1-17-A |
| Characteristics of Temperature Distribution and Current Carrying Capacity of XLPE Cable Joint<br>Yuming Dong, Zhonglei Li, Heyu Wang, Boxue Du (Tianjin University, China), Qinghua Tang, Zhengzheng Meng (Electric Power Research Institute State Grid Tianjin Electric Power Company, China)   | P1-18-A |
| Analysis and Application of Sheath Circulation of HV Cable Cross Transposition System Based on EMTP<br>Yang He, Zhenxing Wang, Hai Li, Tianyang Shi (State Grid Shanghai Cable Company, China)   | P1-19-A |
| Analysis of Fire Detection Methods in Cable Tunnels of Shanghai<br>Shuhan Wang, Lei He, Yongkang Zhang, Ling Wang, Yanling Chen, Chenbin Wu, Minji Tang, Cheng Wang (State Grid Shanghai Cable Company, China)   | P1-20-A |
| Construction and Application of Cable 'Smart Five Ring' Operation and Maintenance Management Mode<br>Yunjie Zhou, Tianyu Yang, Qiang Xu, Zhouhong (State Grid Shanghai Cable Company, China)   | P1-21-A |
| Influence of Cable Length on Characteristic Parameters of PDC Test<br>Xiaoyan Cao, Kai Zhou, Siyan Lin, Fan Yang (Sichuan University, China)   | P1-22-A |
| Ultra-Low Frequency Dielectric Loss Measurement of High Voltage Submarine Cable at Low Electric Field<br>Wenhao Li, Qiang Li, Chunlin Hao (Tianjin university, China), Youcong Huang, Zhongnan Zheng (Electric Power Research Institute of Fujian Power Co., Ltd., China), Tao Han (Tianjin university, China)   | P1-23-A |



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| Thermal Aging State Evaluation of 10kV Polypropylene Cable<br>Juncai Li (Tsinghua University, China; Shenzhen International Graduate School, China),<br>Nianping Yan, Deng Zhixiang (State Grid Corporation of China, China), Xilin Wang,<br>Zhidong Jia (Tsinghua University, China; Shenzhen International Graduate School,<br>China)  | P1-24-A |
| Water Tightness Testing and Evaluation of Composite Interface Structures in Cable<br>Joints<br>Hao Hu, Xiaodong Li, Zhidong Jia, Xilin Wang (Tsinghua University; Shenzhen<br>International Graduate School, China), Simin Luo, Weinan Fan (China Southern Power<br>Grid Company Ltd., China)  | P1-25-A |
| Analysis of Discharge Defect in Buffer Layer for High-Voltage Cable and Rejuvenation<br>Method<br>Jiasheng Huang, Meng Li, Zhuozhan Han (Guangzhou Power Supply Bureau of<br>Guangdong Power Grid Co., Ltd., China), Zhiheng Wu (South China University of<br>Technology, China), Baojun Hui (Electric Power Research Institute of China Southern<br>Power Grid Co., Ltd, China), Gang Liu (South China University of Technology, China) | P1-26-A |
| Study on the Behavior of 220kV Three Core Submarine Cable with a Suspension Span<br>of 1.6m Scoured by Current<br>Yining Zhang (CSG EHV Power Transmission Company, China), Haotian Tan (South<br>China University of Technology, China), Zhidi Huang (CSG EHV Power Transmission<br>Company, China), Peng Zhang, Yanpeng Hao (South China University of Technology,<br>China)   | P1-27-A |
| Detrended Fluctuation Analysis of Grounding Current for Thermal Aging Evaluation of<br>Submarine Power Cable<br>Minxin Wang, Yong Liu, Zhihui Wang, Hongbao Zong, Youcong Huang, Boxue Du<br>(Tianjin University)  | P1-28-A |
| Effect of Icing Gap on Insulated Layer Electric Field During Conductor Galloping<br>Zhihui Wang, Xingwang Huang, Xuejia Dong, Qiran Li, Boxue Du (Tianjin University)  | P1-29-A |
| Dynamic Motion and Discharge Behaviour of Water Droplets on Superhydrophobic<br>Overhead Line Conductor<br>Xu Zhang (University of Warwick, UK), Chorphaka Plaengpraphan, Wenyuan Li (The<br>University of Manchester, UK), Chengxing Lian (Imperial College London, UK), Ian  | P1-30-A |



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| Cotton (The University of Manchester, UK), Kangning Wu, Jianying Li (Xi'an Jiaotong University, China)   |         |
| Anchor Damage Evaluation of 110 kV Submarine Power Cable Based on Electric and Magnetic Field Distribution<br>Minxin Wang, Yong Liu (Tianjin University, China), Ruimin Pan (Tianjin University of Technology and Education, China), Zhihui Wang (Chengde Power Supply Company State Grid Jibei Electric Power Company Limited, China), Youcong Huang (Electric Power Research Institute State Grid Fujian Electric Power Company Limited, China), Boxue Du (Tianjin University, China)  | P1-31-A |
| Evolution of Cable Termination Interface Pressure Considering Low Temperature<br>Q.Li, B.X.Du, X.X.Kong (Tianjin University, China), P.X.Song, L.J.Li, Y.Yu (Tianjin Electric Power Research Institute, China)   | P1-32-A |
| Reliability Evaluation of 10kV XLPE Cable Based on Fault Correlation Bayesian Network and Weibull Distribution Model<br>Ying Tang, Shitan Li, Jing Lei (Guangdong Electric Power Research Institute, China), Mingjun Tang, Yu Wang (Digital Enterprise Technology (Guangdong) Limited of Southern Power Grid, China), Bin Tai, Cuiru Yang, Tiansheng Chen (Guangdong Electric Power Research Institute, China), Jian Lu (Guangdong Power Grid, China), Zuoneng Wen (Digital Enterprise Technology (Guangdong) Limited of Southern Power Grid, China) | P1-33-A |
| Burial Depth Detection Method for Three-Core 220 kV Submarine Cables Based on the Optical Fiber Monitoring Temperature<br>Yining Zhang (CSG EHV Power Transmission Co., China), Qishun Li (South China University of Technology, China), Yueguang Yang (CSG EHV Power Transmission Co., China), Peng Zhang, Yanpeng Hao (South China University of Technology, China)  | P1-34-A |
| Evaluation of Trap Energy and Distribution in Polymers with an Electric Field Stimulated Method<br>Zerui Li, Kai Zhou (Sichuan University, China)  | P1-35-A |



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| <b>Song Xiao (Wuhan University, China)</b>   |         |
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| A Mechanical Vibration Fault Diagnosis Method of Generator Circuit Breaker Based on Deep Residual Network<br>Guowen Hao, Yanping Yang (State Grid Xinyuan Group Co., Ltd., China), Hao Yu (Hekai Electric Technology Co., Ltd., China), Yaxiong Tan, Erhan Hu, Mingyu Zhang (Chongqing University, China)  | P2-01-B |
| Rebreakdown Characteristics of Vacuum Circuit Breaker in its Breaking Process under DC Voltage<br>Jixing Sun (Beijing Jiaotong University, China), Zhen Li, Hong Wang (State Grid Liaoning Electric Power Supply Co., Ltd, China), Jiyong Liu (Shuohuang Railway Development Co., LTD, China), Dong Lei (China Academy of Railway Sciences Group Co., Ltd, China), Xin Wang (Shuohuang Railway Development Co., LTD, China)                  | P2-02-B |
| Study on AC Pollution Flashover Performance of Bushing External Insulation at High Altitude<br>Sun Yong (M&T Center of CSG EHV Power Transmission Company, China), Qiu Ziwei (Chongqing University, China), Lu Wenhao (M&T Center of CSG EHV Power Transmission Company, China), Zhang Zhijin (Chongqing University, China), Cui Yanjie (M&T Center of CSG EHV Power Transmission Company, China), Duan Jiamin (Chongqing University, China) | P2-03-B |
| Investigation on Breakdown of AC-GIL Tri-post Insulator with Crack Defect<br>Boxue Du, Zhijun Guo, Hucheng Liang (Tianjin University, China), L. C. Hao (Pinggao Group Co., Ltd, China), B. Y. Cui, Y. Chen (China Electric Power Research Institute, China)   | P2-04-B |
| Flow Field and Collision Characteristics of Contaminated Solid Particles on Outdoor Insulators<br>Han Zhang, Yong Liu, Chao Li, Yuepeng Xin (Tianjin University, China), Ruimin Pan (Tianjin University of Technology and Education, China), Xianghuan Kong (State Grid Jiangsu Electric Power Co. Ltd., China), B. X. Du (Tianjin University, China), Zhen Yin (State Grid Tianjin Electric Power Company, China)                           | P2-05-B |
| Study on the Degradation of FRP Rod of Composite Insulator under Electrical Stress and Salt Fog<br>Shuqi Liu, Shuming Liu, Qian Wang, Ying Zhou, Zuo Zhou, Chao Wu (Tsinghua University, China), Yanfeng Gao (State Grid Jibei Electric Power Co. Ltd., China), Xidong Liang (Tsinghua University, China)  | P2-06-B |
| Analysis of the Cause of Decay-Like Fracture of Eccentric Composite Insulator<br>Senlin Liao, Hongwei Mei (Tsinghua University, China), Jun Yong, Hui Liu, Chao Zhou, Hao Shen (State Grid Shandong Electric Power Company, China)   | P2-07-B |
| The Influence of Uneven Pollution Distribution on the Electrical and Thermal Characteristics of Insulators<br>Kai Zheng, Huayong Huang, Fuqi Yang, Ming Chen (State Grid Chongqing Maintenance Company, China), Hang Zhang (Chongqing University, China), Zhijin Zhang (Chongqing  | P2-08-B |



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| University, China; Chongqing Dige Technology Co., Ltd., China)  |         |
| Typical Fault Analysis of Composite Insulators for Transmission Lines in Fujian Province<br>Xiaojie Wang, Xinyuan Wan (State Grid Fujian Electric Research Institute, China), Chaohui Lin, Tianyi Wang (Maintenance Branch of State Grid Fujian Electric Power Co. Ltd., China), Qiong Wang (State Grid Fujian Electric Research Institute, China), Bizhen Zhang (Fuzhou University, China) | P2-09-B |
| Research on Pollution Agglomeration Characteristics of Insulator in DC Electric Field<br>Yijie Liu (Shanghai Jiao Tong University, China), Yujun Guo (Southwest Jiaotong University, China), Pengli Li, Xingyi Huang (Shanghai Jiao Tong University, China)   | P2-10-B |
| Transformation and Analysis of Leakage Current for Icing Flashover Prediction of HVDC Outdoor Insulators<br>Chao Li, Yong Liu (Tianjin University, China), Zhihui Wang, Qiran Li (State Grid Jibei Electric Power Company, China), Masoud Farzaneh (Université du Québec à Chicout, Canada), Boxue Du (Tianjin University, China)   | P2-11-B |
| Ice Growth Characteristics of Insulators in High Altitude Environments<br>Song Yue (Chongqing University, China; State Grid Tibet Electric Power Research Institute, China), Zhijin Zhang, Hang Zhang (Chongqing University, China), Wenhui Zeng (State Grid Sichuan Economic and Technology Research Institute, China)   | P2-12-B |
| AC Pollution Flashover Characteristics of Post Insulators under Low Air Pressure<br>Xiaodong Wan (China Electric Power Research Institute, China), Hailin Shi, Zhijin Zhang (Chongqing University, China), Wei Hu (China Electric Power Research Institute, China), Yuanpeng Zhang (Chongqing University, China)  | P2-13-B |
| Quantitative Approaches to Evaluating the Chalking Layer on Silicone Rubber<br>Qian Wang (Tsinghua University, China), Tingyu Jiang (State Grid Shanghai Electric Power Company, China), Shuming Liu, Shuqi Liu, Ying Zhou, Zhou Zuo, Chao Wu, Xidong Liang (Tsinghua University, China)  | P2-14-B |
| Condition Assessment of Composite Insulators Based on Thermally Stimulated Current Method<br>Jianghua Kuang, Zhenyu Chen, Zhuo Chen, Xiangwei Tong (State Grid Hunan Electric Power Co. LTD, China), Kang Longyu, Pan Zhuohong (North China Electric Power University, China)   | P2-15-B |
| The Hydrophobicity Measurement Method of Silicone Rubber Based on the Principle of Condensation Moisture<br>Peng Shen, Hongwei Mei (Tsinghua University, China), Jun Yong, Hui Liu, Chao Zhou, Hao Shen (State Grid Shandong Electric Power Company, China)   | P2-16-B |



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| Online Monitoring of Insulator Failure Using Micro Electric-field Sensor<br>Zhifei Han, Jun Hu, Jinliang He (Tsinghua University, China)  | P2-17-B |
| Influence of Different Artificial Aging Methods on Water Intrusion of HTV SR in Hot and Humid Environment<br>Hongling Zhou, Yong Wang, Guangmao Li, Gang Du, Jie Yang, Weinan Fan (Guangzhou Power Supply Bureau Electric Power Test and Research Institute, China)                                       | P2-18-B |
| Effect of Different Operating Conditions on Aging Characteristics of Composite Insulators Based on Micro-FTIR<br>Chao Li, Yong Liu (Tianjin University, China), Zhihui Wang, Qiran Li (State Grid Jibei Electric Power Company, China), B. X. Du (Tianjin University, China)                              | P2-19-B |
| Research on Intelligent Sensing Method for Three-dimensional Coverage of Hot Spots in Switchgear<br>PengQi Zuo, JiaQi Huang, FeiLong Wang, YinChen Zhang, HaiFeng Jin, LiJun Jin (Tongji University, China)   | P2-20-B |
| Investigation of the Compatibility between Mechanical Fixing Tapes and Impregnation Fluid of Power Capacitors<br>Ruan Li, Yujia Ban, Lu Cheng, Wenfeng Liu (Xi'an Jiaotong University, China)   | P2-21-B |
| Research on Intelligent Production Line System of Motor End Cover with Virtual-real Interaction<br>Nan Lin, Yifei Wang, Pengqi Zuo, Yincheng Zhang, Lijun Jin (Tongji University, China)  | P2-22-B |
| Research on Intelligent Evaluation and Fault Diagnosis Technology of Stator Winding Insulation State of Generator on Base of Micro Molecular and Condensed Structure Analysis<br>Shuai Yang, Ze Huang, Li Tang, Zhihui Xie, Bo Hu, Yue Zhang, Mingpeng He (Dong Fang Electric Machinery Co., Ltd., China) | P2-23-B |
| Decomposition Mechanism of Eco-Friendly Insulation Gases over Metal Surfaces in Discharge Conditions<br>Zhaolun Cui, Yanpeng Hao (South China University of Technology, China)  | P2-24-B |
| Main Insulation Aging State Evaluation of Generator Stator Bar Based on the Branch Way Model of the PDC Method<br>Siyu Wang, Kai Zhou, Guangya Zhu, Haoyang Li (Sichuan University, China)  | P2-25-B |
| Experimental Study of Wind Turbine Blade Lightning Strike High Current Damage Characteristics<br>Lingfeng Jiang, Kai Ning, Xiaoqi Huang (Changsha University of Science & Technology, China)  | P2-26-B |



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| Design of UHF-Overvoltage Sensor and Measurement Under Superimposed Voltage<br>Haotian Wang, Huan Chen, Hengchao Huang, Yuang Wang, Xutao Han, Junhao Li (Xi'an Jiaotong University, China)   | P2-27-B |
| Study on the Feature Recognition of Interfacial Defects in Composite Insulator Using Low Energy Chirp Pulsed Radar Thermography<br>Rui Sun, Hongwei Mei (Tsinghua University, Shenzhen International Graduate School, China), Hanqi Dai (Electric Power Co., Ltd., Huairou Power Supply Branch, China), Ling Luo (Electric Power Co., Ltd., Loudi Power Supply Branch, China), Xiaochun Che, Jianhui Xu (Electric Power Co., Ltd., Lhasa Power Supply Branch, China)  | P2-28-B |
| Preliminary Measurement Research on Piezo Stimulated Currents of Polymers<br>Tianhua Lv (Tongji University, China), Jiaan Shi, Xuan Wang (Harbin University of Science and Technology, China), Yewen Zhang (Tongji University, China), Yang Xu (Xi'an Jiaotong University, China)   | P2-29-B |
| Experimental Study on Explosion of Arc Discharge in the Oil Compartment of OLTC<br>Yikun Zhao, Ke Wang, Shuqi Zhang, Xiaolu Lv (China Electric Power Research Institute, China), Juzhen Wu (State Grid Economic and Technical Research Institute, China), Pei Cao (State Grid Shanghai Electric Power Company, China)   | P2-30-B |
| Research on Aging Characteristics of Arrester under High Frequent Overvoltage<br>Jixing Sun, Yongzhi Fan (Beijing Jiaotong University, China), Hong Wang (Jinzhou Operation and Maintenance Division of Extra High Voltage Branch State Grid Liaoning Electric Power Supply Co., Ltd., China), Jiyong Liu (Shuohuang Railway Development Co., LTD National Energy Group, China), Dong Lei (OCS Research Institute China Academy of Railway Sciences Group Co., Ltd, China), Xin Wang (Shuohuang Railway Development Co.,LTD National Energy Group, China) | P2-31-B |
| Conductivity Property of Frozen Soil in Alpine and High Altitude Regions up to 5500m<br>Xiujuan Chen, Peng Kang (Tibet Yangbajing High Altitude Electrical Safety and Electromagnetic Environment National Observation and Research Station, China), Yanlei Li, Duo Lv (State Grid Corporation of China, China), Shengcheng Dong, Ling Jiang (Electric Power Research Institute of State Grid Qinghai Electric Power, China)  | P2-32-B |
| A Data Driven Method for Arc Fault Detection in Actual Photovoltaic System<br>Jianhua Cha (Electric Power Research Institute Yunnan Power Grid Co. Ltd, China), Qi Yang (Xi'an Jiaotong University, China), Xiaohua Yang (Electric Power Research Institute Yunnan Power Grid Co. Ltd, China), Yu Meng (Xi'an Jiaotong University, China)   | P2-33-B |



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| Flexible Naked-eye High-field Detector Based on Semiconductor/Insulator Bilayer Films<br>Yuanwei Zhu (Xi'an Jiaotong University, China), Yongjie Nie (Electric Power Research Institute, Yunnan Power Grid Co., Ltd, China), Shengtao Li (Xi'an Jiaotong University, China)   | P2-34-B |
| Research on the DC bias in AC Power Grid Caused by Metro Stray Current<br>Yongcong Wu, Hansheng Cai (China Southern Power Grid Research Institute, China)   | P2-35-B |



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| <b>Poster Session 3:</b><br><b>Detection and Assessment</b><br><b>Session Chairs:</b><br><b>Jiandong Wu (Shanghai Jiao Tong University, China)</b><br><b>Guochang Li (Qingdao University of Science and Technology, China)</b><br>Venue: Gallery hall, 3 <sup>rd</sup> F   |         |
| Condition Assessment of Low Voltage Circuit Breaker Based on Long Short-term Memory Network<br>Suqin Xiong, Tianyu Gao (China Electric Power Research Institute, China), Caizhi Gao, Jianing Xu, Silei Chen (Xi'an Jiaotong University, China)   | P3-01-A |
| Hydrophobicity Classification of Composite Insulators based on Image Enhancement and Deep Learning<br>Kai Yang, Xin Wang (Shanghai Jiao Tong University, China), Dawei Liu, Lixin Jiao (State Grid Jilin Electric Power Co., Ltd., China), Song Yang (State Grid Jilin Electric Power Co., Ltd., China), Peng Jin (State Grid Jilin Electric Power Co., Ltd., China) | P3-02-A |
| Relationship Extraction of Bushing Failure from Chinese Corpus based on BERT<br>Shuojie Gao, Yufang Zhang, Zhikang Yuan (Tongji University, China)   | P3-03-A |
| Research on AC Arc Fault Detection Method based on Wigner-Hough Transform and NG-Boost<br>Wang Jing, Yuming Zhao, Qi Yang (Xi'an Jiaotong University, China)   | P3-04-A |
| Identification of Fault Types in Lithium Ions Batteries Energy Storage Station Through Thermal Runaway Gas Generation<br>Shuwen Chen, Shuang Shi, Yang Jin (Zhengzhou University, China)   | P3-05-A |
| Determination of Moisture Content in Silicone Rubber Under Swelling Effect of Silicone Oil Using PDC Method<br>Hao Yuan, Kai Zhou, Yuan Li (Sichuan University, China)   | P3-06-A |
| Multi-state Monitoring System for Cables and Channels Based on Intelligent Perception Technology<br>Junling Zhong, Dongyuan Wang, Zhiqi Wang, Zhixiao Wang (State Grid Shanghai Cable Company, China)  | P3-07-A |
| Research on Precise Positioning Technology of UAV Based on Visual Positioning and Visual Tracking<br>Qiran Li, Qingsheng Tian, Zhuo Pan (Jibei Electric Power Company Limited, China), Yong Liu (Tianjin University, China), Shuang Zhen (Jibei Electric Power Company Limited, China), Boxue Du (Tianjin University, China)   | P3-08-A |
| Modified Technique for Measuring Complex Permittivity of Coarse Polymer Films<br>Jun Li, Tianhua Lv, Wenhao Zhang, Feihu Zheng (Tongji University, China), Yang Xu (Xi'an Jiaotong University, China), Yewen Zhang (Tongji University, China)  | P3-09-A |
| An Infrared Detection Scheme for Distribution Network Power Equipment Based on Deep Convolutional Auto-Encoder for Small Negative Samples<br>Yuepeng Xin, Yong Liu (Tianjin University, China), Zhihui Wang (State Grid Jibei Electric   | P3-10-A |



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| Power Company Limited, China), Xingwang Huang (State Grid Hebei Electric Power Company Limited, China), Han Zhang, Boxue Du (Tianjin University, China)  |         |
| Design and Optimization of the Energy Harvesting Device for Wireless Sensors<br>Qihui Feng, Mingyong Xin, Changbao Xu, Yuanyuan Zhang (Guizhou Power Grid Co., Ltd., China), Zhong Liu, Zejie Tan, Qiancheng Lv (China Southern Power, China)  | P3-11-A |
| Narrowband Interference Suppression of Partial Discharge on Singular Spectrum Analysis<br>Siwei Yang, Guoqiang Gao, Kai Liu, Shuyuan Zhou, Kui Chen, Guangning Wu (Southwest Jiaotong University, China)   | P3-12-A |
| Separation Strategy of Partial Discharge Pulses Interference of Vehicle Cable Terminal<br>Han Cao, Guoqiang Gao, Bo Li, Minbin He, Kai Liu, Siwei Yang, Shuyuan Zhou (Southwest Jiaotong University, China)  | P3-13-A |
| Effects of Rise Time and Pulse Width on Magnitude and Phase Distribution of the Partial Discharge in Power Module Packaging Insulation Under Square Pulse<br>Yi Ding, Yalin Wang, Yi Yin (Shanghai Jiao Tong University, China)  | P3-14-A |
| Partial Discharge and Flashover Characteristics of Millimeter Metal Particles on the Insulator Surface in a Gas Insulated Switchgear<br>Peng Xu, Yiping Ji (Electric Power Research Institute of Shanghai Power Grid Corporation, China), Xing Li (Sichuan Energy Internet Research Institute, Tsinghua University, China), Pei Cao, Zhengyong Hu, Shaojing Wang (Electric Power Research Institute of Shanghai Power Grid Corporation, China) | P3-15-A |
| Partial Discharge Characteristics of a Void Defect inside an Actual 252-kV GIS Post Insulator<br>Yiping Ji, Min Ding (Electric Power Research Institute of Shanghai Power Grid Corporation, China), Xing Li (Sichuan Energy Internet Research Institute, Tsinghua University, China), Shaojing Wang, Xianqin Deng, Yanqing Lu (Electric Power Research Institute of Shanghai Power Grid Corporation, China)                                    | P3-16-A |
| Characterisation of Acrylic Lightguides for an Optical Partial Discharge Measurement System for Gas-Insulated Gear<br>Tobias Fechner, Mingyu Zhou (Global Energy Interconnection Research Institute Europe GmbH, Germany), Felix Klichowski, Prof. Dr.-Ing. Ronald Plath (Technische Universität Berlin, Germany), Yi Luo, Haitian Wang (Global Energy Interconnection Research Institute Europe GmbH, Germany)                                | P3-17-A |
| A Denoising Method for Partial Discharge Based on Wavelet Transformation and Singular Value Decomposition<br>Lin He, Heli Ni (State Grid Shanghai Electric Power Research Institute, China; State Grid Shanghai Municipal Electric Power Company, China)   | P3-18-A |



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| Feature Extraction of Partial Discharge Signals of Cable Terminal in Distribution Network Based on Discrete Level Acquisition Technology<br>Shouming Wang, Haiyue Zhang, Ji Liu, Zhen Li (Harbin University of Science and Technology, China)   | P3-19-A |
| Partial Discharge Characteristics of Post Insulators for 10 kV Switchgear at Different Humidities<br>Chuangyang Li (Tsinghua University, China), Wenkai Zhou, Feiyu Wang (Taiyuan University of Technology, China), Lianghua Zhao (Jiangyin Furen Electric Co., Ltd., China), Fangwei Liang (Tsinghua University, China), Zhipeng Lei (Taiyuan University of Technology, China)   | P3-20-A |
| An Improved UHF Antenna for Partial Discharge Detection Based on Coplanar Waveguide Feeding<br>Xiaoxiao Kong, Chong Zhang, Boxue Du, Chengyao Hou (Tianjin University, China), Yun Chen, Jinpeng Jiang (China Electric Power Research Institute, China)   | P3-21-A |
| Diagnosis of AD and DSV Winding Faults Based on FRA Method and Random Forest Algorithm<br>Song Wang, Shengxuan Qiu, Fei Xie, Siying Yang (Northwest A&F University, China), Kerui Yu (State Grid Shaanxi Electric Power Company, China), Tong Li (Huangling Mining Group Co., Ltd. of Shaanxi Coal and Chemical Industry Group, China)  | P3-22-A |
| Fault Detection and Identification for CHB-BESS Based on Convolutional Neural Network<br>Zhihao Liu, Lingfeng He, Zhibin Ling, Xuguang Li (Shanghai Jiao Tong University, China)  | P3-23-A |
| Simulation Study on UHF Signal Propagation Characteristics of Partial Discharge in the Power Transformer Outlet Device<br>Dan Zhou, Xian Yang, Zhiqin Ma, Linglong Cai, Bin Tai (Electric Power Research Institute of Guangdong Power Grid Co., Ltd., China), Duanjiao Li (Guangdong Power Grid Co., Ltd., China), Yuhui Jin, Chunyao Lin, Shuo Jiang, Xiang Shu (Electric Power Research Institute of Guangdong Power Grid Co., Ltd., China), Hao Liu, Guoming Ma (North China Electric Power University, China) | P3-24-A |
| Simulation on GIS Optical Partial Discharge Based on Light Guide Rod<br>Ze Li, Yong Qian (Shanghai Jiao Tong University, China), Zhen Wang, Hai Xue (State Grid Jiangsu Electric Power Co., Ltd., China), Yiming Zang, Xiuchen Jiang (Shanghai Jiao Tong University, China)   | P3-25-A |
| Detection of Different Cable Defects Simulated by Impedance Box Based on FDR<br>Jingtao Huang, Kai Zhou, Pengfei Meng, Yefei Xu, Zhirong Tang (Sichuan University, China), Zhongyin Liang (Yunnan Electric Power Design Institute Co. Ltd., China)  | P3-26-A |



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| Research on Machine Learning Method for Ultrasonic Temperature Measurement of Transformer<br>Haixin Guo, Dongxin He (Shandong University, China), Zhixiang Ling, Tao Zhang (State Grid Shandong, China), Haochen Wang, Qingquan Li (Shandong University, China)  | P3-27-A |
| A Prediction Model for Power Frequency Breakdown Voltage of Transformer Oil Gap<br>Kang Wang, Guobin Wang, Jinglan Zeng, Bing Liu (State Grid Fujian Electric Power Co., Ltd., China), Yangyang Chen, Shengwen Shu (Fuzhou University, China)  | P3-28-A |
| Partial Discharge Simulation of Air Gap Defects in XLPE Cable at DC Voltage<br>Zhe Zheng, Guohai Lin, Yalin Wang, Yi Yin (Shanghai Jiao Tong University, China)  | P3-29-A |
| Simulation Study on Partial Discharge Production of XLPE Cable Considering Temperature<br>Zeli Ju, Zhe Hou, Xiahaoyue Yun (State Grid Shaanxi Electric Power Company, China), Qian Wang, Sichen Qin, Qiming Xu (Xi'an University of Technology, China)   | P3-30-A |
| Simulation Research on the Influence of Winding Deformation Degree on Transformer Magnetic Field Distribution and Winding Force<br>Yuhui Zhai, Qingquan Li, Wenhao Gao (Shandong University, China)  | P3-31-A |
| Simulation Measurement for Internal Temperature of Silicone Rubber during Surface Pollution Discharge<br>Yuan Fu, Lianrong Pan, Peikai Li, Xin Wei, Daiyu Xie (Guangxi Power Grid Co., Ltd., China), Jikai Bi (South China University of Technology, China)  | P3-32-A |
| Effects of Different Defects on the Electric Field Distribution of Insulation Rod for GIS<br>Chen Yun, Chengyao Hou, Xiaoxiao Kong, Yifang Wang, Lu Wang, Boxue Du (Tianjin University, China)   | P3-33-A |
| Cable Fault Location and Signal Separation Based on Continuous Wavelet Transform<br>Zhoufei Yao (State Grid Shanghai Electric Power Research Institute, China), Jianping Yang, Jian Zheng (State Grid Shanghai Electric Power Company, China), Yangruisi Li, Dongwei Xie, Jiandong Wu (Shanghai Jiao Tong University, China) | P3-34-A |
| Study on Relaxation Current Characteristics of Oil-aper Insulation under DC Electric Field<br>Qi Shi, Chunjie Gu (East China Branch, State Grid Corporation of China, China), Zhoufei Yao (State Grid Shanghai Electric Power Research Institute, China), Haotian Shen, Xuebei Wang (Shanghai Jiao Tong University, China)   | P3-35-A |



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| Study on Thermal Characteristics of High-specific Energy Lithium-ion Batteries Based on the Simulation Modeling<br>Yanbo Ding (Shenyang Institute of Engineering, China; Xavier University of Louisiana, USA), Daile Zhang, Donglai Wang, Hai Zhao, Yuhang Yue, Yaqi He (Shenyang Institute of Engineering, China)   | P4-01-B |
| Capacity Prediction of Battery Pack in Energy Storage System Based on Deep Learning<br>Ruiqi Liang, Zhipeng Yang, Zhengxiang Song, Kun Yang (Xi'an Jiaotong University, China)   | P4-02-B |
| Simulation of Energy Storage Density and Energy Efficiency of Polyetherimide Composites by Modulating Charge Injection Characteristics<br>Lingyu Yang, Daomin Min, Ziwei Gao, Xiaofan Song, Shihang Wang, Wenfeng Liu, Shengtao Li (Xi'an Jiaotong University, China)  | P4-03-B |
| Simulation Study on the Surface Charge Accumulation Characteristics of Silicone Rubber Composite Insulators<br>Zhenglong Jiang, Zhiyao Fu ( StateGrid Hunan Electric Power Company Disaster Prevention and Reduction Center, China), Xingshuo Song, Dexiong Hu, Feng Wang (Hunan University, China), Kai Ning (Changsha university of science & techlonoly, China) | P4-04-B |
| Numerical Simulation of Buoyant Bubble Dynamics in Dielectric Liquid under Uniform Electric Fields<br>Yuhan Sun, Qiaogen Zhang, Zhicheng Wu, Chong Guo, Shaoqi Wang, Rui Zhang (Xi'an Jiaotong University, China)  | P4-05-B |
| Numerical Investigation on the Effects of Electrical Parameter on a Nanosecond Pulsed Surface Dielectric Barrier Discharge<br>Sijia Liang, Yuhuan Du, Yang Yu (Chongqing Jiaotong University, China)   | P4-06-B |
| Tikhonov Regularization Algorithm for Thermal Pulse Method Data Analysis<br>Jingying Fang, Feihu Zheng, Shijie Chen, Yewen Zhang (Tongji University, China)  | P4-07-B |
| Research on the Solution Method of Nonlinear Dielectric Equivalent Circuit Parameters Based on Particle Swarm Algorithm Improved by Genetic Algorithm<br>Jianyu Hu, Zhonghua Li, Zuhui Li (Harbin University of Science and Technology, China)   | P4-08-B |
| Finite Element Simulation on the Thermal Degradation of Silicone Rubber of Composite Insulator<br>Xiangjun Zeng, Haofeng Zhang (Electric Power Research Institute China Southern Grid, China), Yuheng Ren (Shenzhen International Graduate School Tsinghua University, China), Yongsheng Xu (Electric Power Research Institute China Southern Grid, China),        | P4-09-B |



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| Fanghui Yin, Liming Wang (Shenzhen International Graduate School Tsinghua University, China)  |         |
| Prediction of Peak Curing Temperature of Epoxy Resin Based on RBF Neural Network<br>Chuang Wang, Weiyu Zhu, Chi Chen, Zaiqin Zhang, Xu Li, Mingyu Mu (Xi'an University of Technology, China)  | P4-10-B |
| Optimization of Ventilation and Heat Dissipation Structure of Transformer Room in Prefabricated Substation Based on Multi-physics Coupling<br>Run Xie, Jiaqi Huang, Pengqi Zuo, Feilong Wang (Tongji University, China)   | P4-11-B |
| Research on Modularization Method of GIS Equipment Based on Population Genetic Algorithm<br>Yunjie Liu, Fenghua Wang, Xiuchen Jiang, Gehao Sheng (Shanghai Jiao Tong University, China), Xiaoxin Chen (Zhejiang Electric Power Research Institute, China)   | P4-12-B |
| Infrared Image Detection of Transmission Line Insulators Utilizing a CNN Combination Implemented with Small Sample Data Augmentation and Transfer Learning<br>Yuepeng Xin, Yong Liu (Tianjin University, China), Xingwang Huang (Electric Power Research Institute State Grid Hebei Electric Power Company Limit, China), Zhihui Wang (Chengde Power Supply Company State Grid Jibei Electric Power Company Limited, China), Hongbao Zong (Power Cable Branch State Grid Tianjin Electric Power Company, China), Boxue Du (Tianjin University, China) | P4-13-B |
| Phase Change Cooled Encapsulation Material FC-72 Pyrolysis Process Simulation<br>Chang Feng (Qinghai University, China), Shaonan Chen (Electric Power Research Institute of Guangxi Power Grid Co., Ltd, China), Peng Liu (Guangxi Power Grid Co., Ltd., China), Jinsheng Su (Qinghai Electric Power Company, China), Shuang Zhou, Dongmei Yang, Shouxiao Ma (Qinghai University, China)  | P4-14-B |
| DC Magnetron Sputtering Particle Distribution and Energy Simulation Study<br>Yuwei Fu, Ji Peng, Mengsha He, Wen Shuai (Xi'an University of Technology, China)   | P4-15-B |
| Finite Element Analysis of Surface Abrasion Defect of Main Insulation for HV Motor Stator Winding<br>Xin Wang, Lingyan Lin, Ailiang Kang, Zhanqing Chen, Lu Li (Taiyuan University of Technology, China)  | P4-16-B |
| Numerical Model of Bubble Evolution in Oil-paper Insulation Based on Bubble Dynamics<br>Yu Huang (Changsha University of Science and technology, China), Yingting Luo, Mo Shi, Qiang Yang (Electric Power Research Institute Guangdong Power Grid, China), You Zhou, Kehan Luo (Changsha University of Science and technology, China)   | P4-17-B |



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| Study on the Adsorption of SF <sub>6</sub> and Its Major Superheated Decomposition Products on the Surface of Al (1 1 1)<br>Shiling Zhang (Chongqing Electric Power Research Institute, China), Kexin Zhu, Haotian Li (Wuhan University, China), Qiang Yao (Chongqing Electric Power Research Institute, China), Ju Tang, Fuping Zeng (Wuhan University, China)   | P4-18-B |
| Decomposition Properties of CF <sub>3</sub> I- the Alternative Gas for SF <sub>6</sub><br>Fanyi Cai, Baijie Zhou (State Grid Electric Power Research Institute, China), Dongxian Tan (Shanghai Wenyong Industrial Co., Ltd, China), Su Zhao (Shanghai Jiao Tong University, China), Ji Liu (NARI Group Corporation, China)  | P4-19-B |
| Effect of Dilute Oxygen on Mobility of Positive Ions in Nitrogen<br>Bo Yu, Yonghui Wu, Tongtong He, Yuesheng Zheng (Fuzhou University, China)   | P4-20-B |
| Study on the Temperature Distribution Characteristics of SF <sub>6</sub> Gas in GIS Based on Multi-physical Field Coupling<br>Huan Chen, Haotian Wang, Yuting Gao, Xutao Han, Junhao Li (Xi'an Jiaotong University, China)  | P4-21-B |
| Ti <sub>3</sub> C <sub>2</sub> Tx as A Promising Gas Sensor Material for CS <sub>2</sub> : A Theoretical Study<br>Long Li (Electric Power Research Institute of State Grid Chongqing Electric Power Company, China), Hao Qiu, Xiaoxuan Feng, Xianzhong Chao (Wuhan University, China), Baojia Deng (Electric Power Research Institute of State Grid Chongqing Electric Power Company, China), Fuping Zeng (Wuhan University, China) | P4-22-B |
| Study of the Impact of X-Ray on Negative Needle-Plane Corona Discharge in Atmospheric Air<br>Aotian Shang (Nanjing Institute of Technology, China)  | P4-23-B |
| Active Suppression of Metal Particles in AC-GIL/GIS by Functionally Graded Spacers<br>Boxue Du, Zhouyu Jin (Tianjin University, China), Zehua Wang (State Grid Tianjin Electric Power Company, China), Hucheng Liang (Tianjin University, China), Tian Chen (State Grid Jiangxi Electric Power Research Institute, China), Jianan Dong (Tianjin University, China)  | P4-24-B |
| Surface Charge Accumulation on Epoxy Insulator with Metal Particle in C <sub>4</sub> F <sub>7</sub> N/CO <sub>2</sub> Under AC Voltage<br>Shuangying Li, Di Lu, Yu Gao, Wenqu Wang, Boxue Du (Tianjin University, China)  | P4-25-B |
| Effect of Vibration on Surface Charge Accumulation with Metal Particle on DC GIS Insulator<br>Di Lu, Yu Gao, Shuangying Li, Wenqu Wang, Xiaochen Yuan, Boxue Du (Tianjin University, China)   | P4-26-B |



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| Effect of Low Molecular Acid on Methanol Diffusion in Oil-paper Insulation Based on Molecular Dynamics Simulation<br>Chuying Liu, Enze Zhang, Heng Zhang, Yiwen Luo, Xianhao Fan, Jiefeng Liu (Guangxi University, China)  | P4-27-B |
| Simulation Analysis of Buried Depth State of Optical Fiber Composite Submarine Cable Based on Temperature Field Variation<br>Yining Zhang (CSG EHV Power Transmission Company, China), Zhenjin Cen (EHV Transmission Company of China Southern Power Grid Co., Ltd., China), Peng Zhang, Qishun Li, Yanpeng Hao (South China University of Technology, China)  | P4-28-B |
| Current Carrying Capacity of 66kV Wind Turbine Cable with High Thermal Conductivity<br>Songtao Liu, Jin Li (Tianjin University, China), Jing Xu, Chuanbin Wang, Chongjun Tian, Pengfei Zou (Fast East Cable Co., Ltd, China), Wenbo Zhu (Electric Power Research Institute CSG, China), Yuhuai Wang, Boxue Du (Tianjin University, China)  | P4-29-B |
| Broadband Impedance Spectroscopy Analysis Model for Cross-Bonded Cable Systems<br>Wei Duan, Haofei Sun (Electric Power Research Institute of State Grid Shaanxi Electric Power Company Limited, China), Yong Sheng, Chong Wang (State Grid Shaanxi Electric Power Company Limited, China), Xuefeng Zhao, Lu Pu (Electric Power Research Institute of State Grid Shaanxi Electric Power Company Limited, China), Jianfeng Liang, Gangduo Feng, Hanmeng Wang (Xi'an University of Technology, China) | P4-30-B |
| Simulation Study on the Behavior of Submarine Cable Suspension Span Section under the Effect of Ocean Current Scouring<br>Yining Zhang (M&T Center CSG EHV Power Transmission Company, China), Peng Zhang (South China University of Technology, China), Jianbao Guo (M&T Center CSG EHV Power Transmission Company, China), Haotian Tan, Yanpeng Hao (South China University of Technology, China)  | P4-31-B |
| Simulation and Analysis of Submarine Cable Based on Electro-Thermal-Flow Multi-physics Coupling<br>Chengxu Tang, Lipeng Zhong, Tan Zeng, Bingxu Jiang, Dongduan Liu, Ruojie Cheng (Hunan University, China)  | P4-32-B |
| Simulation of Induced Current in Water-blocking Buffer Layer of Corrugated Aluminum Sheathed Cable<br>Shengtao Li, Jiahui Zhao, Yang Feng (Xi'an Jiaotong University, China)   | P4-33-B |



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| Thermoelectric Coupling Simulation of High-Voltage Switchgear Based on RBF Surrogate Model<br>Kai Gao, Shaojing Wang, Peng Xu, Pei Cao, Jiaqi Huang, Lijun Jin (Tongji University, China)   | P4-34-B |



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| <b>Poster Session 5:</b><br><b>Performance of Insulating Material: Interface and Charge</b><br><b>Session Chairs:</b><br><b>Jian Hao (Chongqing University, China)</b><br><b>Jixing Sun (Beijing Jiaotong University, China)</b><br>Venue: Gallery hall, 3 <sup>rd</sup> F                                      |         |
| Migration of Space Charge Packet in Polypropylene Injected by Electron Beam Irradiation<br>Jiaping Pan, Jun Li, FeiHu Zheng, Yewen Zhang (Tongji University, China)   | P5-01-A |
| Study of Space Charge Behavior under AC-DC Compound Electric Field<br>Danyang Xie, Jiandong Wu (Shanghai Jiao Tong University, China)   | P5-02-A |
| Surface Charges Accumulation Characteristics of Epoxy/Glass Fiber Composites under DC Superimposed Harmonic Voltage<br>Ji Liu, Longfei Zhang, Zhen Li, Zirui Mao, Shouming Wang, Minghe Chi (Harbin University of Science and Technology, China)  | P5-03-A |
| Influence of Different Pressures on the Charge Accumulation Characteristics of Cable/Accessory<br>Hanfeng Wang, Qiannan Xue (State Grid Xi'an Electric Power Supply Company, China), Shuai Li, Jie Ma (Shaanxi Ruistan Electric Co., LTD, China), Chi Chen, Yanzhao Pei (Xi'an University of Technology, China) | P5-04-A |
| Space Charge Distribution Characteristics under Ultra-low Frequency Voltage in XLPE<br>Qiang Li, Wenhao Li, Chunlin Hao (Tianjin University, China), Youcong Huang, Zhongnan Zheng (Electric Power Research Institute of Fujian Power Co., Ltd., China), Tao Han (Tianjin University, China)                    | P5-05-A |
| Temperature Effect on Space Charge Behavior of Polyimide Films under DC High Electric Field<br>Haotian Shen, Jiandong Wu, Yi Yin (Shanghai Jiao Tong University, China)   | P5-06-A |
| Grafting and Space Charge Characteristics of XLPE-g-Diacetone Acrylamide<br>Kai Wang, Xindong Zhao, Jiaming Yang, Hong Zhao (Harbin University of Science and Technology, China)  | P5-07-A |
| Surface Charging Behaviors on GIS Basin-type Insulators under AC-DC Composite Voltage<br>Yuhuai Wang, Jin Li (Tianjin University, China), Xiaohui Duan, Jianwei Wei, Yaxiang Wang (Pinggao Group Co., Ltd, China), Boxue Du (Tianjin University, China)   | P5-08-A |
| Transfer Matrix for Space-charge Analysis of Insulating Systems with Complex Geometries<br>Xiaoxin Li, Yeounguk An, Tomohiro Kawashima, Yoshinobu Murakami, Naohiro Hozumi (Toyohashi University of Technology, Japan)  | P5-09-A |
| The Relationship between Space Charge and Prestressing Breakdown in Thin Metallized BOPP Film<br>Jiachen Li, Shijie Chen, Yuxiao Yang, Yewen Zhang (Tongji University)  | P5-10-A |



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| <b>Poster Session 5:</b><br><b>Performance of Insulating Material: Interface and Charge</b><br><b>Session Chairs:</b><br><b>Jian Hao (Chongqing University, China)</b><br><b>Jixing Sun (Beijing Jiaotong University, China)</b><br>Venue: Gallery hall, 3 <sup>rd</sup> F  |         |
| Moisture Content Affecting Electrical Treeing Process in Epoxy and Glass Fiber Reinforced Epoxy Resin<br>Hein Htet Aung, Jin Li (Tianjin University, China), Renyong Zhao (State Grid Shandong Electric Power Company, China), Tianhui Li (State Grid Hebei Electric Power Research Institute, China), Chen Rong (State Grid Tianjin Electric Power Research Institute, China), Chen Yun (China Electric Power Research Institute, China), Songtao Liu (Tianjin University, China), Jin He (State Grid Tianjin Electric Power Research Institute, China), Boyuan Cui (China Electric Power Research Institute, China) | P5-11-A |
| Improved Mechanical and DC Electrical Properties of PP/PE Blend by Grafting<br>Manzhi Shao, Jiaming Yang, Chunyang Li, Hong Zhao, Xuan Wang, Xindong Zhao (Harbin University of Science and Technology, China)  | P5-12-A |
| Thermocycling Ageing of EP/Al <sub>2</sub> O <sub>3</sub> Micron Composites: Phenomena and Insight<br>Dongxu An, Haoran Sui, Jian Gao, Xiaopeng Zha, Kai Yang, Fusheng Zhou, Kangning Wu, Jianying Li (Xi'an Jiaotong University, China)  | P5-13-A |
| Improvement of Electrical Properties of Metal-Insulator Interface Based on Ar/HMDSO $\mu$ -APPJ<br>Xiuhan Guan, Wanyue Xiong, Liyan Wang, Xi Zhu, Zhi Fang (Nanjing Tech University, China)   | P5-14-A |
| Enhancement of Hydrophobic Properties of Epoxy Resin by Large Area Dielectric Barrier Discharge Plasma Treatment Device<br>Yu Zhu, Jialiang Huang, Shijia Guo, Liang Guo, Weicheng Yu, Zhi Fang (Nanjing Tech University, China)  | P5-15-A |
| Promotion on Surface Charge Dissipation by Surface Functionally Graded Modification of SDBD<br>Fangsong Li, Pengfei Wei, Jincheng Chu, Xi Zhu, Zhi Fang (Nanjing Tech University, China)  | P5-16-A |
| Surface Insulation Performance Improvement of the Ceramics with Dielectric Barrier Discharge<br>Chengshuo Huang, Yangyang Zhou, Xi Zhu, Xinglei Cui, Zhi Fang (Nanjing Tech University, China)  | P5-17-A |
| Effects of Plasma Treatment on Interfacial Properties of Aramid Fiber Reinforced Epoxy for Insulation Rod<br>Boxue Du, Rundong Xue, Yun Chen, Xiaoxiao Kong (Tianjin University, China), Boyuan Cui (China Electric Power Research Institute, China), Yifang Wang (Tianjin University, China)   | P5-18-A |



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| Investigation on the Effect of Insulation Material Formulation and Coating Thickness on the Insulation Performance of Epoxy-Metal Interface in Sandwich Structure<br>Lin Liu, Yanpeng Hao, Hongru Mi, Shenglong Huang, Licheng Li (South China University of Technology, China), Fusheng Zhou, Chao Gao, Yun Yang, Guoli Wang (China Southern Power Grid, China)   | P5-19-A |
| Pressure Dependence of XLPE/SiR Interfacial Breakdown Behavior<br>Delun Yi, Haoyue Jiang, Yingying Zheng, Ke Zhang, Kangning Wu, Jianying Li (Xi'an Jiaotong University, China)  | P5-20-A |
| Analysis of Passivation Layer Interface Charge Induced Blocking Capability Degradation in Thyristor<br>Yansheng Zou (Electric Power Research Institute CSG EHV Power Transmission Company, China), Lingfeng Li (University of Electronic Science and Technology of China, China), Kai xiao, Ning Liang (Electric Power Research Institute CSG EHV Power Transmission Company, China), Xuan Li, Xiaochuan Deng (Institute of Electronic and Information Engineering in Guangdong, University of Electronic Science and Technology of China) China | P5-21-A |
| Morphology Evolution and Breakdown Mechanism of XLPE–SiR Interface Induced by Silicone Grease Diffusion<br>Zerui Li, Kai Zhou (Sichuan University, China)  | P5-22-A |
| Interfacial Breakdown and Resistivity Characteristics of Cable Joints under Different Temperatures<br>Kai Wu (Anhui Electric Power Company of State Grid, China), Tianfeng Zhang, Yunxiao Zhang (Fuzhou University, China), Zenghui Zhang (Fujian Agriculture and Forestry University, China), Wenxin Lin, Zhengnan Chi (Fuzhou University, China)   | P5-23-A |
| Comparisons of Electrical Properties of Polycarbonate and Epoxy Resin under Electrical-Thermal Aging<br>Shuning Duan (China Electric Power Research Institute, China), Yucheng Zhang, Wendong Li, Xin Zhao, Wenrui Li, Chao Wang, GuanJun Zhang (Xi'an Jiaotong University, China)   | P5-24-A |
| Effect of organic montmorillonite on the water-tree aging properties of XLPE/OMMT nanocomposite dielectrics<br>Yuan Gao, Ruixue Dong, Xiufeng Li, Zhengdi Liu, Haoze Li (Shandong University of Technology Zibo, China), Yan Zhou (Shandong Jinda Cable Company Zibo, China)   | P5-25-A |



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| Effect of Dielectric Coating on Breakdown Strength in High Pressure SF6<br>Chuyu Sun (Xi'an Jiaotong University, China), Haiyang Wang, Linshen Xie (Northwest Institute of Nuclear Technology, China)   | P5-26-A |
| Fabrication of Multidimensional Functionally Graded Insulator for HVDC GIS<br>J. N. Dong, H. C. Liang, Z. Y. Jin, B. X. Du, H. Yao, Z. J. Guo (Tianjin University, China)   | P5-27-A |
| Electric Field Regulation of Multi-Dimensional Functionally Graded Materials for GIS Spacer under DC and AC Voltages<br>Hang Yao (Tianjin University, China), Zehua Wang (State Grid Tianjin Electric Power Company, China), Boxue Du, Hucheng Liang, Jianan Dong (Tianjin University, China) | P5-28-A |
| Parameter Design of Surface Functionally Graded Materials for HVDC GIL Spacer under Variable Temperature Gradient<br>Hang Yao, Boxue Du, Hucheng Liang, Jianan Dong, Zhouyu Jin (Tianjin University, China)   | P5-29-A |
| Analysis of Novel Superparamagnetic Nanoparticles for Achieving Better Self-Healing Insulating Materials<br>Lu Han, Qi Li, Jinliang He (Tsinghua University, China)   | P5-30-A |
| Study on the Self-Healing Properties of Electric Tree Branches Containing Dynamic Chemical Bond Epoxy Resin<br>Shuang Jian Wang, Ting Xin Chen, Chun Song Chen, (China University of Petroleum (East China), China)   | P5-31-A |
| Study on the Nonlinear Dielectric Properties of SiC/LDPE Composites under Different Electric Fields and Temperatures<br>Yunlong Sun, Jinjiang Pang, Wenmin Guo, Huan Zheng, Xinyu Wang, Zhonghua Li (Harbin University of Science and Technology, China)                                      | P5-32-A |
| The Mechanism of DC Breakdown of EP/TiO2 Nanocomposites at Elevated Temperature<br>Zhen Li (Xi'an Jiaotong University, China), He Gao, Ji Liu (Harbin University of Science and Technology, China), Shengtao Li (Xi'an Jiaotong University, China)  | P5-33-A |
| Effect of Grafting Maleimide on the DC electrical Properties XLPE at Various Temperatures<br>Xu Yang, Kai Wang, Chunyang Li, Xin Dong Zhao, Chengcheng Zhang, Hong Zhao, Xuan Wang (Harbin University of Science and Technology, China)   | P5-34-A |
| Effect of Nanoparticle Type on Charge Transport Characteristics of LDPE/Micro-BN Composite with High Thermal Conductivity<br>Chenyi Guo, Jing Li, Yu Gao, Baixin Liu, Boxue Du (Tianjin University, China)  | P5-35-A |



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| Study on Properties of Precipitated and Fumed Silica Reinforced Polydimethylsiloxane Silicone Rubber<br>Zhenglong Jiang, Zhiyao Fu (State Grid Hunan Electric Power Company Disaster Prevention and Reduction Center, China), Kai Ning (Changsha University of Science & Technology, China)   | P6-01-B |
| Influence of Temperature on Thermal and Electrical Conductivities for PP/Elastomer/BN Nanocomposite<br>Jing Li, Yu Gao, Chenyi Guo, Baixin Liu, Boxue Du (Tianjin University, China)  | P6-02-B |
| Effect of Delocalized Structure on Voltage Stabilizer to Improve Electrical Performance of Cross-linked Polyethylene<br>Zelin Hong, Fanbo Meng, Tianyin Zhang, Muhammad Awais (Zhejiang University, China), Ashish Paramane (National Institute of Technology Silchar, India), Xiangrong Chen (Zhejiang University, China)  | P6-03-B |
| Electrical Conductivity Comparison Between Two Preparing Methods for Graphene/Copper Composite<br>Ruoyu Xu, Mingyu Zhou, Yuzhen Zhou, Haitian Wang, Yi Luo, Tobias Fechner (Global Energy Interconnection Research Institute Europe GmbH, Germany), Yi Ding, Yu Han, Zhixiang Zhu (State Grid Smart Grid Research Institute Co. Ltd., China), Jinbo Bai (CentraleSupélec Laboratory of Mechanics, Structures and Materials, France) | P6-04-B |
| Analysis on Dielectric Properties of NaCl Solution by Establishing a Double Fourier Approximation with Respect to Temperature and Frequency<br>Xiaoyuan Song, Lisheng Zhong, Meng Zhang, Hongxin Gong, Minchen Qiu, Jinghui Gao (Xi'an Jiaotong University, China)  | P6-05-B |
| The Time Evolution of Electrical Properties of Dielectric Elastomers with Different Pre-strain Ratio<br>Lijuan Yin, Huiyi Hu, Wenzhuo Dong (Tsinghua University, China)   | P6-06-B |
| Recycling of Anhydride-Cured Epoxy Resin Through Alcoholysis and Its Insulation Property after Re-Preparation<br>Xin Zhao, Wendong Li, Yucheng Zhang, Wenrui Li (Xi'an Jiaotong University, China), Shuning Duan (China Electric Power Research Institute, China), Guanjun Zhang (Xi'an Jiaotong University, China)   | P6-07-B |
| Crystal Transformation Affecting DC Conductivity and Breakdown Strength of Annealed PP Cable Insulation with $\beta$ -nuclear Agent<br>Yaqing Zheng, Zhonglei Li, Guoning Sun, Boxue Du (Tianjin University, China), Youjian Xi, Canfeng Song (Kun Ming Cable Group CO. LTD, China)   | P6-08-B |



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| Study on Conductivity Characteristics of LDPE/SiO <sub>2</sub> Nanocomposite at High Temperature<br>Yangruisi Li, Jiandong Wu, Yi Yin (Shanghai Jiao Tong University, China)  | P6-09-B |
| The Correlation Mechanism that Micro-Structure Parameters of ZnO Varistor to the Macroscopic Electrical Characteristics<br>Pengfei Meng, Jingke Guo (Sichuan University, China), Long Zhao (State Grid Linyi power supply company, China), Wenhao Lu (Extra High Voltage Power Transmission Company of CSG, China), Zheng Liu (Northwest Institute of Nuclear Technology, China), Shan Li (State Grid Linyi power supply company, China), Kai Zhou (Sichuan University, China), Jun Hu (Tsinghua University, China) | P6-10-B |
| Effect of Synergistic Reduction of Dicumyl Peroxide and Antioxidant Content on Crosslinking Characteristics of XLPE<br>Zhicheng Si, Jiakai Li (Xi'an Jiaotong University, China), Zhi Xu (State Grid Shanghai Municipal Electric Power Company, China), Shihang Wang, Shengtao Li (Xi'an Jiaotong University, China), Jiajun Liu (State Grid Shanghai Municipal Electric Power Company, China)  | P6-11-B |
| Method and Application of Aging with Gradient Fields for Flake XLPE Samples<br>Ming Wang, Li Zhang, Changhai Sun, Yunlong Sun (Dalian University of Technology, China)  | P6-12-B |
| Effect of Crystalline Morphology on Electrical Tree Growth Characteristics of PP Insulation<br>Famin Dai, Zhonglei Li, You Wu (Tianjin University, China), Canfeng Song, Youjian Xi (Kunming Electric Cable Co., Ltd. Kunming Cable Group, China), Boxue Du (Tianjin University, China)   | P6-13-B |
| Electrical Aging of Epoxy based Nonlinear Resistive Field Grading Material<br>Yongsan Han, Chenguang Zhao (Harbin University of Science and Technology, China)  | P6-14-B |
| Effect of Temperature on Electric Field Distortion in LDPE/SiO <sub>2</sub> Nanocomposite under DC Field<br>Xuebei Wang, Jiandong Wu, Yi Yin (Shanghai Jiao Tong University, China)   | P6-15-B |
| Frequency-domain Characteristics of Loss Current in XLPE with Conductor Spike Defect<br>Yan Zhao, Shusheng Zheng, Ju Kong, Xiaohu Yan (North China Electric Power University, China)  | P6-16-B |



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| Study on Surface Yellowing Behavior of White Low Smoke Halogen-Free Flame Retardant Polyolefin Insulating Material<br>Chunfeng Wang (Harbin University of Science and Technology, China), Jialong Zhou (Zhongtian Technology Industrial Wire & Cable System Co., Ltd., China), Guangliang Wang (Harbin University of Science and Technology, China), yongliang Wan (Harbin University of Science and Technology, China), Bin Liang (Zhongtian Technology Industrial Wire & Cable System Co., Ltd., China), Zhidong Han (Harbin University of Science and Technology, China) | P6-17-B |
| On the Dielectric Properties of Liquid Silicone Rubber under Different Thermal Aging State for Dry-type Transformer<br>Boxue Du, Yongping Hou, Xiaoxiao Kong, Chong Zhang, Xiaohui Chen (Tianjin University, China), Qiang Fu (Electric Power Research Institute of Guangdong Power Grid Co., Ltd., China)  | P6-18-B |
| The Effect of High-low Temperature Cycle Ageing on Mechanical Properties of Silicone Rubber under Tensile State<br>Chao Wu, Zhe Miao, Xia Wang (Xi'an Jiaotong University, China), Yanlin Zhang, Zhenbao Chen, Yanhua Yang (CRRC Zhuzhou Electric Locomotive Co., Ltd., China)  | P6-19-B |
| Effect of POE Content on Properties of Polypropylene based Semiconductive Shielding Material for Cable<br>Wenbo Zhu, Shuai Hou, Baojun Hui, Yunpeng Zhan, Mingli Fu (China Southern Power Grid Electric Power Research Institute, China), Jiasheng Huang (Guangzhou Power Supply Bureau of Guangdong Power Grid Co., Ltd., China)   | P6-20-B |
| Effect of Shear Rate and Aramid Solution Concentration on the Properties of Precipitation Fibers<br>Wang Lu, Huang Meng, Yao Yuanxin (North China Electric Power University, China)   | P6-21-B |
| Preparation of rGO/NiO Composites by Nanosecond Pulsed DBD and Its Electrochemical Properties<br>Longhui Zhang, Yang Zhou, Shuhao Li, Yulei Zhao, Feng Liu, Zhi Fang (Nanjing Tech University, China)   | P6-22-B |
| KH560-SiO <sub>2</sub> /PI Insulating Paper Preparation and Characterisation<br>Minghe Chi, Xue Sun, Xiaorui Zhang, Yang Yu, Chunhun Liu, Jiahao Shi (Harbin University of Science and Technology, China)   | P6-23-B |
| Competition between Tensile and Compressive Stresses on Electrical Tree Growth in Epoxy Resin<br>Wenjin Zhang (Tianjin university, China), Boxue Du (Tianjin university, China), Hucheng Liang (Tianjin university, China), Liucheng Hao (Pinggao Group Co., Ltd, China),   | P6-24-B |



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| Yaxiang Wang (Pinggao Group Co., Ltd, China), Duanpeng Yuan (Pinggao Group Co., Ltd, China)   |  |         |
| Stretchable and High Thermally Conductive Boron Nitride Nanosheet/Poly (Thioctic Acid) Nacre-Like Nanocomposites for Thermal Management Applications<br>Wenzheng Jiang (Shanghai Jiao Tong University, China), Shaojing Wang, Peng Xu, Xiangyi Xu (State grid Shanghai municipal electric power company, China), Pingkai Jiang, Xingyi Huang (Shanghai Jiao Tong University, China) |  | P6-25-B |
| Effect of Ozone Aging on Breakdown Strength and Mechanical Properties of Polylactic Acid<br>Wende Jin (State Grid Zhejiang Electric Power Co., LTD., China), Jia Feng (State Grid Zhejiang Electric Power Co., LTD., China), Rongguo Huang (State Grid Zhejiang Electric Power Co., LTD., China), Bin Du (Hefei University of Technology, China)                                    |  | P6-26-B |
| Study on Energy Storage Characteristics of Layered Composite Dielectric with Alternating Stacking of Insulation Layer and Polarization Layer<br>Yanan Shang, Yu Feng, Changhai Zhang, Tiandong Zhang, Qingguo Chi (Harbin University of Science and Technology, China)  |  | P6-27-B |
| N-rich Biomass Carbon Derived from Pine Needles as Anode for High-performance Lithium-ion Batteries<br>Mingbo Gao, Saisai Qiu, Xinqi Liang, Yi Tang, Tianyuan Yin, Minghua Chen (Harbin University of Science and Technology, China)  |  | P6-28-B |
| Characteristic Evaluation of BOPP Capacitor after Winding Process with Mechanical Stress<br>Huize Cui, Zhaoliang Xing, Chong Zhang, Shaowei Guo, Yaotian Su (Beijing Institute of Smart Energy, China), Hailong Zhang (Wuhan Nari Limited Liability Company of State Grid Electric Power Research Institute, China)   |  | P6-29-B |
| Crystallization Time–Dielectric Property Relationship in the Modified Polypropylene for Metallized Film Capacitors<br>Yishuo Zhao, Meng Xiao, Boxue Du (Tianjin University, China)  |  | P6-30-B |
| Dielectric Property Optimization of Polypropylene Based All Organic Capacitor Film under High Magnetic Field<br>H. L. Liu, B. X. Du, Meng Xiao (Tianjin University, China)  |  | P6-31-B |
| Energy Management Circuit Based on Triboelectric Nanogenerator<br>Yulong Yang, Ziren Huang, Zhiye Du, Pengfei Zhao (Wuhan University, China)  |  | P6-32-B |
| Aging Condition Assessment of XLPE Insulated Cables in Various Laying Environments Based on Isothermal Relaxation Current   |  | P6-33-B |



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| Qi Yuan, Hong Zhou, Huangjing Gu, Bingchen Song, Xiaodi Wang, Yunjie Zhou (State Grid Shanghai Cable Company, China)  |         |
| Research on the Characteristics of Liquid Metal Materials Based on Material Studio<br>Wei Peng, Guoqiang Gao, Yaguang Ma, Yu Xiang, Bingyan You (Southwest Jiaotong University, China), Liting Yan (State Grid Shanxi Electric Power Company, China), Aozheng Wang, Guangning Wu (Southwest Jiaotong University, China) | P6-34-B |
| Hierarchically Porous Metal-organic Framework Composite for Heat Dissipation of Electronic Devices<br>Xiangyu Liu, Pingkai Jiang, Xingyi Huang (Shanghai Jiao Tong University, China)   | P6-35-B |
| High-temperature Polyimide Composite Film with Enhanced Energy Density via Regulating the Inorganic Layer Structure<br>Xue-Jie Liu and Jun-Wei Zha (University of Science & Technology Beijing, China)  | P6-36-B |