



**2023 INTERNATIONAL SYMPOSIUM ON
ELECTRICAL INSULATING MATERIALS
September 24-28, 2023, Matsue City, Japan**

**Sponsored by
IEEJ Technical Committee on Dielectrics and Electrical Insulation**

**Technically Co-sponsored by
IEEE Dielectrics and Electrical Insulation Society
IEEE DEIS Japan Chapter**

Final Program

Wednesday, Sept. 27					Thursday, Sept. 28				
Large Exhibition Hall	Multipurpose Hall	Small Hall	International Conference Hall	Other places	Large Exhibition Hall	Multipurpose Hall	Small Hall	International Conference Hall	Other places
Poster session, sticking up the posters is mandatory, free for discussion.	Preparation	J-K Exchange Program Presentation				Oral L Insulation design, reliability, aging and degradation, their detection and monitoring (4)	Oral M Electrical properties of dielectrics and measurement and testing techniques (3)		
		Oral K1 Computational techniques for dielectrics such as quantum chemical							
		Coffee break				Coffee break	Coffee break		
				Oral K2 Computational techniques for dielectrics such as quantum chemical					Oral N Space charge, surface and interfacial phenomena (3)
Lunch							Awarding / Closing ceremony		
						Lunch distribution			
Poster session including in-person discussion	Demonstrative session								Excursion
Coffee break									
SS session MVP4-6									
Withdrawal	Withdrawal of the demonstrative session								
Note: Registration will be available till morning to evening.					Note: Registration will be available till morning to noon at Kunibiki Messe.				
					Lunch box is prepared for those who attends excursions.				

Monday, Sept. 25

09:00-09:10

Opening address by Toshihiro Takahashi (Chair of ISEIM2023, CRIEPI, Japan)

09:10-10:00

Inuishi Memorial Award Lecture Chair: Toshihiro Takahashi (CRIEPI, Japan)

In a search for reliable methods to evaluate resistance to electrical treeing in materials for HVAC and HVDC cable insulations
Emeritus Prof. Stanislaw M. Gubanski
(Chalmers University of Technology, Sweden)

10:15-12:00

Oral A - Insulation design, reliability, aging and degradation, their detection and monitoring (1)

Chair: Takahiro Umemoto (The Univ. of Tokyo, Japan)

- A-1 Improvement of Partial Discharge Signal Recognition for Power Cable Lines
Min Chen(1), Masahiro Kozako(2), Masayuki Hikita(2), Nozomi Takeuchi(3), Zhipeng Zhou(1), Jingjing Lu
(1)SE Technology Limited, Hong Kong, (2)Kyushu Institute of Technology, Japan, (3)Tokyo Institute of Technology, Japan)
- A-2 3D Digitization of Shapes and Surface Conditions for Aged Stress Relief Cones in XLPE Cables
Takafumi Mashimo(1), Hideki Misaka(1), Toshihiro Takahashi(1)
(1)Central Research Institute of Electric Power Industry, Japan)
- A-3 The Risk of Insulation Thermal Runaway in Electrical Machines Used in Traction Electrification
Alberto Rumi(1), Andrea Cavallini(1), Paolo Seri(1)
(1)University of Bologna, Italy)
- A-4 Modeling the dielectric breakdown of nanocomposites using a novel phase-field model
Qi Wang(1), Yuheng Deng(1), Jieli Ma(1), Malvern Yap(2), Yan Yang(1), Wen kwang Chern(3), Zhong Chen(1)
(1)Nanyang Technological University, Singapore, (2)Institute of High Performance Computing Agency for Science, Technology and Research Singapore, Singapore, (3)Singapore Power Group, Singapore)

Oral B - Polymeric insulators and outdoor insulation

Takashi Kurihara (CRIEPI, Japan)

- B-1 Study on the Surface Discharge Process of Insulators and Its Influencing Factors Considering Quantum Transition
Gangjie Zhou(1), Pengqi Zuo(1), Wendi Ding(1), Haifeng Jin(1), Zhikang Yuan(1), Lijun Jin(1)
(1)Tongji University, China)
- B-2 The Impact of Thermal Aging on Mechanical and Electrical Properties of Epoxy/Amine Resin
Yuheng Deng(1), Qi Wang(2), Jieli Ma(2), Yan Yang(2), Malvern Yap(2), Wen Kwang Chern(2)(3), Joo Tien Oh(1), Zhong Chen(1)(2)
(1)Nanyang Technological University, Singapore, (2)Singapore Power Group, Singapore)
- B-3 Simultaneous Improvement of Energy Storage Density and Self-healing property of Dielectric Film Applied in Metalized Capacitor
Lu Cheng(1), Wenfeng Liu(1), Liuqing Yang(1), Xiaohong Chi(1)
(1)Xi'an Jiaotong University, China)
- B-4 Investigations on the Local Thermal Breakdown in Polymeric Insulation
Pranav Johri(1), Purnabhishek Muppala(1), Azmeera Harshith Kumar(1), C. C. Reddy(1)
(1)Indian Institute of Technology Ropar, India)

Oral C - Space charge, surface and interfacial phenomena (1)

Chair: June-Ho Lee (Hoseo Univ., Korea)

- C-1 Effect of Insulation Thickness on Space Charge Behavior and Electric Field Evolution in HVDC Cable under Polarity Reversal Voltage
Zhong Zheng(1), Zhonglei Li(1), You Wu(1), Boxue Du(1)
(1)Tianjin University, China)
- C-2 Field distribution in HVDC Cable Accessories: Shaping Field Control Elements
Thi Thu Nga VU(1), Gilbert TEYSSÉDRE(2), Séverine LE ROY(2), Fulbert BAUDOUIN(2)
(1)Electric Power University, Vietnam, (2)Laplace, University of Toulouse and CNRS, France)
- C-3 Two-dimensional Space Charge Measurement of Scaled Cable Joint Model and Signal Compensation
Shafira Zahra(1), Masaki Utagawa(1), Tomohiro Kawashima(1), Yoshinobu Murakami(1), Naohiro Hozumi (1), Peter Morshuis(2), Young-Il Cho(3), Yoon-Hyoung Kim(3)
(1)Toyohashi University of Technology, Japan, (2)Solid Dielectric Solutions, the Netherlands, (3)LS Cable & System Ltd., Republic of Korea)
- C-4 Simultaneous Measurement of Space Charge Distribution and Leakage Current in 6.6 kV CV Cable under Polarity-reversed Voltage
Kazunori Kadowaki(1), Mayu Maehata(1), Takato Kaji(1), Shinya Ito(1), Shinji Yudate(1), Ryotaro Ozaki(1)
(1)Ehime University, Japan)

13:00-14:45

Oral D - Insulation design, reliability, aging and degradation, their detection and monitoring (2)

Chair: Hiroaki Miyake (Tokyo City Univ., Japan)

- D-1 Effects of Heat and Radiation on Flame-Retardant and Non-Flame-Retardant XLPE Cables
Yoshimichi Ohki(1), Naoshi Hirai(1), Yasuhiro Tanaka(2)
((1)Waseda University, Japan, (2)Tokyo City University, Japan)
- D-2 Mechanoluminescence as a tool for the diagnosis in epoxy polymer
Baptiste Robbiani(1), Jean-Louis Augé(1), Gilbert Teyssède(1)
((1) Laboratoire Plasma et Conversion d'Energie (LAPLACE) CNRS INPT, UPS, Université de Toulouse, France)
- D-3 The Dielectric Properties in Frequency Domain of the 22 kV Underground Cables with Defective Joint
Patt Udomluksananon(1), Siwakorn Jeenmuang(1), Komin Chumpiboon(1), Kritsada Dorkmai(1), Warisanan
((1)King Mongkut's Institute of Technology Ladkrabang, Thailand)
- D-4 Fabrication and Flashover Characteristics of Permittivity and Conductivity Graded Materials (ϵ/σ -FGM) for DC-GIS Spacers
Ryoji Sugimoto(1), Takumu Kato(1), Hiroki Kojima(1), Naoki Hayakawa(1)
((1)Nagoya University, Japan)

Oral E - Electrical properties of dielectrics and measurement and testing techniques (1)

Chair: Kazunori Kadowaki (Ehime Univ., Japan)

- E-1 Several Innovative Measurement Methods for Insulating Materials Research
Yoshimichi Ohki(1), Naoshi Hirai(1)
((1)Waseda University, Japan)
- E-2 Different dielectric properties in polyvinylidene fluoride
Jun Zhou(1), Haomin Guo(1), Kai Wu(1), Yuqing Chen(1)
((1)Xi'an Jiaotong University, China)
- E-3 Enhanced Breakdown Strength of Polypropylene Film by Molecular Semiconductor Addition
Hongbo Liu(1), Lu Cheng(1), Xuemei Zheng (1), Wenfeng Liu(1)
((1)Xi'an Jiaotong University, China)

Oral F - Partial discharge (1)

Chair: Yusuke Kikuchi (Univ. of Hyogo, Japan)

- F-1 Partial discharge characteristics in twisted enameled wires under high repetition voltage pulses generated by a SiC-MOSFET inverter power supply
Yusuke Kikuchi(1), Jun Matsusue(1), Fuma Yamada(1), Takafumi Okuda(2), Yoshimi Nishimura(2), Takashi Nakamura(2)
((1)University of Hyogo, Japan, (2)NexFi Technology, Inc., Japan)
- F-2 Electric Field Distribution at High Temperatures in Impregnated Enameled Conductors Used in Electrical Machines
Alberto Rumi(1), Paolo Seri(1), Andrea Cavallini(1)
((1)University of Bologna, Italy)
- F-3 Discrimination of Insulation Condition based on Partial Discharge Waveform using Deep Learning
Tomohiro Kawashima(1), Quang Ho (1), Yoshinobu Murakami(1), Naohiro Hozumi(1)
((1)Toyohashi University of Technology, Japan)
- F-4 Partial Discharge Detection and Analysis on a Cast Resin Transformer under Lightning Impulse Voltage
Yuanhang Yao(1), Mizuki Miyagawa(1), Ryota Koresawa(1), Masahiro Kozako(1), Masayuki Hikita(1), Katsutoshi Takei(2), Teruo Shibata(2), Tamotsu Uzuki(2), Kazuhiro Futakawa(2), Hiroyuki Ozeki(2)
((1)Kyushu Institute of Technology, Japan, (2)TEPCO Power Grid, Inc., Japan)

Monday, Sept. 25

15:30-18:30

MVP session 1

Cordinator: Tomohiro KAWASHIMA(Toyohashi Univ. of Tech, Japan)

MVP1-1 Statistical Comparison of Degradation Grade and R-Index Based on VLF Tan δ

Sanga Ryu(1), Keonhee Park(1), Sehee Park(1), Jangseob Lim(1)

((1)Mokpo National Maritime University, Republic of Korea)

MVP1-2 The Effect of Nano TiO₂ on Space Charge Behaviour of Silicone Elastomer under DC Electric Field

Chen Zhang(1), Zepeng Lv(1), Zihang Xu(1), Kai Wu(1), Peter Morshuis(2), Aurore Claverie(3)

((1)Xi'an Jiaotong University, China, (2)Solid Dielectric Solutions, Leiden, the Netherlands, (3)SBM Offshore, Carros, France)

MVP1-3 Calibration of space charge distribution by frequency resolved analysis

Xiaoxin Li(1), Masaki Utagawa(1), Tomohiro Kawashima(1), Yoshinobu Murakami(1), Naohiro Hozumi(1)

((1)Toyohashi University of Technology, Japan)

MVP1-4 Proton Beam Writing Fabrication of Micro-patterns in Dielectric Films for Improving Output Voltage Triboelectric Nanogenerators

Takumi Yamasaki(1), Haruya Takashima(1), Yasuyuki Kashiwakura(1), Kunpisit Kosumsupamala(1), Hironori Seki(1),

Hidetaka Hayashi(2), Nitipon Puttaraksa(1), Hiroyuki Nishikawa(1)

((1)Shibaura Institute of Technology, Japan, (2)NPO Ecodesign Promotion Network, Japan)

MVP1-5 Long-Term Partial Discharge Characteristics till Breakdown in a 22 kV Cast Resin Transformer

Mizuki Miyagawa(1), Yuanhang Yao(1), Ryota Koresawa(1), Hideaki Kawano(1), Masayuki Hikita(1), Masahiro

((1)Kyushu Institute of Technology, Japan, (2)TEPCO Power Grid, Inc., Japan)

MVP1-6 Understanding the surface discharge characteristics with thermally aged ester fluid impregnated pressboard adopting fluorescent fiber technique

Leena Gautam(1), R. Sarathi(1), Palanisamy Soundarya(1), Govindasamy Sekar(1), U.M. Rao(2), I. Fofana(2)

((1)Indian Institute of Technology, India, (2)University of Quebec at Chicoutimi, Canada)

MVP session 2

Cordinator: Yoshitaka Miyaji (Mitsubishi Electric Co., Japan)

MVP2-1 Investigation on the effect of Al₂O₃ Nanoparticle with surfactant on electrical performance of Synthetic Ester Liquid

Mridula(1), R. Sarathi(1), Michael G. Danikas(2)

((1)Indian Institute of Technology, India, (2)Democritus University of Thrace, Greece)

MVP2-2 Determination of Repair or Replacement Decision using the Index of the Transformer DGA

Sehee Park(1), Keonhee Park(1), Sanga Ryu(1), Jangseob Lim(1)

((1)Mokpo National Maritime University, Republic of Korea)

MVP2-3 Self-clearing Electrode Containing SWCNT Line for Elastomer

Zihang Xu(1), Zepeng Lv(1), Chen Zhang(1), Kai Wu(1), Peter Morshuis(2), Aurore Claverie(3)

((1)Xi'an Jiaotong University, China, (2)Solid Dielectric Solutions, Leiden, the Netherlands, (3)SBM Offshore, Carros, France)

MVP2-4 Voltage Applied Exposure Test of Polymeric Insulators for Distribution Lines in the Coastal Areas along the Sea of Japan

-Evaluation of ESDD (Equivalent Salt Deposit Density) Based on Meteorological Conditions-

Yosuke Tanaka(1), Kazuaki Tsuji(1), Shunya kawashima(1), Masafumi Yashima(1), Tomoyuki Sato(2), Takuya Watanabe(2)

((1)Tohoku University, Japan, (2)Tohoku Electric Power Network Co., Inc, Japan)

MVP2-5 Enhanced output voltages of triboelectric nanogenerator devices by modification of dielectric material with micro-pits

Haruya Takashima(1), Takumi Yamasaki(1), Takuma Kudo(1), Kunpisit Kosumsupamala(1), Hironori Seki(1), Hidetaka

Hayashi(2), Nitipon Puttaraksa(1), Hiroyuki Nishikawa(1)

((1)Shibaura Institute of Technology, Japan, (2)NPO Ecodesign Promotion Network, Japan)

MVP2-6 Fabrication of Miniature Surface Plasmon Resonance Sensor Chip Using Polymeric Prism

Wisansaya Jaikandee(1), Supeera Nootchanat(2), Chutiparn Lertvachirapaiboon(1), Sanong ekgasit(2), Kazunari

Shinbo(1), Keizo Kato(1), Akira Baba(1)

((1)Niigata University, Japan, (2)Chulalongkorn University, Thailand)

MVP session 3

Cordinator: Yuta Makino (CRIEPI, Japan)

MVP3-1 Effect of Electrometer Internal Circuit Parameters in Interpretation of Conduction Current Transient Characteristics

Iyyappa C(1), C. C. Reddy(1)

((1)Indian Institute of Technology Ropar, India)

MVP3-2 Dielectric Strength and Failure Mechanism of Power Module Packaging Insulation at Ultra-High Temperature

Meng Chen(1), Yalin Wang(1)(2), Yi Yin(1)

((1)Shanghai Jiao Tong University, China, (2)Harbin University of Science and Technology, China)

MVP3-3 Insulating Property Estimation using Q(t) Method of tpP/hBN Composite Materials Produced by Electrostatic Adsorption Method

Yusuke Sato(1), Tomohiro Kawashima(1), Naohiro Hozumi(1), Yoshinobu Murakami(1)

((1)Toyohashi University of Technology, Japan)

MVP3-4 Sterilization Mechanism of Escherichia coli in Highly Conductive Aqueous Solution by Dielectric Barrier Discharge Treatment Using a Water Column Electrode

Hiroshi Kataoka(1), Shinji Yudate(1), Ryotaro Ozaki(1), Akira Nozawa(1), Kazunori Kadowaki(1)

((1)Ehime University, Japan)

MVP3-5 Effect of Carbon Black Addition on Dielectric Breakdown Strength of Alicyclic Epoxy Resins

Keisuke Shinozaki(1), Daigo Okumura(1), Masayuki Hikita(1), Masahiro Kozako(1)

((1)Kyushu Institute of Technology, Japan)

15:30-18:30

SS session

- SS-1 Innovation for Renewable Energy Networks
Masatoshi Nishikawa, Daiki Ichikawa, Kazutoshi Abe
(Sumitomo Electric Industries)
- SS-2 Observing Electrical Tree Propagation in Epoxy Resin by X-ray Phase Contrast Imaging
Sho Takano, Hiroto Watanabe, Yuji Hayase
(Fuji Electric)
- SS-3 Electrical Insulation Technology for Sustainable Society
Yoshitaka Miyaji, Hirotaku Ishikawa, Shigeyoshi Yoshida
(Mitsubishi Electric)
- SS-4 Development of Fault Diagnosis System for Rotating Machinery
Masaki Miyazaki, Tetsushi Okamoto, Yasuhiro Hada
(Toshiba Mitsubishi-Electric Industrial Systems)
- SS-5 Development of Partial Discharge Detection Systems Based on Transient Earth Voltage Method
Yuuki Fujii, Yusuke Nakamura, Hiroaki Cho
(Toshiba Infrastructure Systems & Solutions Corporation)
- SS-6 On-line Partial Discharge Monitoring/Diagnosis System
Sadayuki Kanazawa, Yasuhiro Nakayama, Ryosuke Shinoki
(SOKEN ELECTRIC)
- SS-7 Partial Discharge Diagnosis system for Epoxy-Molded Equipment
Tatsuya Mutakamihigashi, Naoya Nara, Syunya Tajiri
(Kanden Engineering)
- SS-8 High-function Portable PD Detector
Chen Min, Liu Yingying, Lu Jingjing
(SE Technology)
- SS-9 Fluke ii910 Industrial Ultrasonic Camera
Susumu Yokota, Kenichi Suzuki, Hiroyuki Takamori
(TEKTRONIX & FLUKE)
- SS-10 Corona Discharge Viewer MK-760
Norio Nakata
(JFE Advantech)
- SS-11 Partial Discharge Diagnostic System AQUILATM Portable PD Diagnostics Instrument
Kiyoka Suenaga, Kenji Ushimaru, Katsuya Sasamatu
(Electric Science Technical Academy/Yokkaichi Electric)
- SS-12 The Development of Acoustic Imaging AI & Data Analysis
Tomoaki Ishikawa, Robert Albrecht
(FLIR Systems)

Tuesday, Sept. 26

09:00-10:45

Oral G - Partial discharge (2)

Chair: Masahiro Kozako (Kyushu Inst. of Tech., Japan)

- G-1 Understanding the Shielding Effectiveness of Short Carbon Fiber Reinforced MWCNT/Epoxy Composite on Electromagnetic Interference Induced by Partial Discharges
Gandluri Parameswarreddy(1), Ramanujam Sarathi(1), Suematsu Hisayuki (2), Yugandhara Rao Yadam(1), Kavitha Arunachalam(1), Rishi Verma(3)
(1)Indian Institute of Technology, India., (2)Nagaoka University of Technology, Japan., (3)Bhabha Atomic Research Center, India.)
- G-2 Partial Discharge Testing on MV Motor – Case Study
Siwakorn Jeenuang (1), Warisanan Rojanasunan (1), Kritsada Dorkmai (1), Komin Chumpiboon (1), Patt Udomluksananon (1), Norasage Pattanadech (1)
(1)King Mongkut's Institute of Technology Ladkrabang, Thailand)
- G-3 Assessment of Surface Resistivity of Insulation System Using Waveform Characteristics of Partial Discharge
Wikanda Nantanawut(1)(2), Quang Ho (1), Tomohiro Kawashima(1), Yoshinobu Murakami(1), Boonchai Techaumnat(2), Naohiro Hozumi(1)
(1)Toyohashi University of Technology, Japan, (2)Chulalongkorn University, Thailand)
- G-4 Study on the influence of frequency on the endurance life of electric vehicle drive motor under pulse-width modulation voltage
Peng Zeng(1), Wang Peng(1), Zhu Yingwei(1), Yu Chaofan(1), Shi Yang(1)
(1)College of Electrical Engineering, Sichuan University, China)

Oral H - Space charge, surface and interfacial phenomena (2)

Chair: Boxue Du (Tianjin Univ., China)

- H-1 The Influence of Electro thermal Aging on Space Charge Distribution in Polyimide Under Square Wave Voltage
Xinyang Zhu(1), Yi Yin(1), Yalin Wang(1), Lu Fan(1)
(1)Shanghai Jiao Tong University, China)
- H-2 Challenges and Pitfalls of PEA Calibration with Fast Charge Accumulating Materials
Paolo Seri(1), Alberto Rumi(1), Fabrizio Palmieri(1), Andrea Cavallini(1), Davide Fabiani(1)
(1)University of Bologna, Italy)
- H-3 Space Charge Measurement of Power Module Packaging Insulation under Square Wave Voltage at Sub-Megahertz Repetition Frequency
Yalin Wang(1), Jiandong Wu(1), Yi Yin(1)
(1)Shanghai Jiao Tong University, China)
- H-4 Simulation of Space Charge Behavior in Low-Density Polyethylene under Short Circuit Condition Using a Mobility Based on Disorder Model
Ryotaro Ozaki(1), Atsuki Date(1), Taichi Yano(1), Shinya Itoh(1), Shinji Yudate(1), Kazunori Kadowaki(1)
(1)Ehime University, Japan)

Oral I - Insulation design, reliability, aging and degradation, their detection and monitoring (3)

Chair: Naohiro Hozumi (Toyohashi Univ. of Tech., Japan)

- I-1 Study on AC Breakdown Voltage Characteristics of Dissolved Water in Insulating Oils by JIS C 2101
Inin Ou(1), Katsunori Miyagi(1), Ryoichi Hanaoka(1)
(1)Kanazawa Institute of Technology, Japan)
- I-2 Experimental studies on the sulfur corrosion behavior of copper windings in Transformer after different processings
Xu Dai(1), Yuan Yuan(2), Ruijin Liao(1), Chenghao Jian(2), Tao Zhu(2), Huiying Xiang(2)
(1)State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, China, (2)College of Materials Science and Engineering Department of Chongqing University, China)
- I-3 Effect of twin content on sulfur corrosion resistance of copper windings
Huiying Xiang(1), Yuan Yuan(1), Tao Zhu(2), Xu Dai(1), Ruijin Liao(1)
(1)College of Materials Science and Engineering, Chongqing University, China, (2)State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, China)
- I-4 Classification of the Aging condition of silicone rubber insulating material using Laser Induced Breakdown Spectroscopy adopting Recurrence Plot
R Akash(1), R. Sarathi(1), Stefan Kornhuber(2)
(1)Indian Institute of Technology, India, (2)University of Applied Sciences Zittau, Germany)

11:00-12:45

Oral J - Electrical properties of dielectrics and measurement and testing techniques (2)

Chair: Masahiro Sato (The Univ. of Tokyo, Japan)

- J-1 Multi-dimensional functionally graded spacer for HVDC-GIS
B. X. Du(1), J. N. Dong(1), H. C. Liang(1)
(1)Tianjin University, China)
- J-2 Parallel Measurements of $Q(t)$ and Space Charge Distribution in PP film
Masumi Fukuma(1), Youitsu Sekiguchi(2)
(1)National Institute of Technology, Matsue College, Japan, (2)Sumitomo Electric Industries, Ltd., Japan)
- J-3 Electrical aging properties of polypropylene and its polyolefin elastomer composites
Qilu Liang(1), Dan Cao(1), Zepeng Lv(1), Jie Yao(1), Huixin Kang(1), Kai Wu(1)
(1)School of Electrical Engineering Xi'an Jiaotong University Xi'an, China)
- J-4 Role of phase transition on breakdown characteristics of microcapsule-based thermochromic epoxy dielectrics
Jian Gao(1), Kangning Wu(1), Jianying Li(1)
(1)Xi'an Jiaotong University, China)

Wednesday, Sept. 27

09:00-09:30

Korea-Japan Young Researcher Exchange Program Chair: Hiroaki Miyake (Tokyo City Univ., Japan)

Pressure and Electric Field Analysis Considering Insulation Porosity of MI Cable

Seol Lee

(Hanyang University, Republic of Korea)

09:30-11:30

Oral K - Computational techniques for dielectrics such as quantum chemical calculation, artificial intelligence, and machine learning

Chair: Ryotaro Ozaki (Ehime Univ., Japan)

- K-1 Molecular Simulation on the Local Morphology and Electronic Behavior of PE/SiO₂ Nanocomposite
Yang Wang(1)(2), Yuanyang Ren(3), Wenchao Yan(1)(2), Qiankai Zhang(1)(2), Chuanhui Cheng(4), Wen Cao(1)(2), Kai
(1)School of Electronics and Information, Xi'an Polytechnic University, China, (2)Xi'an Key Laboratory of Interconnected Sensing and Intelligent Diagnosis for Electrical Equipment, Xi'an Polytechnic University, China, (3)State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, China, (4)Electric Power Research Institute, China Southern Power Grid, China)
- K-2 Automated Space Charge Detection Inside XLPE HVDC Cable Insulation Employing Customized Convolutional Neural Network
Sayanjit Singha Roy, Ashish Paramane, Jiwajot Singh, Xiangrong Chen
(1)National Institute of Technology Silchar, India., (2)College of Electrical Engineering, Zhejiang University, China)

- K-3 The Inversion Algorithm of Non-invasive Surface Potential Measurement Based on Wiener Filter
Lu Fan(1), Yi Yin(1), Yalin Wang(1), Xinyang Zhu(1), Meng Chen(1)
(1)Shanghai Jiao Tong University, China)
- K-4 Numerical Modeling of Time Delay Stochastic Characteristics of Partial Discharge Considering PWM Voltage's Rise Time and Overshoot Parameters
Bingshu Chen(1)(2), Yue Hu(1)(2), Lan Wu(3)
(1)Department of Electrical Engineering, School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, China, (2)Key Laboratory of Control of Power Transmission and Conversion (SJTU), Ministry of Education, Shanghai Jiao Tong University, China, (3)Shaoguan Power Supply Bureau, Guangdong Power Grid Company, China)

13:00-14:30

Poster session

- P-1 Duration of Current Application until Outer Semiconducting Layer Started Burning and Temperature Increase across Gap in Samples Simulating Breakage of Shielding Layer in 6.6 kV XLPE Cable under Constant AC Current
Takashi Kurihara(1)
(1)Central Research Institute of Electric Power Industry, Japan)
- P-2 Mechanical and insulation properties of elastomer-toughened polypropylene ternary blends for high-voltage power cable
Seunggun Yu(1), Seong Hwan Lee(1), Do-Kyun Kim(1), Ik-Su Kwon(2), Dae Ho Lee(1), Ohuk Lee(1), Il Jin Kim
(1)Insulation Materials Research Center, Republic of Korea Electrotechnology Research Institute, Republic of Korea, (2)Power Cable Research Center, Republic of Korea Electrotechnology Research Institute, Republic of Korea)
- P-3 Influence of PD characteristics within motor windings exposed to elevated temperatures
Thomas Hammarstrom(1)
(1)Chalmers University of Technology, Sweden)
- P-4 Surface Potential Decay and Hydrophobicity of Three Liquid Silicone Rubbers Before and After Direct Fluorination
Dong Li(1), Zhen Zhu(1), Xin Wang(2), Weijiang Lu(2), Zhenlian An(2)
(1)State Grid Electric Power Research Institute Co., Ltd., China, (2)Tongji University, China)
- P-5 Analysis of Influence of Various Defects on the Electric Field and Mechanical Stress Distribution of Insulation Rod
Xiaoxiao Kong(1), Chengyao Hou(1), Yun Chen(1)(2), Yifang Wang(1), Rundong Xue(1), Boxue Du, (1)
(1)Tianjin University, China, (2)China Electric Power Research Institute, China)
- P-6 Identification and Analysis of Micro Defects in Insulation Pull Rod Based on the Ultrasonic Method
Bingyue Yan(1), Wei Yang(1), Haoyu Wang(2), Chengyao Hou(3), Xiaoxiao Kong(3), Boxue Du(3), (3)
(1)Beijing Smart Energy Research Institute, China, (2)Xi'an XD Switchgear Electric Co., Ltd, China, (3) Tianjin University, China)
- P-7 Estimation of Material Properties through Charge Transport Simulation using Machine Learning
Yoshitaka Miyaji(1), Hirofuku Ishikawa(1), Kaisei Enoki(2), Kazuki Endo(2), Hiroaki Miyake(2), Yasuhiro Tanaka(2)
(1)Mitsubishi Electric Corporation, Japan, (2)Tokyo City University, Japan)
- P-8 Observation of Changes in Partial Discharge Activity in Artificial Voids Based on Analysis of Φ -q-n Characteristics and Light
Yusuke Aoki(1), Yuki Takeuchi(1), Takato Sakakihara(1), Kazuo Iida(1), Tokihiro Umemura(1), Masahiro Kozako(2),
(1)Mie University, Japan, (2)Kyushu Institute of Technology, Japan, (3) Toshiba Industrial Products and Systems Co., Japan)
- P-9 Simulation analysis of energy deposition by proton in cosmic ray for charge evaluation in insulation materials
Hirofuku Ishikawa(1), Yoshitaka Miyaji(1), Hiroki Shiota(1), Kunihiro Tajiri(1)
(1)Mitsubishi Electric Corporation, Japan)
- P-10 Breakdown characteristics of mineral oil in uniform to non-uniform electric field under AC voltage using bare electrodes
Shigeyoshi Yoshida(1), Yuta Yamanaka(1), Takahiro Umemoto(1)
(1)Mitsubishi Electric)
- P-11 Effect of Nitrogen Fine Bubbles on Negative Lightning Impulse Breakdown Voltage and Discharge Propagation Characteristics of
Norimitsu Takamura(1), Nobutaka Araoka(1), Taiki Eguchi(2), Mikiya Matsuda(2), Douyan Wang(2), Takao Namihira(2),
Masahiro Hanai(1)
(1)Fukuoka University, Japan, (2)Kumamoto University, Japan)
- P-12 Effect of high relative humidity on the thermal aging of composite epoxy insulation materials
Jielin MA(1), Yan YANG(1), Qi WANG(1), Yuheng DENG(1), Malvern YAP(2), Wen Kwang CHERN(3), Joo Tien OH(1),
Zhong CHEN(1)
(1)Nanyang Technological University, Singapore, (2)Institute of High Performance Computing Agency for Science, Technology and Research Singapore, Singapore, (3) Singapore Power Group, Singapore)
- P-13 Research on Optimization Design of GIS Grounding Grid Based on ATP-EMTP
Siqi Du(1), Wen Cao(1)(2), Wei Shen(3), Yicheng Fan(1), Xiaojun Tang(1), Jiang Wu(1)
(1)Electronic Information College Xi'an Polytechnic University, China, (2)Xi'an Key Laboratory of Interconnected Sensing and Intelligent Diagnosis for Electrical Equipment, China, (3) Electric Power Research Institute of State Grid Shaanxi Electric Power Company Limited, China)
- P-14 Estimation of Electric Field Distribution in a 220KV HVAC XLPE Cable under Differential Ageing
Priyesh Kumar Pandey (1), Azmeera Harshith Kumar (1), C. C. Reddy(1)
(1)Indian Institute of Technology Ropar, India)

15:00-18:00

MVP session 4

Cordinator: Yuichi Murakami (Meijo Univ., Japan)

- MVP4-1 Estimation of Surface Roughness using AFM Image Adopting 2D FFT And Wavelet Analysis
K. Ganesan(1), R.Sarathi(1), B. Thangabalan(1), Prof.M.G.Danikas(2)
((1)Indian Institute of Technology India, (2)Democritus University of Thrace, Greece)
- MVP4-2 Statistical Analysis of AC Breakdown Strength Characteristics according to Nanofiller Content
Keonhee Park(1), Sehee Park(1), Sanga Ryu(1), Jangseob Lim(1)
((1)Mokpo National Maritime University, Republic of Korea)
- MVP4-3 Electrical Treeing and Partial Discharges in Double Layer Printed Circuit Board
Jianhong Song(1), Zepeng Lv(1), Kai Wu(1), Zengbiao Huang(1), Yuan Li(1), Qi Li(1)
((1)Xi'an Jiaotong University, China)
- MVP4-4 Observation of Interfacial Charge Formation Process by Space Charge Microscopy
Kana Yasuda(1), Xiaoxin Li(1), Tomohiro Kawashima(1), Yoshinobu Murakami(1), Naohiro Hozumi(1)
((1)Toyohashi University of Technology, Japan)
- MVP4-5 Web-Based Simulation of Particle Motion in Ionic Wind Flow using WebGL
Naruya Ninomiya(1), Shinji Yodate(1), Ryotaro Ozaki(1), Kazunori Kadowaki(1)
((1)Ehime University, Japan)
- MVP4-6 Effect of Moisture Content on Temperature Dependence of Partial Discharge Characteristics of Biodegradable Ester Oils
Takahiro Okamoto(1), Daigo Okumura(1), Motoo Tsuchie(1), Masayuki Hikita(1), Masahiro Kozako(1)
((1)Kyushu Institute of Technology, Japan)

MVP session 5

Cordinator: Yusuke Nakamura (Toshiba Infrastructure Systems & Solutions Co.)

- MVP5-1 Effect of Polarity Reversal on Space Charge Dynamics of HVDC Cable Insulation at Different Electric Fields
Azmeera Harshith Kumar(1), Parimal Sharma(1), Iyyapan C(1), C C Reddy(1)
((1)Indian Institute of Technology Ropar, India)
- MVP5-2 Dielectric performance of UV irradiation Modified Polypropylene Film for HVDC capacitors
Kaixu Wang(1), Meng Xiao(1), Boxue Du(1), Yuning Song(1), Ke Chen(1), Shuhang Lian(2)
((1)Tianjin University, China, (2)State Grid Handan Electric Power Supply Company, China)
- MVP5-3 Measurement of Spark Discharge Inception Voltage Using CIGRE Method-II Type Metal-Air Gap-Metal Electrode System
Tomoaki Sakakibara(1), Tomohiro Kawashima(1), Naohiro Hozumi(1), Yoshinobu Murakami(1)
((1)Toyohashi University of Technology, Japan)
- MVP5-4 A study of Monte Carlo Simulation for Negative Field Dependent Charge Mobility in Polymer Based on Disorder Model
Taiki Kanamitsu(1), Akira Ohno(2), Hiroaki Iino(2), Shinji Yodate(1), Ryotaro Ozaki(1), Kazunori Kadowaki(1)
((1)Ehime University, Japan, (2)Tokyo Institute of Technology, Japan)
- MVP5-5 Investigation of space charge accumulation behavior by repeated proton irradiation
Naoto Morita(1), Hiroaki Miyake(1), Yasuhiro Tanaka(1), Naoto Hagura(1), Kaisei Enoki(1)
((1)Tokyo City University, Japan)

MVP session 6

Cordinator: Shosuke Morita (CRIEPI, Japan)

- MVP6-1 Breakdown in LDPE due to Water Ingression under DC Polarity Reversal Stress
Parimal Sharma(1), Azmeera Harshith Kumar(2), C Iyyappan(3), C C Reddy(4)
((1)Indian Institute of Technology Ropar, India)
- MVP6-2 Acoustic Emission Characteristics of SiC MOSFET Based on Flexible Sensor
Zhiming Cheng(1), Yalin Wang(1), Yi Yin(1)
((1)Shanghai Jiao Tong University, China)
- MVP6-3 Measurement of Absorbed Current of Polyester Coated Enameled Wires with Q(t) meter
Akinao Watanabe(1), Masumi Fukuma(1), Youitsu Sekiguchi(2)
((1)National Institute of Technology, Matsue College, Japan, (2)Sumitomo Electric Industries, Ltd., Japan)
- MVP6-4 Space Charge Distribution Measurement during Electron Beam Irradiation with DC Voltage Application
Kazuki Endo(1), Pierre Ribardiere(1)(2), Kaisei Enoki(1), Hiroaki Miyake(1), Yasuhiro Tanaka(1)
((1)Tokyo City University, Japan, (2)ENSEEIH Toulouse INP, France)
- MVP6-5 Classification of Electrical Treeing Images by Machine Learning of Supervised and Unsupervised Learning
Yudai Shiozaki(1), Hyeon-Gu Jeon(1), Haruo Ihori(1)
((1)Ehime University, Japan)

Thursday, Sept. 28

09:00-10:15

Oral L - Insulation design, reliability, aging and degradation, their detection and monitoring (4)

Chair: Hiroaki Miyake (Tokyo City Univ., Japan)

- L-1 Degradation Mechanism of Photovoltaic Insulating Backsheets under the Stresses of UV Radiation and Temperature
Yu Zhao(1), Jiawei Zhang(1), Abdelwahed hajjaji(2), Fouad Belhora(2), Li Wang(1), Kai Feng(1)
((1)Xi'an University of Technology, China, (2)Ningxia Guoxin Testing & Research Co., Ltd, China)
- L-2 Verticality Online Monitoring (VENOM) for Transmission Tower Assessment based on Arduino
Ary Gemayel(1), Dhany Irvandy(1), Adi Kusmiyanto(1), Lucky Prabowo(1), Joko Muslim(1), Prima Adhi Yudhistira(2)
((1)PT. PLN, Indonesia, (2)scratch robotic, Indonesia)
- L-3 Structuring dielectric interfaces for enhanced electrical strength
André Knapp(1), Fabian Kopsch(1), Anett Müller(1), A. J. Amalanathan(2), Stefan Kornhuber(2), Andreas Fery(1)
((1)Leibniz Institute of Polymer Research, Germany, (2)University of Applied Sciences Zittau, Germany)

Oral M - Electrical properties of dielectrics and measurement and testing techniques (3)

Chair: Masahiro Kozako (Kyushu Inst. of Tech., Japan)

- M-1 Time-Temperature and Time-Electric Field Correlation for Integrated Currents in XLPE
Yoitsu Sekiguchi(1), Osamu Urakawa(2), Tadashi Inoue(2)
((1)Sumitomo Electric Industries, Japan, (2)Osaka University, Japan)
- M-2 Effect of Gamma-Ray Irradiation on Charge Transport Behavior in Polypropylene/Elastomer Blends
Baixin Liu(1), Jing Li(1), Chenyi Guo(1), Yu Gao(1), Boxue Du(1)
((1)Tianjin University, China)
- M-3 The Improvement in Electrical Properties and Hydrophobicity of PRTV Silicone Rubber by the Introduction of Al₂O₃ Nanocomposite
Yan Du(1), Wenxin Gao(1), Menggen Wei(1), Bo Zhang(1), Qingdong Zhu(2)
((1)Xi'an Polytechnic University, China, (2)Electric Power Research Institute, State Grid ShanDong Electric Power Co., Ltd., China)

10:30-11:45

Oral N - Space charge, surface and interfacial phenomena (3)

Chair: Gilbert Teyssède (LAPLACE, France)

- N-1 Examination of Electric Field Distribution measured under 24-hour Load Cycle Condition
Shosuke Morita(1)(2), Norikazu Fuse(1), Toshihiro Takahashi(1), Yoshinobu Murakami(2), Naohiro Hozumi(2)
((1)Central Research Institute of Electric Power Industry, Japan, (2)Toyohashi University of Technology, Japan)
- N-2 A Study on Space Charge and Electrical Conduction Current Properties according to Thermal Stress Period of Insulation Materials for HVDC Ecofriendly Power Cables
Chul-Ho Kim(1), June-Ho Lee, (1)
((1)Hoseo University, Republic of Korea)
- N-3 Research on space charge characteristics of crosslinked polyethylene in high-voltage DC cables based on finite element simulation
Man Ding(1), Jiahe Wang(1), Qingfeng Zheng(1), Weifeng He(1), Chao Dai(1), Dingyun Wen(2), (3)
((1)College of Energy and Electrical Engineering, Hohai University, China, (2)Xi'an Jiaotong University, China, (3)State Grid Gansu Electric Power Co., Ltd. Research Institute, China)

11:45-12:15

Awarding / Closing ceremony

MC: Hiroaki Miyake (Tokyo City Univ., Japan)