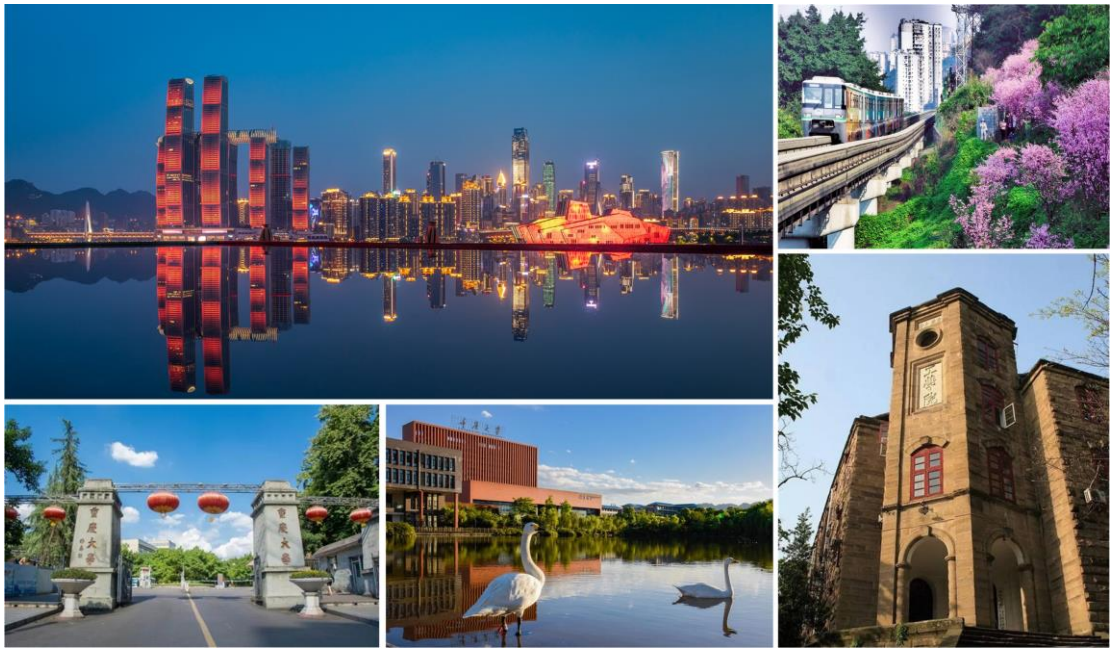
ICEMPE 2021

3rd International Conference on Electrical Materials and Power Equipment

11th-15th, April, 2021 Chongqing, China



Sponsored by:

Engineering Dielectrics Committee of China Electrotechnical Society

IEEE Dielectrics and Electrical Insulation Society

Organized by:

Chongqing University

Supported by:

Chongqing Yuneng Oil-filter Manufacturing Co., Ltd.

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ICEMPE 2021

3rd International Conference on Electrical Materials and Power Equipment

WELCOME MESSAGE FROM THE CHAIRMAN

It's our great pleasure to invite you to join the 3rd International Conference on Electrical Materials and Power Equipment (ICEMPE 2021), which will provide a forum within the international academic and engineering community in the field of electrical materials and power equipment.

ICEMPE 2021 will be held in Chongqing on April 11th-15th, 2021. It is co-sponsored by the Engineering Dielectrics Committee of China Electrotechnical Society (CES) and the IEEE Dielectrics and Electrical Insulation Society (DEIS), and it will be organized and technically supported by Chongqing University. ICEMPE is an extension of National Conference on Engineering Dielectrics (NCED) in China, which was founded in 1983 as a biennial forum and has already been successfully conducted for 16 sessions. In 2017, the 1st ICEMPE had been successfully held in Xi'an. In 2019, the 2nd ICEMPE had been successfully held in Guangzhou.

The ICEMPE 2021 will be the third conference of the series. The scientific research and development of electrical engineering are meeting new challenges as renewable energy sources are being greatly promoted. In the area of dielectrics and electrical insulation, people are paying more attention to eco-friendly dielectrics and recycling insulating materials, nanodielectrics and superconducting techniques as well as electrical insulation phenomena and charging under cosmic and radiological environment. Additionally, internationalization of power equipment industry is going so prompt that leading high voltage equipment manufacturers possess factories/workshops in many countries. Thus, there comes a growing demand to organize an international conference on electrical materials and power equipment to promote close interaction between academies and engineers, which is exactly the aim of ICEMPE 2021.

Chongqing is an economic and financial center in upper Yangtze River. It is the youngest Municipality and one of the five central cities in China, remains at the forefront of the "Go West" national development campaign with the fastest economic growth.

We are looking forward to meeting you in the very beautiful city Chongqing, China, during April 11th-15th, 2021. Definitely, ICEMPE 2021 will provide you a pleasant experience, new contacts and a memoriable stay in Chongqing.

Shengtao Li
Chairman of ICEMPE 2021

CONFERENCE COMMITTEES

Conference Chairs

Shengtao Li (China, Conference Chair)
Weigen Chen (China, Conference Executive Chair)

International Organizing Committee

Qingguo	Chen	(China)	Bo	Qi	(China)
Yonghong	Cheng	(China)	Yasuhiro	Tanaka	(Japan)
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Xingyi	Huang	(China)	Qingfeng	Xie	(China)
Pingkai	Jiang	(China)	Shuhong	Xie	(China)
Kai	Jiang	(China)	Lin	Yang	(China)
Zhijian	Jin	(China)	Lijun	Yang	(China)
Paul	Lewin	(UK)	Yi	Yin	(China)
Jian	Li	(China)	Rong	Zeng	(China)
Peng	Li	(China)	Guanjun	Zhang	(China)
Shengtao	Li	(China)	Xiaoxing	Zhang	(China)
Qingquan	Li	(China)	Hong	Zhao	(China)
Ruijin	Liao	(China)	Lisheng	Zhong	(China)
Guoming	Ma	(China)	Ming	Zhou	(China)
M. Tariq	Nazir	(Australia)			

International Advisory Board

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Jianyu	Pan	(China, Co-Chair)	Hualong	Zheng	(China)
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Han	Zhang	(China)			

Local Arrangements Committee

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Potao	Sun	(China, Co-Chair)	Quan	Zhou	(China)
Ming	Yang	(China, Co-Chair)	Yu	Wang	(China)
Youyuan	Wang	(China)			

Secretary

Feipeng	Wang	Secretary-general	(China)
Fu	Wan	Secretary	(China)
Zhengyong	Huang	Secretary	(China)

LOCATION

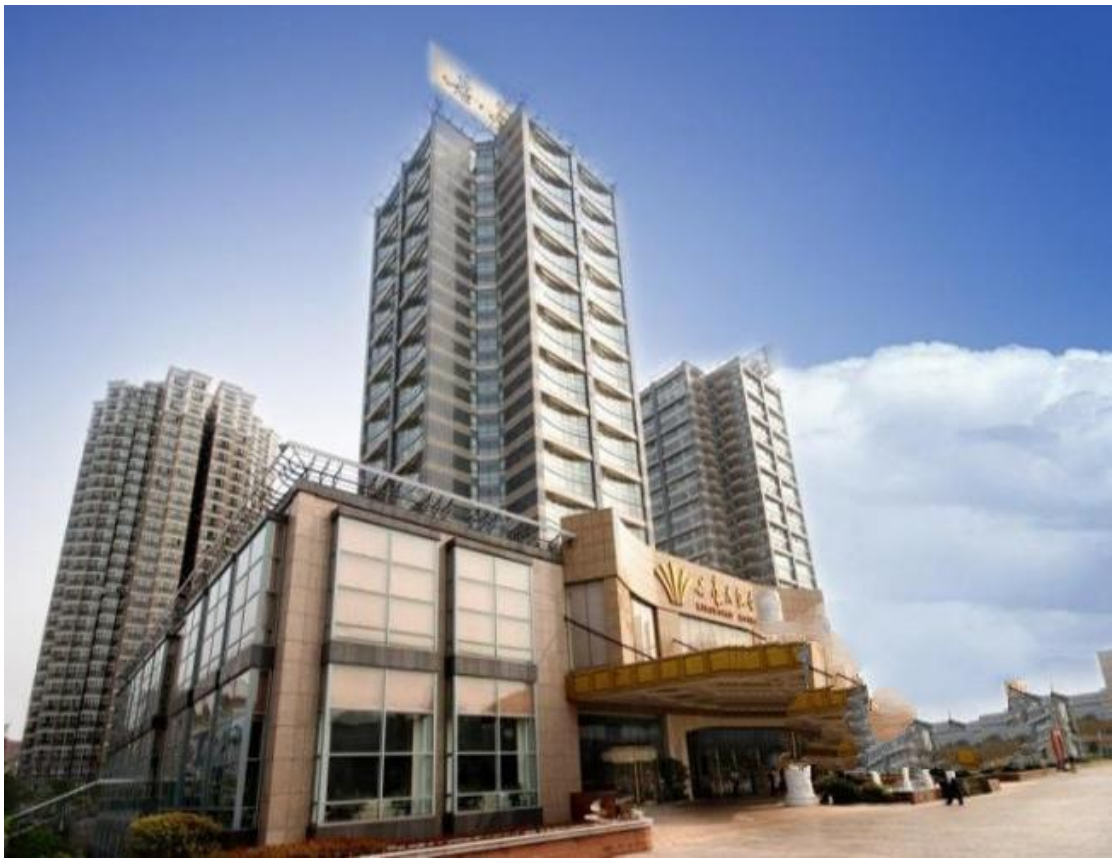
The ICEMPE 2021 will be held at **King World Hotel Chongqing** (重庆君豪大饭店) in Chongqing, China. We are sure that you would enjoy a comfortable and enjoyable trip in Chongqing.

Conference Location: King World Hotel Chongqing (重庆君豪大饭店)

Hotel: King World Hotel Chongqing

Address: 9 Jinyuan Road, Jiangbei District, Chongqing, China. (中国重庆市江北区金源路 9 号)

Tel：+86-23-86338888



To King World Hotel Chongqing:

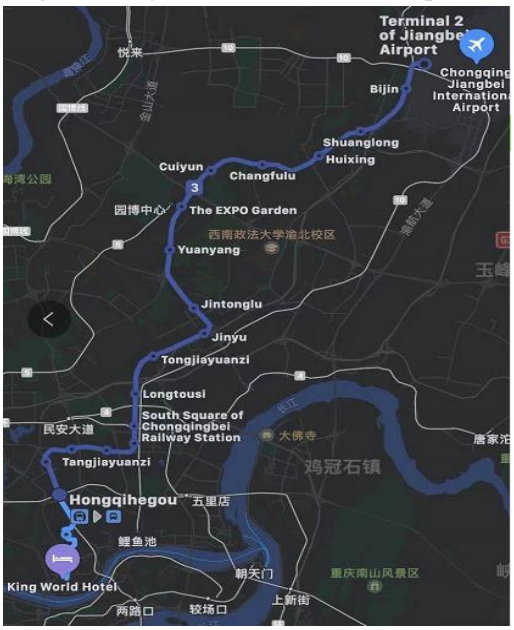
1)✈️**From Chongqing Jiangbei International Airport:** the hotel is 27 km away from the airport.

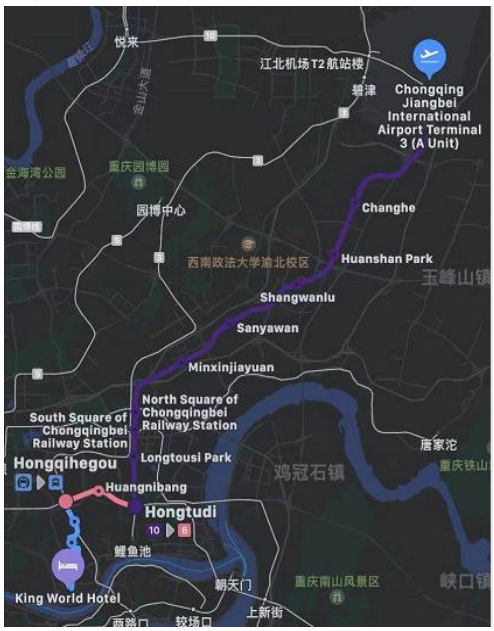
🚕It takes about 35 minutes and 60 RMB to reach the hotel **by taxi**.

🚌It takes about 80 minutes and 17 RMB to reach the hotel by **shuttle bus**. Take airport shuttle bus K01 and get off at the Stop "大庙龙湖新壹街(Xinyijie)", and take the line 630 bus (Toward Xingzhu Lu, 2 RMB, hours: 07:00-20:55), after 4 stops (8 min), get off the bus at Jinyuan Lu stop, and walk about 5 min to the hotel.

🚇It takes about 80 minutes and 8 RMB **by subway**. **From terminal 2 of the airport,** walk 2 min to enter terminal 2 of Jiangbei Airport subway station, and take the line 3 train (Toward Yudong, Hours: 06:30-22:30,6 RMB), after 17 stops (46 min), get off the train at Hongqihegou, and follow the signs for Exit 3, then walk 4 min to get to Yutong bus stop, and take the line 630 bus (toward Xingzhu Lu,2 RMB, hours: 07:00-20:55), after 4 stops (8 min), get off the bus at Jinyuan Lu stop, and walk about 5 min to the hotel. **From terminal 3 of the airport,** walk 4 min to enter terminal 3

of Jiangbei Airport subway station and take the No.10 train toward Liyuchi, transfer to line 6 toward Beibei at Hongtudi after 9 stops and 32 min, and get off the train at Hongqihegou after 2 stops and 4 min, follow the signs for Exit 3 and walk 4 min to take the line 630 bus toward Xingzhu Lu at Yutong station, get off the bus after 4 stops and 8 min, you could see the hotel after 5 min walking.

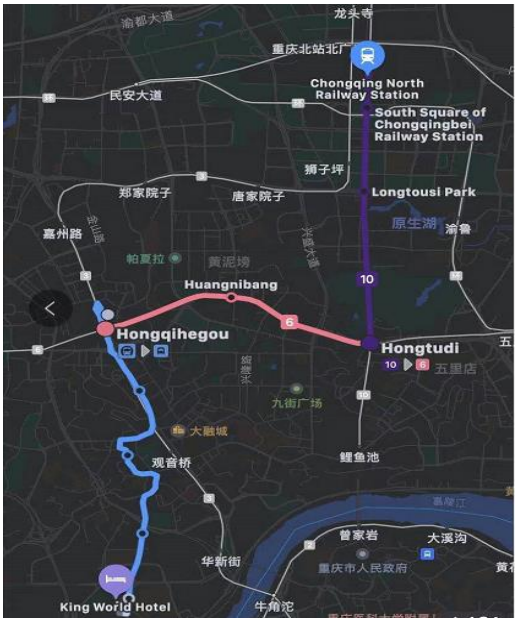


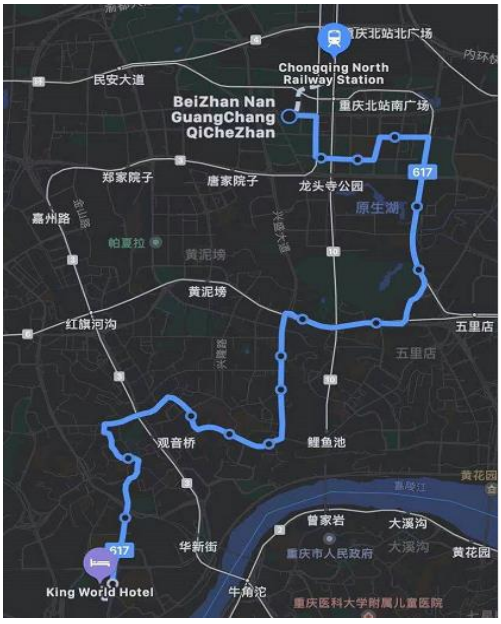


2) From Chongqing North Railway Station: the hotel is 12 km away from the station.

It takes about 25 minutes and 30 RMB to reach the hotel **by taxi**.

It takes about 48 minutes and 4 RMB **by subway**. Walk 2 min to enter North Square of Chongqing North Railway Station subway station and take the line 10 train (toward Liyuchi, Hours: 06:34-23:15,2 RMB), after 3 stops and about 5min, get off the train at Hongtudi stop, follow the signs to transfer to Line 6 toward Beibei, and get off the train after 2 stops and 4 min, then follow the signs for Exit 3, and walk 4 min to Yutong bus stop and take line 630 bus toward Xingzhu Lu, get off the bus at Jinyuan Lu after 4 stops, you would see the hotel after walking for 5 min. You could also walk for 10 min to bus stop Beizhan Nan Guangchang bus station to take the line 617 bus toward Xingzhu Lu, after 15 stops, get off at Jinyuan Lu, then walk 5 min to the hotel.

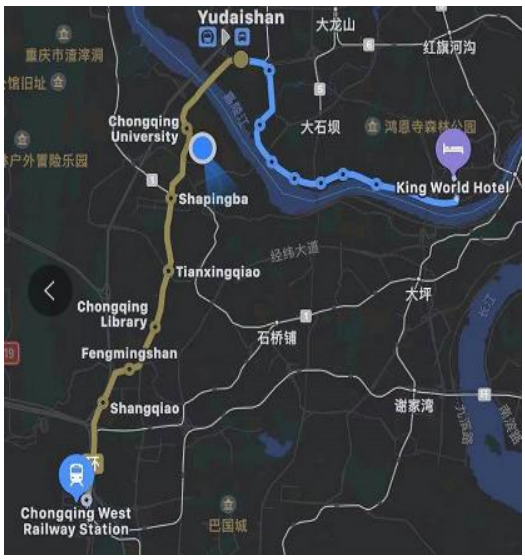


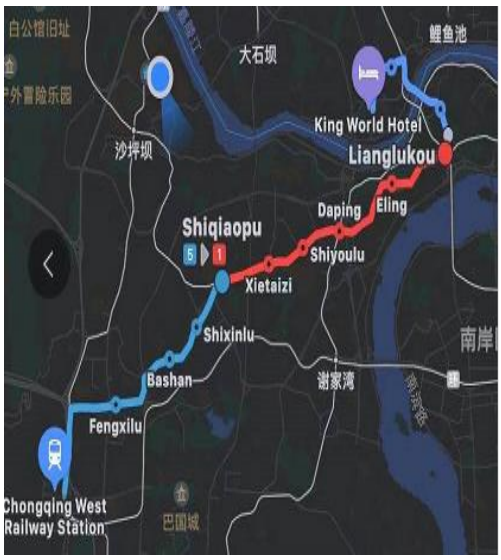


3) From Chongqing West Railway Station: the hotel is 16 km away from the station.

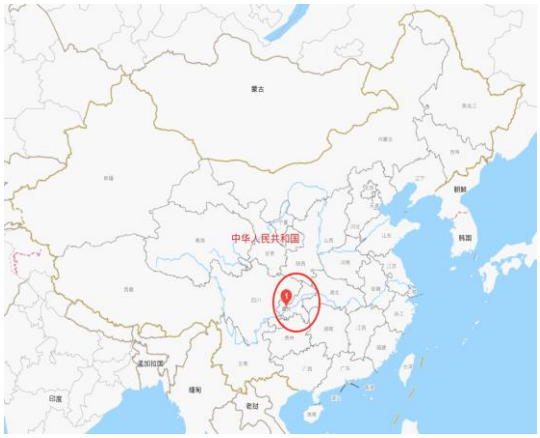
It takes about 22 minutes and 30 RMB to reach the hotel **by taxi**.

It takes about 60 minutes and 6 RMB **by subway**. Walk 2 min to enter Chongqing West Station subway station to take the line 5 train toward Shiqiaopu, transfer to line 1 at Shiqiaopu after 4 stops and 9 min, get off the train at Lianglukou after 5 stops and follow the signs for Exit 1, then walk 7 min to Wen Huagong bus stop to take the line 401 or 615 bus, get off the bus at Jinyuan Lu, and walk 5 min to hotel. You could walk 2 min to take the Railway Traffic Ring Road Inner Loop Train at Chongqing West Station and get off the train at Yudaishan after 7 stops and 25 min, follow the signs for exit 4 and walk 3 min to Guidao Yudaishan bus stop to take line 615 bus to Jinyuan Lu, and walk 8 min to the hotel.





Connections to Chongqing



By Air: Chongqing Jiangbei International Airport is located in Chongqing Yubei District, 19 km from the center of the city, which is one of the eight regional hub airports in China. Flights are available to all other major cities in China including Beijing, Shanghai, Xi'an, Guangzhou, Shenzhen, Hongkong, etc. There are direct international flights between Chongqing and Japan, Korea, Singapore, Thailand and Malaysia. Taxi cabs and the airport shuttle bus and subway are the major transportation tools between downtown and the airport. The subway costs under 7 RMB and the taxi cost about 80 RMB to the main district of Chongqing.

By Train: There are three major railway stations. Chongqing North Railway Station, Chongqing West Railway Station and Shapingba Railway Station. Chongqing West Railway Station is now the largest railway station in Chongqing. Most trains from all around China would stop at Chongqing North Railway Station and Chongqing West Railway Station.

CONFERENCE INFORMATION

Official Language

The official language is English, which will be used in all presentations and printed materials.

Name Badges and On-site Registration

Participants are required to wear name badges at all times in order to enter the conference area and participate in social activities. Participants can make on-site registration at the registration desk located in the lobby of King World Hotel Chongqing (1st F). Service hours of registration desk are as follows.

Sunday	April 11, 2021	9:00-21:00
Monday	April 12, 2021	8:30-12:00
Tuesday	April 13, 2021	8:30-12:00
Wednesday	April 14, 2021	8:30-12:00

Participants can still make on-site registration in the above service hours.

Category	Early Bird (Before 10th March)		Normal (After 10th March)		Registration fee covers
IEEE Student Member	$400	¥2600	$450	¥2925	-Conference Material -Admission to Session -Welcome Reception -Lunch& Dinner -Banquet -Technical Tour
Student Member	$500	¥3250	$550	¥3575	
IEEE/CES/IEEJ/KIEE Member	$600	¥3900	$650	¥4225	
Others	$650	¥4225	$700	¥4550	
	Deadline: 1st April, 2021				
Virtual Conference (only for international participant)	$200		$200		

Lunch & Dinner

Lunch & Dinner will be provided during the conference. All participants can have buffet in the Junhao Cafeteria on the 1st floor on April 12th to April 14th. It should be noted that the dinner (banquet) will be provided in Grand Ballroom on the 2nd floor on April 13th, and that only the lunch will be provided in the Junhao Cafeteria on the 1st floor.

Wi-Fi Access

Wireless Internet will be available in King World Hotel Chongqing.

Message and Announcement Boards

Message and Announcement Boards will be set up in the registration areas so that participants can get useful information from the secretariat or other participants.

Guidelines for Oral Presentation Presenters

Each invited speech is allocated **25 minutes, including 22 minutes of presentation and 3 minutes of Q&A**. Each paper in an oral session is allocated **15 minutes**. This includes time required for introduction of the speaker, as well as time for questions from the audience. Therefore, authors are advised to prepare a 13 minutes talk and leave 2 minutes for questions at the end.

Please submit your PPT via haojian2016@cqu.edu.cn, or submit via USB flash drive at the registration desk. Please arrive at your session at least 10 minutes before the start of your session. If you choose to bring PPT slides with video clips on USB, you can bring your materials in a couple of different PPT versions and try them out prior to the presentation. Only PowerPoint ® files (.ppt or .pptx) with the version of 2021 or earlier are supported for oral presentation.

lf you need additional audio/visual equipment, please notify us by email icempe2021@cqu.edu.cn before 8th April. lf your presentation includes any videos or animations, it is strongly recommended to convert them into the graphic interchange format (GIF) before inserting them into the PowerPoint® document because special video format might not be displayed properly on the computer.

lf you have to be absent from the ICEMPE 2021 for some irresistible reasons, please inform us in advance via icempe2021@cqu.edu.cn.

Guidelines for Poster Presenters

The poster board is 100 cm wide and 240 cm high. The poster presentation should include following items in addition to the main contents.

- Title of the presentation
- Authors' names and their organizations
- Introduction
- Conclusion

The poster boards are marked with the sequence No. of corresponding paper. Please do not cover the numbers. A poster information desk with fixing materials will be available.

Please put up your poster prior to the start of the poster session and remove it shortly after the session.

OFFICIAL & SOCIAL EVENTS

Welcome Reception

You are invited to join us at the Welcome Reception to welcome colleagues.
Date & Time: 18:00-20:30, April 11th (Sunday)
Location: Jinhaoyuan Chinese Restaurant, King World Hotel Chongqing (B1 F)

Opening Ceremony and Chen Jidan Award & Memorial Lecture

Date & Time: 08:30-10:10, April 12th (Monday)
Location: Grand Ballroom, King World Hotel Chongqing (2nd F)

Banquet

Date & Time: 18:30- 21:00, April 13th (Tuesday)
Location: Grand Ballroom, King World Hotel Chongqing (2nd F)

Excellent Paper Award and Closing Ceremony

"Excellent Paper Award" will be awarded before Closing Ceremony. All presenters are advised to attend the closing ceremony.
Date & Time: 18:30, April 14th (Wednesday)
Location: Grand Ballroom, King World Hotel Chongqing (2nd F)

Excellent Paper Awards

Excellent Paper Awards are granted to presenter demonstrating excellent research works. At the same time, the award aims to inspire researchers who have been very active in electrical materials and power equipment.

China Session

China session is part of the oral session. The invited speakers and oral speakers are allowed to give their presentation in Chinese.
Date & Time: 8:30, April 15th (Thursday)
Location: Jinhaoyuan Chinese Restaurant, King World Hotel Chongqing (B1 F)

TECHNICAL TOUR

Technical tour is planned to make your conference experience even more interesting and enjoyable. Please confirm your joining at the registration desk by 11th April, 2021.

Date & Time: 13:30-18:00, April 13th (Tuesday)
Itinerary: King World Hotel Chongqing —Chongqing ABB Transformer Co., Ltd.
Assembly Point: Lobby of Main Entrance (1st F), King World Hotel Chongqing.
Assemble Time: 13:30

Chongqing ABB Transformer Co., Ltd.—A Brief Introduction

Chongqing ABB Transformer Co., Ltd. was established in 1998 by ABB Group and Chongqing Transformer Co., Ltd., which is located by Huayan Lake, a scenic spot in Chongqing, with an area of 120,000 square meters. As one of ABB's largest transformer manufacturing bases in the world. Chongqing ABB Transformer Co., Ltd. focuses on the design and production of power transformers, reactors, HVDC converter transformers and UHV AC transformers, with an annual production capacity of more than 50,000 MVA and about 520 employees.

Chongqing ABB Transformer Co., Ltd. is also the transformer design center of ABB worldwide, with a group of senior engineers and technicians with ABB design concept, representing the leading technology level of ABB in the world. It provides customized product designs and solutions to extremely complex technical problems using ABB's global transformer design platform and standards, as well as supports ABB's design and technical service requirements in other countries. The company has advanced production and testing equipment, the application of the world's leading and constantly updated transformer and reactor design and manufacturing technology, to ensure the reliable quality of power transformer and reactor. And so far, the company has successfully participated in many national key projects, including the famous engineering on the right bank of the Yangtze River Three Gorges water conservancy hub project, ±800 kV UHV DC transmission project, as well as the world's first ±1100 kV UHV DC transmission project. At the same time, the products have been exported to Singapore, Laos, Australia and other 19 overseas markets.

Chongqing ABB Transformer Co., Ltd. is also ABB's insulation manufacturing center in the Asia Pacific region, providing ABB's transformer factories in the Asia Pacific region and domestic transformer manufacturers with top-quality insulation parts.

GENERAL INFORMATION

Local Time

GMT +8 hours (Beijing Time)

Weather and Climate

Chongqing is located at the confluence of two rivers, and is known as the "Mountain City" and the "Fog City". The weather here is usually rainy and foggy. It is better to bring an umbrella. The usual temperature in April is 23℃.

Currency

The unit of currency in China is the Chinese Yuan (RMB). Notes occur in 100, 50, 20, 10, 5 and 1 Yuan denominations, while coins in 1, 0.5, 0.1 Yuan denominations.

Business Hours

Government office hours are usually from 9:00 to 17:00 on weekdays and closed on weekends. Banks are open from 9:00 to 17:00 on workdays and from 10:00 to 17:00 on weekends. Major stores open daily from 10:00 to 22:00.

Useful Phone Numbers

-Police 110 / Fire 119 / Ambulance 120

-General:

Feipeng Wang	+86-185 8076 8887

-Secretary:

Zhengyong Huang	+86-130 6236 6645
Fu Wan	+86-136 4843 8210

CONFERENCE CHAIR

Professor Shengtao Li
Xi'an Jiaotong University, Xi'an, China

Biography

Shengtao Li was born in Sichuan, China, in February 1963. He received the B.S. M.S. and Ph.D. degrees in electrical engineering from Xi'an Jiaotong University (XJTU) in 1983, 1986, and 1990, respectively. He worked at Waseda University, Tokyo, Japan, as JSPS research fellow for 3 months in 1996, and did research at the University of Southampton, UK, as a senior visiting scholar for 6 months in 2001. He was a Lecturer, Associate Professor, and Professor with Xi'an Jiaotong University, China, in 1990, 1993, and 1998, respectively. From 1993 to 2003, he was a deputy director of the State Key Laboratory of Electrical Insulation and Power Equipment (SKLEIPE) in Xi'an Jiaotong University. Since 2003, he has been an executive director of SKLEIPE. He is an Associate Editor of the IEEE Transactions on Dielectrics and Electrical Insulation. In 2014, he took the guest editorship of the Special Issue of IEEE TDEI to Recognize and Celebrate the 60th Anniversary of Electrical Insulation and Dielectrics in China. His research interests are dielectric theory and application, functional materials and devices, insulating materials and insulation technology in extreme environments. He can be reached by email at sli@mail.xjtu.edu.cn.

CONFERENCE EXECUTIVE CHAIR

Professor Weigen Chen
Chongqing University, Chongqing, China

Biography

Weigen Chen was born in Zhejiang, China in August 1967. He received his B.Sc., M.Sc., and Ph.D. degrees in electrical engineering from Chongqing University, China in 1990, 1993, and 2003, respectively. Currently he is a professor in the School of Electrical Engineering at Chongqing University. His main research interests include online monitoring and fault diagnosis of power equipment, condition based maintenance, and the internal insulation and thermal properties of power transformers. He can be reached by email at weigench@cqu.edu.cn.

CHEN JIDAN AWARD & MEMORIAL LECTURE

The Gassing of Insulating Fluids

Professor Issouf Fofana
Université du Québec à Chicoutimi (UQAC)
Chicoutimi, QC Canada

Synopsis

Since the end of the 1950s, the extraction of dissolved gases from an oil sample and the determination of the nature and concentration of these gases has been serving as a means of faults detection. The type and extent of a defect can often be diagnosed from the composition of the gases and the rate at which they are produced. This technique, known as Dissolved Gas Analysis (DGA) for detecting certain categories of faults in oil-filled devices that cannot be readily detected by other conventional methods, remains one of the most widely used today. Although there is general consensus that increasing the concentration of dissolved gas is a precursor of local deterioration of insulation, opinions differ when it comes to interpretation of the symptoms. Consequently, the first step towards improving the accuracy of DGA techniques should be understanding the mechanisms associated with chemical reactions contributing to the generation of fault gases in transformer oils. This speech intends to show how the chemical composition of the insulation system may affect the analyses. Some data was also included for further understanding.

Biography

Issouf Fofana (M'05-SM'09) obtained his electromechanical engineering degree in 1991 from the University of Abidjan (Côte d'Ivoire), and his master's and doctoral degrees from École Centrale de Lyon, France, in 1993 and 1996, respectively. He was a postdoctoral researcher in Lyon in 1997 and was at the Schering Institute of High Voltage Engineering Techniques at the University of Hanover, Germany, from 1998 to 2000. He was a Fellow of the Alexander von Humboldt Stiftung from November 1997 to August 1999. He joined Université du Québec à Chicoutimi (UQAC), Québec, Canada, as an Associate Researcher in 2000, and he is now a professor there. Dr. Fofana held the Canada Research Chair, tier 2, of insulating liquids and mixed dielectrics for electrotechnology (ISOLIME) from 2005 to 2015. He currently holds the Research Chair on the Aging of Power Network Infrastructure (ViAHT) and is director of the MODELE laboratory and of the International Research Centre on Atmospheric Icing and Power Network Engineering (CenGivre) at UQAC. Professor Fofana is an accredited professional engineer in the province of Québec and Fellow of the IET. He is currently a member of the DEIS AdCom and of the international scientific committees of some IEEE DEIS-sponsored or technically sponsored conferences (ICDL, CEIDP, ICHVE and CATCON). He is a member of the ASTM D27 committee. He has authored or co-authored over 280 scientific publications, two book chapters, one textbook, has edited two books and holds three patents.

INVITED SPEAKER

New Approach to Miniaturization and Weight Reduction of High-voltage Electrical Equipment

Professor Guangning Wu
Southwest Jiaotong University, Chengdu, China

Synopsis

The miniaturization and weight reduction of high-voltage electrical equipment is the development goal of the discipline of high-voltage and insulation technology. Traditional high-voltage equipment has the disadvantages of large volume, weight and low power density. Efficient heat dissipation management technology is an important means to achieve small-size and lightweight high-voltage equipment. This report mainly explores new ideas for using phase-change heat dissipation technology to achieve miniaturization and weight reduction, including two aspects: first, introduction to the application prospects of phase-change heat dissipation technology in vehicle transformers; second, proposing a centralized heat management strategy for high-voltage equipment based on phase-change heat dissipation technology. The miniaturization and weight reduction of high-voltage electrical equipment is the development goal of the discipline of high-voltage and insulation technology. Traditional high-voltage equipment has the disadvantages of large volume, weight and low power density. Efficient heat dissipation management technology is an important means to achieve small-size and lightweight high-voltage equipment. This report mainly explores new ideas for using phase-change heat dissipation technology to achieve miniaturization and weight reduction, including two aspects: first, introduction to the application prospects of phase-change heat dissipation technology in vehicle transformers; second, proposing a centralized heat management strategy for high-voltage equipment based on phase-change heat dissipation technology.

Biography

Guangning Wu, born in 1969, PhD, Distinguished Professor of Southwest Jiaotong University, IEEE Fellow, IET Fellow, CIGRE SC B2 Strategy Advisory Group (SAG) member, Customer Advisory Group (CAG) member and regular member, as well as the head of National innovation team in key areas of China. He is the author (or coauthor) of over 10 IEC/IEEE standards, over 10 monographs and more than 200 academic papers. With the aim of ensuring the safe operation of traction power supply equipment for high-speed electrified railways, Prof. Wu has been focusing on researching about the condition evaluation of the traction power supply equipment. The researching work mainly includes three aspects: overvoltage protection theory and key technology for the traction power supply system, insulation failure mechanism and detection technology for the key equipment in traction substation, insulation failure mechanism and evaluation method for the traction motors of high-speed trains.

INVITED SPEAKER

Dielectrically Graded Insulation: Concept, Design, Fabrication and Evaluation

Professor Guanjun Zhang
Xi'an Jiaotong University, Xi'an, China

Synopsis

In high voltage devices, the reduction of breakdown strength due to local electric field distortion is a universal problem, which severely restricts the insulation performance. Dielectrically Graded Insulation (DGI) is a novel dielectric material with spatially inhomogeneous distribution of permittivity and/or conductivity. It could be applied to effectively control the electric field distribution, and thus to remarkably improve the breakdown strength. In this speech, the concept of DGI and the research progress on its design, fabrication and evaluation are thoroughly described. For the concept of DGI, its origin from functionally graded material (FGM) is introduced, and the underlying mechanism of electric field regulation is described. Secondly, the design method of spatial permittivity/conductivity distribution in DGI is investigated, including iterative, intelligent and topology optimization approaches. Thirdly, typical DGI fabrication methods are presented, which emphasizes the application of flexible, effective 3D printing technology. Finally, a brief discussion is made on the evaluation approaches of DGI, including non-destructive measurement on the spatial permittivity distribution and prediction model of surface flashover in gaseous and vacuum ambient. It is expected to give a guidance to the academic study and industrial application of DGI, which is promising in performance enhancement and geometrical downsizing of electric power equipment and pulsed power devices, etc.

Biography

Guanjun Zhang was born in Weifang, Shandong, China in 1970. He received B.S., M.S. and Ph.D. degrees in electrical engineering from Xi'an Jiaotong University (XJTU), Xi'an, China, in 1991, 1994 and 2001, respectively. He is currently a professor at School of Electrical Engineering, XJTU, China, and the director of Center for Advanced High Voltage and Plasma Technology. His main interests cover high voltage insulation and discharge characteristics, fault diagnosis and condition maintenance for power equipment, discharge plasmas and multi-disciplinary applications, etc. He has been visiting researcher at Tokyo Institute of Technology, visiting scientist at Plasma Physics Laboratory, Princeton University, JSPS fellow at Saitama University, and visiting professor at University of Southampton. He has published 300 papers and held 30+ patents. Prof. Zhang received 2011 Distinguished Young Scholar of NSFC, 2008 IEEE ISDEIV Chatterton Young Investigator, 2006 Fok Ying Tong Research Award for University Young Teachers, and 2003 National Top 100 Excellent Doctoral Dissertation Award of China. He can be touched at gjzhang@xjtu.edu.cn.

INVITED SPEAKER

Multiple Stress Affecting Insulation Breakdown Behavior of HVDC Cable Accessories

Professor Boxue Du
Tianjin University, Tianjin, China

Synopsis

High voltage direct current (HVDC) power transmission plays a key role in the global power grid today and in the future, particularly for high-capacity, long-distance, and regional power grid interconnections. HVDC Cable accessories are the key components and the weakest insulation links in cable transmission system. During polarity reversal and over voltages on the HVDC system, polymeric insulation can breakdown in cable accessories. In addition, multi-physics operating conditions will accelerate the aging of the insulation of DC cable accessories. This invited keynote speech summarizes the latest research progress on the electric tree degradation and breakdown of HVDC cable accessories. The effects and mechanisms of multiple physical fields, including electrical, thermal, magnetic and mechanical field, on insulation ageing and breakdown for HVDC cable accessories are discussed. Then, the novel nanoparticles and voltage stabilizers with polar groups to suppress electrical trees are presented for HVDC cable accessories. We intend that this presentation will help academics and industry toward the higher voltage level of HVDC cable accessories insulation.

Biography

Boxue Du is a Professor and Director-founder of the Institute of High Voltage at the School of Electrical and Information Engineering, Tianjin University, China. His research interests are focused on dielectric failure mechanisms of polymer insulating materials, electrical insulation technology and application of polymer dielectrics under various extreme environments such as cryogenic, high temperature, high altitude, gamma-ray irradiation and high-intensity magnetic field. He has published 5 books including "High Voltage DC Cable Accessories Insulation" (Science Press, 2020); "Polymer Insulation Applied for HVDC Transmission" (Springer, 2021); "Accelerating the Discovery of New Dielectric Properties in Polymer Insulation"(CyberTech, 2017); "Electrical Insulation Breakdown and Its Theory, Process, and Prevention" (IGI Global, 2019); "Properties and Application of Polymer Dielectrics" (InTech, 2017), and 24 book chapters in Polymer Dielectrics, and authored about 500 papers and over 150 of them published in IEEE Transactions.

INVITED SPEAKER

Dielectric Polymer Nanocomposites with High Thermal Conductivity

Professor Xingyi Huang
Shanghai Jiao Tong University, Shanghai, China

Synopsis

The increasing power density and miniaturization generated much heat in electronic devices and electric equipment, and thus seeking high-efficiency thermal management materials becomes more urgent and important for ensuring their reliability. Thermally conductive polymer composites have strong potential as thermal management materials because of their ease of processing, lightweight and low cost. In this presentation, the speaker will present the recent advances in thermally conductive polymer/boron nitride nanocomposites. Here, the boron nitride filler may include boron nitrite nanotubes (BNNTs), boron nitrite nanosheets (BNNSs), boron nitrite nanospheres (BNNPs) or hybrids of BN and other filler. Interface is an important factor in determining the composite property, while most of attention was paid to the interface between the polymer matrix and the filler. In this talk, however, emphasis will be given to how to tailor the filler/filler interface for thermally conductive polymer nanocomposites. Some applications of the thermally conductive polymer/boron nitride nanocomposites will be introduced.

Biography

Xingyi Huang is now a full professor at Research Center of Dielectrics and Electrical Insulation, Shanghai Jiao Tong University. Huang's research focuses on polymers nanocomposites for dielectric, energy and thermal applications. He received his Ph.D. from Shanghai Jiao Tong University in 2008 and had postdoctoral experience in the same university. From 2011 to 2012 he was a visiting scholar at Waseda University. Currently, Huang serves as Associate Editor of two journals (IEEE Transactions on Dielectrics and Electrical Insulation, High Voltage) and editorial member of Composites Science and Technology, Chinese Chemical Letters.

INVITED SPEAKER

Strengthening the Interconnected Grid for Improved Integration of Renewable Energies - German 525 kV HVDC Cable Projects with Extreme Lengths

Professor Ronald Plath
Technische Universität Berlin, Germany

Synopsis

The German energy transition aims to completely replace nuclear and fossil power plants with renewable energy sources. The last three nuclear power plants in Germany will be shut down in 2022. In order to be climate-neutral by 2050, the decarbonisation of the entire energy system is required, among other things. In 2020, the German Bundestag had decided to phase out coal-fired power generation by 2038 at the latest. The decommissioning of the large synchronous generators with their enormous rotational inertia, which has already begun, leads to major challenges to ensure grid stability in the future. The energy transition will eventually lead to a low-inertia grid based mainly on converter-coupled solar and wind generators as well as hydropower plants. Combined with the volatile nature of wind and solar, this requires new strategies for proper frequency and voltage control as well as for black start capability. In Germany, solar energy production is mainly located in the south, while wind energy (onshore and offshore) is very much concentrated in the north. The German TSOs (transmission system operators) have therefore decided to build several so-called HVDC corridor projects with lengths of up to 800 km. These connections are intended to avoid temporary overloads and (virtual) redispatching in the existing AC-380 kV interconnected grid and to better balance the fluctuating power generation between north and south. Typically, such connections are realized as overhead lines. But these plans provoked fierce public opposition. As a result, the German government gave priority to cable over overhead lines in 2015. For the first time in the world, 525 kV HVDC polymer-insulated land cables are now being installed on a very large scale in Germany. After successfully passing the required prequalification tests, the TSOs began ordering the cables in 2020. The total investment in these HV interconnections is estimated at 50-70 billion euros. According to the German national annex to IEC 62895, as of February 2019, DIN IEC 62895 recommends that the mandatory DC after-installation test be extended to include an (optional) AC after-installation test. If possible, the AC test should be combined with partial discharge (PD) measurements. The current status and technical challenges of these projects will be reported.

Biography

Ronald Plath was born in Berlin, Germany in 1962. He received the M.S. and Ph.D. degrees in electrical engineering from the Berlin University of Technology in 1987 and 1994, respectively. He is a member of DKE K124 (German mirror committee of IEC TC42) and of CIGRE DAK B1 working groups and TFs. He is author of several international reports.

INVITED SPEAKER

Progress in Recyclable High Voltage Cable Insulation Materials for Bulk Power Transmission

Professor Jinliang He
Tsinghua University, Beijing, China

Synopsis

With the development of renewable energy, especially the offshore wind power, cable power transmission is becoming very important. Traditional crosslinking polyethylene (XLPE) cable insulation cannot meet the requirement of environmental protection and sustainable development. This invited keynote speech summarizes the progress in the development of recyclable high voltage cable insulation materials, especially the PP based cable insulation materials. Propylene based materials, including the blends with other elastomers and copolymers are introduced as the base material for both AC and DC cable insulation application; secondly the effects and mechanisms of adding nanoparticles and grafting with polar groups in tailoring the properties of PP based cable insulation under DC electric field are discussed; thirdly, the space charge performances under high temperature and high electrical field, are presented. Finally, the application of PP cables is introduced, and the issues for future research are introduced.

Biography

Jinliang He (M'02-SM'02-F'08) was born in Changsha, China, in 1966. He received the B.Sc. degree from Wuhan University of Hydraulic and Electrical Engineering, Wuhan, China, in 1988, the M.Sc. degree from Chongqing University, Chongqing, China, in 1991, and the Ph.D. degree from Tsinghua University, Beijing, China, in 1994, all in electrical engineering. He became a Lecturer in 1994, an Associate Professor in 1996, and a professor in 2001, in the Department of Electrical Engineering, Tsinghua University. From 1997 to 1998, he was a Visiting Scientist with the Korea Electrotechnology Research Institute, Changwon, Korea. During Jan. 2014 to Jan. 2015, he was a Visiting Professor in the Department of Electrical Engineering, Stanford University. Currently, he is the Chair of the High Voltage and Insulation Research Institute, Tsinghua University. His research interest covers advanced power transmission technology, nanodielectric materials, nanotechnology and MEMS based smart sensors. He is the author of seven books and more than 500 academic papers, among which around 400 papers have been published in international academic journals and transactions. He was selected as an IEEE Fellow in 2007, he was the recipient of the IEEE EMCS Technical Achievement Award in 2010, and the recipient of 2018 IEEE Herman Halperin Electric Transmission and Distribution Award.

INVITED SPEAKER

Insulating Liquids Toward a Sustainable Future——Ester-based Oil

Professor Feipeng Wang
Chongqing University, Chongqing, China

Synopsis

The ever-growing electricity demand has been accompanied by rising great challenges from traditional petroleum-based mineral insulating oil, from non-renewable energy crisis, to environmental unfriendliness, to fire hazards, and to operating efficiency dissatisfaction. Never before has the power world faced such a need for more reliable, safer, and cleaner insulating liquid as mineral oil replacement, and a need for sound scientific knowledge and expertise to deeply understand and tackle challenges/obstacles that currently exist for alternative dielectric liquids. This talk will discuss recent progresses on developing ester-based insulating oils that hold promise to replace mineral oil with particular performance advantages and environmental impact; more significantly, ester-based oils fill the vacancies of some specific application scenarios where mineral oils fail to satisfy the fire-safety and environmental standards, such as offshore wind farms, locomotive tractions, modern cities, natural reserves, underwater affairs, etc. To this end, first, we will briefly touch on the evolution of insulation fluids. Second, some physicochemical properties of ester-based oil will be introduced. Next, ester-based insulating fluids will be analyzed in terms of aging properties and followed by streamer development and breakdown phenomena. Last, the general outlook and conclusion will be provided. We intend that this presentation will help academia and industry toward the next set of research and development actions for renewable and sustainable ester-based insulating fluids.

Biography

Feipeng Wang was born in Henan province, China in 1977. He received Ph.D. degree from Tongji University, China in 2007 in Materials Physics and Chemistry. He is now working at the School of Electrical Engineering of Chongqing University as a University Professor focusing on Engineering Dielectrics and Applications in Power Grid. He was a Post Doc, a DFG Fellow, and a senior scientist sequentially in the University of Potsdam, Germany during 2007–2013, which was followed by a short research in the Fraunhofer Institute for Applied Polymer Research, Germany during the second half of 2013. Currently he is oriented with researching the breakdown behavior in dielectric liquids including esters, functional nano-fibers and -layers as well as assessment methods of transformer insulation condition based on DGA and other oil tests. He is a Member of IEEE, DEIS and PES, and member of IEEE Technical Committee on Liquid Dielectrics. He is serving as the Asia-pacific region chair for the Membership and Chapters Committee of IEEE DEIS, a Publications Committee member of DEIS and an Associated Editor of IEEE Electrical Insulation Magazine.

INVITED SPEAKER

AC Dielectric Strength of Combined Paper-Mineral Oil and Paper-Synthetic Ester Insulating Systems with Special Emphasis on New Cellulose Paper Enhanced with Aramid

Professor Pawel Rozga
Lodz University of Technology, Poland

Synopsis

From the very beginning of existence of high voltage power transformers, their insulating structure consists of the mixed paper-dielectric liquid systems. In the early 1930s, insulation made of cellulose paper in combination with mineral oil began to be used in transformers. This combination was used to meet the increasing electrical strength requirements. At the end of the 1950s, synthetic dielectric materials began to be introduced to the transformer market, which, in the process of continuous improvement, began to replace cellulose insulation in specific applications. Currently, next to the cellulose based solid insulation, mixtures of both cellulosic and synthetic materials are used in operation. Nowadays, to ensure the longest possible period of failure-free operation of transformers and to eliminate faults related to the insulation system, newer and more reliable solutions have been sought that would have better parameters than classic cellulose insulation. One of the new proposals is the cellulose paper enhanced with aramid, which, in connection with synthetic ester liquid may give some significant features such as extended service life, reduced aging effect at high ambient temperature, reduced impact of continuous load and reduced sensitivity of the transformer insulation to temporary overloads. The important part of the tests of new solid insulating materials is the dielectric breakdown test, especially when the mentioned solid materials are going to be applied both in combination with mineral oil or synthetic ester. Hence, the selected results of the studies in this field will be presented together with the critical comments on optimal parameters for impregnation process allowing to get required values of dielectric strength of solid components. The discussion will include also new cellulose paper enhanced with aramid the dielectric strength of which was analyzed statistically from the viewpoint of dielectric liquid used form impregnation.

Biography

Pawel Rozga (M'11-SM'13) was born in Kielce, Poland in 1979. He received the M.Sc. degree from the Kielce University of Technology, Poland in 2003 and the Ph.D. degree from the Lodz University of Technology, Poland in 2009, both in electrical engineering. He has been working at the Institute of Electrical Power Engineering of Lodz University of Technology as an Assistant Professor. He also completed several research projects in the field of liquid and solid insulation. Currently he has been working on assessment of selected parameters of dielectric ester liquids for electrical purposes.

INVITED SPEAKER

Research on the Application of 3D Printing in Insulating Materials Preparation for Electrical Equipment

Professor Level Senior Engineer Bing Luo
CSG Electric Power Research Institute,
Guangzhou, China

Synopsis

Based on the analysis of the application prospect and technical applicability of 3D printing in the preparation of insulating parts for electrical equipment, the report will introduce the application and exploration of 3D technology in the preparation of insulating parts for electrical equipment.The application of 3D printing technology in support insulators, cable accessories and suspension insulators will be taken as examples to introduce the technical principle, preparation process and property evaluation progress of 3D printing insulation parts for electrical equipment.

Biography

Bing Luo, Ph.D., senior engineers, the former head of the High Voltage Department in Research Institute of China Southern Power Grid, the senior technical expert, engaged in high voltage insulation and testing technology and AC/DC transmission technology research and management. Now he is the engineer in charge of the High Voltage Department, director of the ministry, national lightning arrester, insulator 2 standard committee, deputy director of the commission, and industry committee and secretary-general, deputy director of the condenser standardization committee-Nanyang insulator industry standards committee, IEEE and CIGRE members, self-help network science and technology prize foundation secretary-general of guangdong province, guangdong institute of electrical engineering professional top ten leading figures in the dc power transmission and transformation. Participated in the scientific research and construction of the world's first ±800kV Yun-Guangzhou-UHV DC, responsible for two projects of the National Eleventh Five-Year Plan, undertook 1 project of the National 973 Project, presided over more than 30 major science and technology projects of South Power Grid, published more than 50 papers and 30 patents.

INVITED SPEAKER

High Voltage Cable Quality Monitoring and Its Buffer Layer Problem Analysis

Professor Level Senior Engineer Qian Wang
State Grid Chongqing Electric Power Research Institute, Chongqing, China

Synopsis

Taking the basic situation of State Grid Chongqing Electric Power Institute in the quality inspection of high voltage cable as an example, the paper explores the significance of high voltage cable quality inspection and the problems found in the process of the test. Meanwhile, combined with the project of buffer layer resistivity detection in high voltage cable quality sampling inspection, this paper introduces the research contents of State Grid Chongqing Electric Power Institute in the aspects of buffer layer characteristics, buffer layer resistivity detection, buffer layer ablation mechanism etc. when facing the difficult problem of the buffer layer ablation defect of the high voltage cable.

Biography

Qian Wang, professor senior engineer, director of equipment condition evaluation center of State Grid Chongqing Electric Power Research Institute, has been engaged in condition based maintenance, condition detection and fault diagnosis research and management of electrical equipment. The first batch of professional leading talents (maintenance major) of State Grid Corporation of China, member of the 5th power cable Standardization Technical Committee of power industry, member of engineering construction technical standard professional working group of State Grid Corporation of China, core member of "state evaluation and fault diagnosis technology research team of power transmission and transformation equipment" of Chongqing company, and outstanding young engineer of Chongqing electrical engineering society. Presided over and participated in a number of major scientific and technological and on-site technical problems, published more than 30 papers, and obtained 8 invention patents and 18 utility model patents.

TECHNICAL PROGRAM

April 11th-15th, 2021

ICEMPE 2021 PROGRAM SCHEDULE

ICEMPE 2021 Agenda（11th-15th, April Chongqing）					
Time	11, April 2021	12, April 2021	13, April 2021	14, April 2021	15, April 2021
08:00-08:30	Registration	Registration	Registration	/	/
08:30-08:35		Opening Ceremony	1. Invited Speaker He Jinliang (8:30-8:55) 2. Oral Session 2： Oral 1-7 (8:55-10:40) Modelling and Measurement Technique	1. Invited Speaker Wang Feipeng (8:30-8:55) 2. Oral Session 3： Oral 1-7 (8:55-10:40) Equipment, Ageing, Life Assessment, etc.	China Session 1. Invited Speaker Luo Bing (8:30-8:50) 2. Invited Speaker Wang Qian (8:50-9:10) 3. China Session： Oral 1-6 (9:10-10:40)
08:35-08:40					
08:40-08:45					
08:45-08:50					
08:50-09:00		Chen Jidan Memorial Lecture			
09:00-09:40		Keynote Speaker Issouf Fofana			
09:40-10:10		Group Photo&Coffee Break			
10:10-10:35		Invited Speaker Wu Guangning			
10:35-11:00		Invited Speaker Zhang Guanjun	Coffee Break (10:40-11:00)	Coffee Break (10:40-11:00)	Coffee Break (10:40-11:00)
11:00-11:25		Invited Speaker Du Boxue	Poster Session 2 (11:00-12:00) Modelling and Measurement Technique	Poster Session 3 (11:00-12:00) Equipment, Ageing, Life Assessment, etc.	China Session： Oral 7-12 (11:00-12:30)
11:25-12:00		Invited Speaker Huang Xingyi			
12:00-14:00	/	Lunch (12:00-14:00)	Lunch (12:00-14:00)	Lunch (12:00-14:00)	Lunch (12:30-14:00)
14:00-14:15	Registration	Oral Session 1： Oral 1-7 (14:00-15:45) Insulating Materials	Technique Visit--Chongqing ABB (13:30-18:00)	1. Invited Speaker Pawel Rozga (14:00-14:25) 2. Oral Session 4： Oral 1-8 (14:25-16:25) Dielectric Phenomenon	Return Journey
14:15-14:30					
14:30-14:45					
14:45-15:00					
15:00-15:15					
15:15-15:30					
15:30-15:45					
15:45-16:00		Coffee Break (15: 45-16:00)			
16:00-16:25		Invited Speaker Ronald Plath（16:00-16:25）			
16:25-16:40		Oral Session 1：Oral 8-10 (16:25-17:10) Insulating Materials		Coffee Break (16:25-16:40)	
16:40-16:55					
16:55-17:10				Poster Session 4 (16:40-18:00) Dielectric Phenomenon	
17:10-17:15		Poster Session 1 (17:10-18:30) Insulating Materials			
17:15-17:30					
17:30-17:45					
17:45-18:00					
18:00:18:30			/	/	/
18:30-21:00	Welcome Reception	Dinner	Banquet	1. Excellent Paper Awards & Closing Ceremony 2. Dinner	/

OPENING CEREMONY

Monday, April 12th, 2021.
Time: 8:30-10:10
Chair: Weigen Chen (Chongqing University)
Venue: Grand Ballroom, 2nd F

8:30-8:50

Shengtao Li
Chairman of ICEMPE 2021

Zhuo Yan
Vice Secretary General of CES

Paul Gaberson
President of IEEE DEIS

Yuechun Lv
Deputy Secretary of State Grid Chongqing Electric Power Company

Ruijin Liao
Vice President of Chongqing University

Chen Jidan Award & Memorial Lecture

8:50-9:00 **Chen Jidan Award Introduction**
Shengtao Li (Xi'an Jiaotong University, China)

9:00-9:40 **Chen Jidan Memorial Lecture**
Issouf Fofana (University of Quebec at Chicoutimi, Canada)

9:40-10:10 **Group Photo & Coffee Break**

Invited Speech (10:10-12:00)
Chair: Lijun Yang (Chongqing University)

10:10-10:35 **New Approach to Miniaturization and Weight Reduction of High-voltage Electrical Equipment**
Guangning Wu (Southwest Jiaotong University, China)

10:35-11:00 **Dielectrically Graded Insulation: Concept, Design, Fabrication and Evaluation**
Guanjun Zhang (Xi'an Jiaotong University, China)

11:00-11:25 **Multiple Stress Affecting Insulation Breakdown Behavior of HVDC Cable Accessories**
Boxue Du (Tianjin University, China)

11:25-11:50 **Dielectric Polymer Nanocomposites with High Thermal Conductivity**
Xingyi Huang (Shanghai Jiao Tong University, China)

ORAL SESSIONS

Monday, April 12th, 2021
Oral Session 1: Insulating Materials
Time: 14:00-17:10
Chairs: Xiangrong Chen (Zhejiang University)
Yu Gao (Tianjin University)
Venue: Grand Ballroom, 2nd F

14:00-14:15
O 1-1
THz Spectroscopic Study of Degradation of Epoxy Resins
Yoshimichi Ohki, Hiroyuki Ishii, Mayu Hayashi, Naoshi Hirai
Res. Inst. for Matls. Sci. and Technol., Waseda University

14:15-14:30
O 1-2
Research on Space Charge Characteristics of LDPE/Microcapsule Self-Healing Insulation Material
Yunqi Li[1], Youyuan Wang[1], Yudong Li[2], Yanfang Zhang[1], Adnan Yaseen[1]
[1]State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing University
[2]Weifang Power Supply Company, State Grid Shandong Electric Power Company

14:30-14:45
O 1-3
Electrical Tree Aging Characteristics of Silicone Rubber Filled with Monomodal PDMS-grafted TiO_2 Nanoparticles under Power Frequency Voltage
Yuanxiang Zhou, Quzong Gesang, Yunxiao Zhang, Linlu Liu, Ling Zhang
State Key Lab of Power System, Dept. Electrical Engineering, Tsinghua University

14:45-15:00
O 1-4
Understanding the Thermal and Resistive Properties from The Perspective of Molecular Interaction of Epoxy/POSS Composite
Farooq Aslam, Zhen Li, Guanghao Qu, Zhaozi Zhang, Huan Niu, Shengtao Li
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University.

15:00-15:15
O 1-5
Ageing Status Identification of Oil-paper Impregnated Insulation by NIRS Detection with Improved LDA Method
Xiaolin Chen[1], Wenbo Zhang[2], Han Li[2], Lincong Chen[1], Chuanfu Fu[1], Yuan Li[2]

[1]Key Laboratory of Physical and Chemical Analysis for Electric Power of Hainan Province Electric Power Research Institute
[2]State Key Laboratory of Electrical Insulation and Power Equipment Xi'an Jiaotong University

15:15-15:30
O 1-6

Heat-triggered Self-healing Cross-linked Poly(silicone-urea)s with Recoverable Dielectric Performances

Wenjie Sun, Lei Zhang, Jiaming Luo, Jiale Mao, Yuanlong Xie, Yonghong Cheng
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University

15:30-15:45
O 1-7

What is Mechanism of Space Charge Accumulation in Polyethylene with Surface Fluorination?

Jiaping Pan, Mingshu Liu, Zhenlian An, Feihu Zheng, Yewen Zhang
Dept. of Electrical Engineering Tongji University

15:45-16:00 **Coffee Break**

16:00-16:25
Invited Speech

Strengthening the Interconnected Grid for Improved Integration of Renewable Energies - German 525 kV HVDC Cable Projects with Extreme Lengths

Ronald Plath (Technische Universität Berlin, Germany)

16:25-16:40
O 1-8

Study on the Energy Storage Performance of Al_2O_3/PVDF Hybrid Film Based on Sol Blending Doping Strategy

Mengjia Feng[1,2], Chen Chen[1,2], Tiandong Zhang[1,2], Yu Feng[1,2], Qingguo Chi[1,2], Qingquan Lei[1,2]
[1]School of Electrical and Electronic Engineering, Harbin University of Science and Technology.
[2]Key Laboratory of Engineering Dielectrics and Its Application, Ministry of Education, Harbin University of Science and Technology.

16:40-16:55
O 1-9

Scalable and Durable Superhydrophobic RTV Silicone Rubber Insulator Coatings via Fluorosilane-Modified Silica Nanoparticle Incorporation

Zijia Shen, Feipeng Wang, Gang Wen, Jianpeng Ye
State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing University

16:55-17:10 **O 1-10**	**Influence of Octavinyl-Polyhedral Oligomeric Silsesquioxane on the Electric Treeing Resistance of Polypropylene** Xiaosi Lin[1], Wah Hoon Siew[1], Martin Given[1], John Liggat[1], Jinliang He[2] [1]University of Strathclyde [2]Tsinghua University
17:10-18:30	**Poster Session 1: Insulating Materials**

Tuesday, April 13th, 2021
Oral Session 2: Modelling and Measurement Techniques
Time: 8:30-10:40
Chair: Feipeng Wang (Chongqing University)
Qingguo Chi (Harbin University of Science and Technology)
Venue: Grand Ballroom, 2nd F

8:30-8:55 **Invited Speech**	**Progress in Recyclable High Voltage Cable Insulation Materials for Bulk Power Transmission** **Jinliang He** (Tsinghua University, China)
8:55-9:10 **O 2-1**	**Aging Stage Diagnosis of Oil-Paper Insulation Equipment Using Raman Spectrum Based on Multiple Screening KNN Algorithms** Yongkuo Zhou, Weigen Chen, Dingkun Yang, Ruyue Zhang Chongqing university.
9:10-9:25 **O 2-2**	**A New Method for Detecting Trace Methanol in Insulating Oil Based on Terahertz Spectroscopy** Yuxin He, Lijun Yang, Jiajun Li, Li Cheng, Dong Ding, Ruijin Liao State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University.
9:25-9:40 **O 2-3**	**Mechanism of Gas Movement and Convergence in Oil-immersed Transformer** Yucheng Zhang[1], Zhiguo Hao[1], Haitao Yang[2], Boyu Li[1], Shaoyong Yao[1], Ruihan Yin[2] [1]School of Electrical Engineering, Xi'an Jiaotong University. [2]Electric Power Research Institute, State Grid Anhui Electric Power Co., Ltd.

9:40-9:55 **O 2-4**	**The Influence of Thermal Aging on Space Charge Distribution in Oil-impregnated Paper under AC Field** Guiyue Zhou, Yi Yin, Jiandong Wu, Lu Che Department of Electrical Engineering, School of Electronic, Information and Electrical Engineering, Shanghai Jiao Tong University
9:55-10:10 **O 2-5**	**Signal Calibration for Electric Field Measurement by the Thermal Pulse Method** Yu Zhang, Feihu Zheng, Shijie Chen, Guanwen Chen, Yewen Zhang School of Electronics and Information Engineering, Tongji University
10:10-10:25 **O 2-6**	**An Improved Method to Evaluate the Severity of Discharges with DGA Based on Thermodynamics** Rui Guo, Jian Wang, Renying Liu, An Ping, Ruofan Xiao, Jingrui Wang State Key Lab of Alternate Electrical Power System with Renewable Energy Sources North China Electric Power University
10:25-10:40 **O 2-7**	**AC Flashover Performance and Insulation Coordination of Novel Lightning Protection Composite Insulator** Jiazheng Lu[1], Jianping Hu[1], Zhen Fang[1], Xinhan Qiao[2], Zhijin Zhang[2], Xingliang Jiang[2] [1]State Key Laboratory of Disaster Prevention & Reduction for Power Grid Transmission and Distribution Equipment State Grid Hunan Electric Power Company [2]School of Electrical Engineering Chongqing University
10:40-11:00	**Coffee Break**
11:00-12:00	**Poster Session 2: Modelling and Measurement Techniques**
13:00-18:00	**Technique Visit--Chongqing ABB**

Wednesday, April 14th, 2021
Oral Session 3: Equipment, Ageing, Life Assessment, etc.
Time: 8:30-10:40
Chair: Chijie Zhuang (Tsinghua University)
Huaqiang Li (Xi'an Jiaotong University)
Yuan Li (Xi'an Jiaotong University)
Venue: Grand Ballroom, 2nd F

8:30-8:55 **Invited Speech**	**Insulating Liquids toward a Sustainable Future- Ester-based Oil** **Feipeng Wang** (Chongqing University, China)
8:55-9:10 **O 3-1**	**Distribution Characteristics of Insulation Interfacial Defects in High Voltage Direct Current Cables** Jiru Wang, Lisheng Zhong, Xiaoyu Yang, Wei Zhao, Fei Li, Wenpeng Li, Gao Jinghui State Key Laboratory of Electrical Insulation and Power Equipment Xi'an Jiaotong University
9:10-9:25 **O 3-2**	**Study on the Electromagnetic Thermal Coupling Analysis Method for Valve Side Bushing of Converter Transformer Under Multi-Frequency Harmonic Current** Mu Lin[1], Kai Liu[1], Hao Tang[2], Yan Yang[1], Bo Gao[1], Guangning Wu[1] [1]School of Electrical Engineering, Southwest Jiaotong University. [2]State Grid Electric Power Research Institute.
9:25-9:40 **O 3-3**	**Electrical Insulation Properties of Material Interfaces in HVDC Cable Factory Joint** Fanbo Meng[1], Ashish Paramane[1], Muhammad Awais[1], Zewei Zhou[2], Yuantao Zhao[2], Xiangrong Chen[1] [1]Zhejiang Provincial Key Laboratory of Electrical Machine Systems, College of Electrical Engineering Zhejiang University. [2]Ningbo Orient Wires & Cables Co., Ltd.
9:40-9:55 **O 3-4**	**Insulation Delamination Detection of Composite Cable Terminal Based on THz Time Domain Spectral** Binglei Cao, Shuaibing Li, Yongqiang Kang, Jingtao Lu, Xingzu Yang School of New Energy and Power Engineering, Lanzhou

Jiaotong University

9:55-10:10 **O 3-5**	**A Modular Over-Voltage Trigger Device for Two-electrode Spark-gap Switches** Xuedi Liu[1], Zicheng Zhang[1,2], Huibo Zhang[1], Haoran Zhang[1], Shifei Liu[1], Longbo Yan[1] [1]College of Advanced Interdisciplinary Studies, National University of Defense Technology [2]State Key Laboratory of Pulsed Power Laser Technology Studies, National University of Defense Technology
10:10-10:25 **O 3-6**	**Assessment of the Insulation Conditions of Power Transformers Through Online Monitoring of Partial Discharges** Guilherme M. F. Ferraz, Laerty J. S. Damião, Renato M. Capelini, Rogério Salustiano HVEX
10:25-10:40 **O 3-7**	**Failure Analysis of HVDC Cable Accessories During R&D Tests** Yi Luo, Mingyu Zhou, Tobias Fechner, Haitian Wang HEM Group, Global Energy Interconnection Research Institute Europe GmbH
10:40-11:00	**Coffee Break**
11:00-12:00	**Poster Session 3: Equipment, Ageing, Life Assessment**

Wednesday, April 14th, 2021
Oral Session 4: Dielectric Phenomenon
Time: 14:00-16:25
Chairs: Chao Tang (Southwest University)
Wenfu Wei (Southwest Jiaotong University)
Venue: Grand Ballroom, 2nd F

14:00-14:25 **Invited Speech**	**AC Dielectric Strength of Combined Paper-Mineral Oil and Paper-Synthetic Ester Insulating Systems with Special Emphasis on New Cellulose Paper Enhanced with Aramid** **Pawel Rozga** (Lodz University of Technology, Poland)
14:25-14:40 **O 4-1**	**Effect of Nano-doping on the Interface Charge Characteristics of SIR/XLPE Composite Insulation**

Chunmiao Ma, Yunxiao Zhang, Yuanxiang Zhou, Ling Zhang, Xin Huang
State Key Laboratory of Power System and Generation Equipment & Department of Electrical Engineering Tsinghua University.

14:40-14:55 O 4-2 **Comparison of Optimization Methods used in the Design of Functionally Graded Insulation Objects**

Haoyang Yin, Wendong Li, Chao Wang, Zhihui Jiang, Wang Guo, Guanjun Zhang
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University

14:55-15:10 O 4-3 **The Effect of Epoxide on Molecular Chain Relaxation on Bisphenol A Epoxy Resin after Curing**

Mingru Li[1], Zhuoli Cai[1], Huan Niu[1], Shengtao Li[1], Yafang Gao[1], Bingnan Li[1], Hangyin Mao[2], Weiwang Wang[1], Kai Shang[1]
[1]Xi`an Jiaotong University State Key Laboratory of Electrical Insulation and Power Equipment
[2]State Grid Zhejiang Electric Power Co., Ltd.

15:10-15:25 O 4-4 **Gamma-Ray Irradiation Induced Variation in Thermal Conductivity of Polyethylene/Nano-Silica/Micro-Boron Nitride Composite as Potential Cable Insulation**

Binyuan Ye, Yong Liu, Yu Gao, Jing Li, Bangbang Xu, Boxue Du
Tianjin University

15:25-15:40 O 4-5 **Glass Transition of LDPE and PP under High Quasi-Hydrostatic Pressure in Room Temperature**

Chaohu Yu[1], Yewen Zhang[1], Jingxian Xu[1], Longhua Mu[1], Yabo Sun[2], Yang Xu[2], Zhi Li[3], Xuan Wang[3], Qingquan Lei[3]
[1]Department of Electrical Engineering, Tongji University
[2]State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University
[3]Harbin University of Science and Technology.

15:40-15:55 O 4-6 **Significantly Improved Breakdown Strength of Sandwiched Polymer Dielectrics by Functionalized Boron Nitride Nanosheets**

Yingke Zhu, Pingkai Jiang, Xingyi Huang
Shanghai Key Lab of Electrical Insulation and Thermal Aging, Shanghai Jiao Tong University

15:55-16:10 **O 4-7**	**Electrical Characteristics of Polyimide Film Modified by Nanoparticle in LN** Daosheng Liu, Liang Zhang, Xingrong Chen, Chunhua Zhou School of Electrical Engineering and Automation, Jiangxi University of Science and Technology
16:10-16:25 **O 4-8**	**Enhance the Surface Flashover Performance of the Fluorocarbon Coating Composited with SiC Particles** Wenjie Xu, Jian Li, Zhengyong Huang, Feipeng Wang, Jianying Zhao, Fanyun Su School of Electrical Engineering Chongqing University
16:25-16:40	**Coffee Break**
16:40-18:00	**Poster Session 4: Dielectric Phenomenon**

Thursday, April 15th, 2021
Oral Session 5: China Session
Time: 8:30-12:30
Chair: Jian Hao (Chongqing University)
Yongfu Li (Chongqing Electric Power Research Institute)
Zhengyong Huang (Chongqing University)
Jianyu Pan (Chongqing University)
Venue: Grand Ballroom, 2nd F

8:30-8:50 **Invited Speech**	**Research on the Application of 3D Printing in Insulating Materials Preparation for Electrical Equipment** **Bing Luo** (CSG Electric Power Research Institute, China)
8:50-9:10 **Invited Speech**	**High Voltage Cable Quality Monitoring and Buffer Layer Problem Analysis** **Qian Wang** (State Grid Chongqing Electric Power Research Institute, China)
9:10-9:25 **O 5-1**	**A Miniaturized Device for Detecting Defects of Porcelain Insulators Based on High-Level Impulse Voltage Breakdown** Lu Wen[1], Junshuang Zhang[2], Liming Wang[1], Fanghui Yin[1] [1]Institute of Advanced Technologies in Energy and Electrical Engineering Tsinghua Shenzhen International Graduate School [2]State Key Laboratory of Electrical Insulation and Power Equipment Xi'an Jiaotong University

9:25-9:40
O 5-2

Influence of Fiber Diameters on the Thermal Conductivity of Liquid Crystal Epoxy Resin Film

Senyuan Yang, Zhengyong Huang
State Key Laboratory of Power Transmission Equipment & System Security and New Technology School of Electrical Engineering, Chongqing University

9:40-9:55
O 5-3

Thermal Stress Analysis of Epoxy Resin Encapsulated Solid State Transformer's Cracking Caused by Temperature Shock

Yixian Dai[1], Yushun Zhao[1], Wei Yang[2], Yun Chen[2], Long Wei[1]
[1]School of Electrical Engineering and Automation, Hefei University of Technology
[2]State Key Laboratory of Advanced Power Transmission Technology Global Energy Interconnection Research Institute

9:55-10:10
O 5-4

Research on Electric Field Distribution at Winding End of Converter Transformer Considering Temperature Gradient

Liangkai Wang, Kaining Hou, Xinbo lu, Qingquan Li
School of Electrical Engineering, Shandong University

10:10-10:25
O 5-5

FDS Prediction of Transformer Oil-paper Insulation Under Non-Uniform Aging Based on Finite Element Method

Xianhao Fan, Tengyue Sun, Jiefeng Liu, Yiyi Zhang
School of Electrical Engineering, Guangxi University.

10:25-10:40
O 5-6

Calculation of Excitation Current and Loss of 110kV Three-phase Transformer under DC Bias

Peng Li[1], Mingxin Dong[1], Gang Li[1], Shuqi Zhang[1], Ke Wang[1], Jinzhong Li[2]
[1]China Electric Power Research Institute
[2]State Grid Corporation of China.

10:40-11:00 **Coffee Break**

11:00-11:15
O 5-7

Identification Structural and Moisture Defect of Oil-Paper Insulation Bushing Based on Partial Discharge Phase and Discharge Quantity Analysis

Yu Shang[1], Yong Liang[1], Xiaowei Liu[1], Qiang Liu[1], Zheng Jian[2], Jian Hao[2]
[1]State Grid Shaanxi Electric Power CO. Shaanxi Electric Power Research Institute
[2]Chongqing University

11:15-11:30
O 5-8

Fault Analysis and Electric Field Simulation of Elbow Cable Terminal in Distribution Network

Zhixiang Deng [1,2], Jianbing Pan [1,2], Nianping Yan [1,2], Yu Hao [1,2], Qinya Qi [1,2], Gege Chen [1,3], Zhen Chen [1,2], Yangqi Huang [1,2]
[1]State Grid Jiangxi Electric Power Research Institute
[2]State Grid Jiangxi Electric Power Supply Co., Ltd.
[3]State Grid Jiangxi Maintenance Company

11:30-11:45
O 5-9

An Analysis of the Characteristics of Oil-Paper Insulated Bushing with Moisture and X-wax Defects Through Oil Chromatographic and Frequency Domain Spectroscopy

Yubo Zhang[1], Zhiming Huang[2], Ran Zhuo[2], Mingli Fu[2], Zhangting Yu[1], Lei Zhang[1], Yan Luo[2], Yue Yu[2]
[1]Electric Power Research Institute Guangxi Power Grid Co.
[2]High Voltage Research Institute CSG Electric Power Research Institute Co., Ltd.

11:45-12:00
O 5-10

Research and Application of Intelligent Diagnosis Method of Mechanical Fault Based on Transformer Vibration and Noise and BP Neural Network

Zhangting Yu, Dajian Li, Liangyuan Chen
Electric Power Research Institute Guangxi Power Grid Co.

12:00-12:15
O 5-11

Influence of Insulation Material Parameters of Large Hydro-generator on Electric Field Distribution and Potential Distribution at the End of Stator Bar

Ze Huang [1], Keer Sun [2], Bo Hu [1], Yulai Zhao [3], Mingpeng He [1], Jianlin Hu [2], Xingliang Jiang[2]
[1]Dongfang Electric Machinery Co., Ltd.
[2]State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University
[3]State Grid Jinhua Power Supply Company

12:15-12:30
O 5-12

Aging Evaluation of the Distribution Transformer under Varying Load due to Electric Vehicle Charging

Sen Qian[1], Xiaojing Zhang[2], Chuan Chen[1], Hongkang Wang[2], Jinghong Guo[1], Yang Xu[2]
[1]Global Energy Interconnection Research Institute
[2]Xi'an Jiaotong University

POSTER SESSIONS

Monday, April 12th, 17:10-18:30
Poster Session 1: Insulating Materials
Chairs: Fuping Zeng (Wuhan University)
Daomin Min (Xi'an Jiaotong University)
Venue: Big Banquet Hall 3, 2nd F

P 1-1 Characteristics of Charge Dissipation on Super-Hydrophobic Surface of Silicone Rubber and Its Influence on Hydrophobicity
Qian Wang[1], Hao Shen[2], Xidong Liang[1], Tingyu Jiang[1], Shuming Liu[1], Zhou Zuo[1]
[1]State Key Laboratory of Power System, Department of Electrical Engineering, Tsinghua University
[2]Ningbo Power Supply Center State Grid Zhejiang Electric Power Company

P 1-2 Breakdown Improvement of PP Films under DC Supercomposed Harmonic Voltages
Zhaoyu Ran, Boxue Du, Meng Xiao, Haoliang Liu, Jiwen Xing
Key Laboratory of Smart Grid of Education Ministry, School of Electrical and Information Engineering, Tianjin University

P 1-3 The Influence of Sintering Temperature on Phase Composition and AC Breakdown Field Strength of $SrTiO_3$-$PbTiO_3$-Bi_2O_3-$nTiO_2$ High-voltage Ceramics
Yiwen Qiu[1], Wei Chen[1], Jingen Sun[1], Baoying Dong[2]
[1]State Key Laboratory of Electrical Insulation and Power equipment Xi'an Jiaotong University Xi'an, China
[2]Henan Pinggao Electric Co., Ltd.

P 1-4 A High Efficient Time-domain Modeling Method for Partial Discharge Propagation in XLPE Cables with Large Length
Saike Yang, Li Wang, Xianyu Yue
School of Electrical Engineering, Xi'an Jiaotong University

P 1-5 Improved Breakdown Strength of Polypropylene Films by Additions of Aromatic Compounds
Boxue Du, Jiwen Xing, Meng Xiao, Zhaoyu Ran, Haoliang Liu, Jianan Dong
Key Laboratory of Smart Grid of Education Ministry, School of Electrical and Information Engineering Tianjin university

P 1-6 Effects of Fullerene C_{60} on the Dielectric Strength of Epoxy Resin at Elevated Temperature
Boxue Du, Yifang Wang, Xiaoxiao Kong, Hanlei Sun, Jin Li,

Wenbo Zhu
[1]School of Electrical and Information Engineering Tianjin University,
[2]Electric Power Research Institute China Southern Power Grid Guangzhou China

P 1-7 DC Breakdown Strength of ZnO/GFRP at Room Temperature and Cryogenic Temperature

Peng Jia, Rongjin Huang, Dong Xu, Yongguang Wang, Zhicong Miao, Laifeng Li
State Key Laboratory of Technologies in Space Cryogenic Propellants, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences.

P 1-8 Feasibility Analysis of Hexaphenoxy Cyclotriphosphazene Flame Retardant for Inhibiting Electrical Tree Growth of Epoxy Resin

Yongguang Wang, Rongjin Huang, Peng Jia, Zhicong Miao, Hongyu Dong, Laifeng Li
State Key Laboratory of Technologies in Space Cryogenic Propellants, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences Beijing, China University of Chinese Academy of Sciences.

P 1-9 Electrical Tree Characteristics in Graphene/SiR Nanocomposites under Temperature Gradient

Yimeng Li, Boxue Du, Jin Li, Zhonglei Li, Tao Han, Zhaoyu Ran
Key Laboratory of Smart Grid of Education Ministry, School of Electrical and Information Engineering Tianjin university.

P 1-10 Nano-cellulose Doping to Improve the Electrical Properties of Insulating Paper Under Thermal Aging

Boxue Du, Wuye Tao, Jinpeng Jiang
School of Electrical and Information Engineering, Tianjin University

P 1-11 A High–throughput Plasma–based Approach for Improving the Thermal Conductivity of Epoxy Resin/Boron Nitride

Penghao Zhang, Liang Yu, Wenjie Sun, Dazhao He, Shoulong Dong, Chenguo Yao
State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University

P 1-12 Experimental Studies on Insulation and Arc Extinguishing Performance of $C_5F_{10}O/CO_2$ Gas Mixture

Xiaonan Wang, Zhe Ye, Dingxin Liu, Jialin Liu, Huan Yuan, Aijun Yang, Mingzhe Rong, Xiaohua Wang
The State Key Laboratory of Electrical Insulation and Power

Equipment, Xi'an Jiaotong University

P 1-13 Improvement of Interfacial Wetting and Mechanical Electrical Properties of Cu-B/ Sintered-carbon Composites
Haozi Zuo, Guangning Wu, Xiaobo Li, Zhanglin Huang, Wenfu Wei, Zefeng Yang
Department of Electrical Engineering, Southwest Jiaotong University

P 1-14 Effects of Benzene Ring and Polar Group on the Conductivity Characteristics of Polyethylene Matrix Composites
Zhiqiang Wang, Zhonghua Li, Cheng Peng
Key Laboratory of Engineering Dielectrics and Its Application, Ministry of Education Harbin University of Science and Technology

P 1-15 The Improvement of Flashover Characteristics with Field Grading CCTO Coating for GIL Spacer
Yufan Wang, Jin Li, Mi Xiao, Hucheng Liang, Hang Yao, Boxue Du
School of Electrical and Information Engineering, Tianjin University

P 1-16 Effects of Voltage Stabilziers on the AC and DC Breakdown Strengths of EPDM
Wei Hu[1], Chunyang Li[1], Hong Zhao[1], Zhenguo Yue[2], Shuai Hou[3], Mingli Fu[3]
[1]Key Laboratory of Engineering Dielectrics and Its Application, Ministry of Education Harbin University of Science and Technology
[2]Zhejiang Chenguang Cable Co., Ltd.
[3]Electric Power Research Institute China Southern Power Grid

P 1-17 Microscale Characteristic of Chalking Silicone Rubber
Yonghao Fang, Yu Deng, Yijun Du, Songsong Zhou, Chen Gu, Jun Zhou
China Electric Power Research Insititute

P 1-18 Study of Storage Activity of XLPE Pre-Crosslinked Material for High Voltage AC Cables
Yizhu Wang[1], Xia Wang[1], Shuai Hou[2], Meibing Liu[3], Mingli Fu[2]
[1]State Key Laboratory of Electric Insulation and Power Equipment Xi'an Jiaotong University
[2]Electric Power Research Institute. CSG
[3]Department of High Voltage Technology, Zhejiang Wanma Polymer Material Company Limited

P 1-19 A Novel Surface Charge Accumulation Behavior on Downsized Spacers in C_4F_7N/CO_2 Mixture

Junhao Dong, Junhong Chen, Jinshu Li, Junbo Deng, Yan Liu, Jianben Liu
State Key Laboratory of Electrical Insulation and Power Equipment Xi'an Jiaotong University

P 1-20 Additive Manufacturing of Polymer-Matrix Composite Dielectric Materials using Stereolithography Technique

Wendong Li[1], Chao Wang[1], Haoyang Yin[1], Junbo Deng[1], Haibao Mu[1], Guanjun Zhang[1], Yun Chen[2], Falun Song[3], Yanling Chen[3]
[1]State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University,
[2]China Electric Power Research Institute
[3]China Academy of Engineering Physics

P 1-21 Hydrophobicity Improvement of Polluted Silicone Rubber by Plasma Jet in High Humidity Environment

Shuang Li, Jianjun Li, Ruobing Zhang
Engineering Laboratory of Power Equipment Reliability in Complicated Coastal Environments Tsinghua Shenzhen International Graduate School

P 1-22 Study on Epoxy Resin Curing Process Based on Frequency Dielectric Spectroscopy

Yinjun Shi[1], Yushun Zhao[1], Wei Yang[2], Xin Chen[2], Yun Chen[2]
[1]School of Electrical Engineering and Automation, Hefei University of Technology
[2]State Key Laboratory of Advanced Power Transmission Technology, Global Energy Interconnection Research Institute Co., Ltd.

P 1-23 Study on Real-Time Temperature Distribution Characteristics of The HTS Tape Under Shock Current

Jianfa Wu, Yaxiong Tan, Chuyu Tian, Jian Li
State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing University

P 1-24 Expanding the Process Window of Epoxy Composite Insulating Materials by Compounding Anhydride

Zimin Luo[1], Yushun Zhao[1], Cheng Yan[1], Song Zhang[1], Wei Yang[2], Yu He[3]
[1]School of Electrical Engineering and Automation, Hefei University of Technology
[2]State Key Laboratory of Advanced Power Transmission Technology Global Energy Interconnection Research Institute Co., Ltd.
[3]Shanghai Xrun Resin Co., Ltd.

P 1-25 Study on Corrosion Resistance of Grain Boundary Engineering Windings at Different Temperatures

Yuan Yuan[1], Jiang Zhou[2], Youdong Jiang[1], Xiongwei Kuang[1], Xue Gao[1]
[1]College of Materials Science and Engineering Department of Chongqing University
[2]State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University.

P 1-26 Preparation and Electrical Property of Carbon Foam Grounding Material by Pyrolysis of Cyanate Esters Modified with Phosphorus Contained Schiff-base

Mian Fan, Huiwen He, Bo Tan, Xianghan Wang, Xuefang Tong, Min Dai
China Electric Power Research Institute, Wuhan.

P 1-27 Research on Improvement of Carbon Fiber Composite Heating Element

Lihua Jiang, Jianlin Hu, Keer Sun, Xiaofeng Wang, Ruihe Zhang
State Key Laboratory of Power Transmission Equipment & System Security and New Technology Hongqing University.

P 1-28 The Effect of Powdered Layer on the Physicochemical Properties of Silicone Rubber Surface

Huan Huang[1], Tian Liang[2], Xiaohong Ma[1], Jianrong Wu[1], Qi Yang[1], Ying Zhang[1], Bo Li[1]
[1]Electric Power Research Institute of Guizhou Power Grid Co., Ltd.
[2]State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University

P 1-29 Study on Corrosion Failure Characteristics of Silicone Rubber in Acidic Environment

Ma Xiaodan[1], Zhang Zhijin[1], Ma Xiaohong[2], Huang Huan[2], Jiang Xingliang[1]
[1]State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University
[2]Power Research Institute of Guizhou Power Grid Co., Ltd.

P 1-30 Effect of Secondary Drying Impregnation on the Breakdown Characteristics of Oil-Paper

Pengfei Xu[1], Lijun Yang[1], Huanchao Cheng[2]
[1]School of Electrical Engineering, Chongqing University
[2]Transformer Technology Laboratory, China Electronic Power Research Institute

P 1-31 Analysis of Infrared Characteristics of SO_2F_2 and SOF_2 of SF_6 Decomposition Components.

Chao Bian, Feng Dai, Jun Cheng, Qiang Gan, Zhengdong

Zhang, Guanglu Cui, Tingyue Tan, Dongfeng Li, Jiangang Jie.
State Grid Jiangsu Electric Power Co., Ltd.

P 1-32 Fabrication of Fabray-Perot Sensor Based on Stainless Steel Diaphragm and Its Sensing Characteristics of Partial Discharge Ultrasound.
Mengying Chen[1], Zhixian Zhang[2], Jiali Lei[2], Yuxuan Song[2], Kejie Wu[2]
[1]Ningbo Institute of Technology Electrical Engineering and Automation
[2]Chongqing University

P 1-33 Effect of Negatively Charged SiO_2-PMMA Filler on Properties of Epoxy Resin Composites
Yuxiang Mai, Bin Du, Qian Liu, Yu Shi
School of Electrical Engineering, Hefei University of Technology

P 1-34 Study on Insulation Performance of Thermal Aging XLPE Cables by Direct Current Integrated Charge Technique
Bingrong Huang[1], Weiwang Wang[1], Shengtao Li[1], Xinyuan Li[1], Yongjie Nie[2], Yunkun Deng[2], Qihang Jiang[1]
[1]School of Electrical Engineering Xi'an Jiaotong University
[2]Yunnan Electric Power Research Institute

P 1-35 Study on the Decrease of Power Loss during DC Degradation of Zinc Oxide Varistor Ceramics
Zongke Hou, Yingying Zheng, Men Guo, Yao Wang, Zhuolin Cheng, Kangning Wu, Jianying Li, Shengtao Li
State Key Laboratory of Electrical Insulation and Power Equipment Xi'an Jiaotong University

P 1-36 Oil Flow Electricfication of Insulating Oil Detected by the Triboelectric Effect
Jiachen Yao[1], Zhengyong Huang[1], Jian Li[1], Xiaoqiang Xiao[2], Qiang Xu[2]
[1]School of Electrical Engineering Chongqing University Chongqing, China
[2]Chongqing Yuneng Oil-Filter Manufacturing Co., Ltd. Chongqing, China

P 1-37 Analysis of Breakdown Characteristics of Sensing Optical Fiber in Oil under AC and DC Voltage Conditions
Zhenhui Luo, Quan Zhou, Xi Ouyang, Jiajia Zheng, Junfeng Dai, Hujun Shang
State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University.

P 1-38 Enhanced Thermoelectric Performance of Bi_2Te_3 Through Uniform Dispersion of $Ti_3C_2T_x$

Jianying Zhao, Zhengyong Huang, Jian Li, Feipeng Wang, Huijun Liao, Wenjie Xu
School of Electrical Engineering, Chongqing University

P 1-39 Study of Electromagnetic Characteristics of Silicon Steel Sheet and Transformer Vibration Under Different Tension/Compression Stress

Yao Hang, Dezhi Chen, Baodong Bai, Shichong Zhang
School of Electrical Engineering, Shenyang University of Technology

P 1-40 Optimization of Power Frequency Withstand Voltage Characteristics of Thermal Electrochemical Oxide Ceramic Film Based on Machine Learning

Zhen Yan, Haomin Li, Meng Zhang, Lianke Wang, Yingsan Geng, Jianhua Wang.
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University

P 1-41 Research on MOA Configuration in UHV AC Substation Located in more Thunderstorm Region and Thunderstorm Activity Special Strong Region

Xiujuan Chen[1], Zhaohui Zhang[2], Weidong Shi[1], Fengbo Tao[2], Tiantian Lu[1], Liuchun Zhang[1], Ting Lei[1], Chengbo Hu[2], Yongling Lu[2]
[1]China Electric Power Research Institute
[2]State Grid Jiangsu Electric Power Co., Ltd.

P 1-42 Design and Implementation of Image Recognition for Package Crack of Dry-type Air-Core Reactor Package

Anlan Mao[1], Huihao Guo[1], Ye Fei[2], Haidan Lin[3], Jin Qiu[1]
[1]High Voltage Research Institute China Electric Power Research Institute
[2]Shanghai Energy Internet Research Institute China Electric Power Research Institute
[3]Equipment Condition Evaluation Center Jilin Electric Power Research Institute

P 1-43 Measurement of Residual Stress in GIS Basin Insulators by Using Ultrasonic Longitudinal Critically Refracted Wave Method

Xu Yang[1], Changhong Zhang[1], Weiguo Li[1], Chao Gao[2], Fusheng Zhou[2], Ruodong Huang[2], Guoli Wang[2], Xuezhi Liang[2]
[1]Maintenance and Test Center of EHV Power Transmission Company China Southern Power Grid
[2]Electric Power Research Institute, China Southern Power Grid

P 1-44 Diagnosis of Overall 10kV Cable Insulation State Based on Transient Voltage Transfer Characteristics
Qingsong Jie, Qing Yang, Yu Zhang, Haonan Cui
State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University

P 1-45 Fabrication of Durable Superhydrophobic Aluminium Surface and Its Anti-Icing Properties
Guoyong Liu[1], Yuan Yuan[2], Ruijin Liao[1], Qi Yu[2], Liang Wang[2]
[1]State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing University.
[2]College of Materials Science and Engineering Department of Chongqing University

Tuesday, April 13th, 11:00-12:00
Poster Session 2: Modelling and Measurement Techniques
Chairs: Yiyi Zhang (Guangxi University)
Yuesheng Zheng (Fuzhou University)
Venue: Big Banquet Hall 3, 2nd F

P 2-1 Research on High Voltage Capacitor Partial Discharge Detection with Portable Oscillating Wave Circuit
Lingying Chen, Guangke Xu, Panfeng Shang
Shandong Electric Power Research Institute

P 2-2 Surface Electric Field Simulation of Worker in Live Working on ±800kV UHVDC Transmission Line
Chilong Jiang[1], Dehua Zhou[2], Xiao Yang[3], Qiaoqing He[3], Tianyan Jiang[3]
[1]State Grid Chenzhou Power Supply Company, Key Laboratory of Intelligent Live Working Technology and Equipment(Robot) of Human Province
[2]State Grid Hunan Electric Power Company Limited, Hunan China
[3]School of Electrical and Electronic Engineering Chongqing University of Technology

P 2-3 Research on Cable Defect Location Method Based on Joint Time-Frequency Analysis
Bin Feng[1], Lin Zhang[2], Shuai Hou[1], Xiaojing Dang[2], Wenbo Zhu[1], Baojun Hui[1], Mingli Fu[1]
[1]Electric Power Research Institute China Southern Power Grid.
[2]Power Technology Research Center Shenzhen Power Supply Co., Ltd., Shenzhen, P.R.China

P 2-4 Method for Detectng the Non-Soluble Deposit Density of Insulators Based on Hyperspectral Technology

Tingting Wang[1], Chengfeng Yin[2], Bing Luo[1], Yujun Guo[2], Xueqing Zhang[2]
[1]Electric Power Research Institute China Southern Power Grid
[2]Department of Electrical Engineering Southwest Jiaotong University

P 2-5 Calculation of Electric Field and Configuration of Grading Ring for Composite Tower of 500 kV AC Double Circuit Transmission Lines

Yezhi Wu, Xi Yang, Li Yang, Lijuan Zhu
School of Electrical Engineering and Automation Hefei University of Technology.

P 2-6 Dynamic Simulation and Analysis of Carbon Fiber Conductor Galloping

Weiguo Chen[1], Yifeng Ju[1], Yinkun Chen[1], Yongli Liao[2], Bo Gong[2], Jinqiang He[2]
[1]Haikou Power Supply Bureau, Hainan Power Grid Co., Ltd.
[2]Electric Power Research Institute, China Southern Power Grid Co., Ltd.

P 2-7 Optimal Design of Magnetic Field Sensor for Condition Monitoring of High Voltage Power Cable

Xingwang Huang[1], Yong Liu[1], Qiran Li[2,3], Boxue Du[1]
[1]School of Electrical and Information Engineering, Tianjin University
[2]Tangshan Power Supply Company of State Grid
[3]Jibei Electric Power Company Limited

P 2-8 Galloping Characteristics of 10kV Overhead Transmission Line Using Finite Element Analysis Method

Zhihui Wang[1], Yong Liu[1], Xianghuan Kong[2], Qiran Li[3], Xingwang Huang[1], Boxue Du[1]
[1]School of Electrical and Information Engineering, Tianjin University
[2]Xuzhou Power Supply Branch State Grid Jiangsu Electric Power Limited Corporation
[3]Tangshan Power Supply Company State Grid Jibei Electric Power Company Limited

P 2-9 Analysis of Multi-Spectral Signal in GIS and Comparing with Electrical Signals

Nannan Yan[1], Huangru Zhu[1], Chengchen Qian[2], Shunsheng Gui[2], Chunjie Gu[2]
[1]State Grid Shanghai Energy Interconnection Research Institute
[2]State Grid Shanghai Municipal Electric Power Company

P 2-10 Influence of Oil Baffle Structure on Winding Temperature Distribution of Transformer under Different Cooling Modes

Cong Liu[1], Jian Hao[1], Xianliang Zhang[1], Jiang Sun[2],
Chun Xiang[2], Guanghua Liao[2]
[1]State Key Laboratory of Power Transmission Equipment & System Security and New Technology
[2]Chongqing Nari Borui Transformer Co., Ltd.

P 2-11 Study on Terahertz Time-domain Spectroscopy Method of Detecting Inorganic Salt in Outdoor Insulation Contamination

Xudong Zheng[1], Hongwei Mei[1], Xingming Bian[2], Lanxin Li[1], Huaiyuan Jiang[1], Liming Wang[1]
[1]Tsinghua Shenzhen International Graduate School, Tsinghua University
[2]State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University

P 2-12 Electric Field Computation and Optimization for a 400 kV Y-shaped Composite Cross-arm

Kai Yin[1], Filipe Faria da Silva[1], Claus Leth Bak[1],
Hanchi Zhang[1], Qian Wang[1], Henrik Skouboe[2]
[1]Department of Energy Aalborg University
[2]Bystrup Architecture Design & Engineering, Vermundsgade 40A, 2100 Kobenhavn

P 2-13 An Improved Meshless Method Based on Strong-Weak Coupling Algorithm for Electrostatic Field Calculation

Hongzhi Du[1], Tong Wu[2], Yuan Fang[2], Shi Long[1], Youyuan Wang[1]
[1]State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing university
[2]State Grid Hubei Electric Power Company Electric Power Research Institute State Grid Hubei Electric Power Company

P 2-14 Improved Finite Element Based on Gradient Recovery Algorithm for Electric Field Calculation

Tu Caiqi[1], Bai Yao[1], Long Shi[2], Du Hongzhi[2]
[1]Electric Power Research Institute State Grid Hubei Electric Power Company
[2]State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing University

P 2-15 A Method for Simulating Abnormal Heating Internal Interface of Composite Insulator Based on Electromagnetic Heating

Liming Wang, Ziyue Li, Hongwei Mei
Tsinghua Shenzhen International Graduate School, Tsinghua University

P 2-16 Numerical Simulation of Influence of Dust on Electric Field Distribution of Insulators in Northwest China

Jiang Guimin[1], Zhou Yuanxiang[2], Sui Jiang Yuan[3], Ma Xudong[4], Jiang Ling[4], Wang Shengfu[4]
[1]School of Electrical Engineering, Xinjiang University
[2]Tsinghua University
[3]Zhuhai Power Supply Bureau
[4]National Network Qinghai Electric Power Research Institute of Electric Power

P 2-17 Traveling Wave Location of Cable Faults Based on Real-time Sensing of High Frequency Signals

Muye Zhang, Renfei Che, Jiahui Chen
School of Electrical Engineering, Shandong University

P 2-18 Research on Position and Recognition Algorithms for Insulators Based on Efficient Det

Qifan Yang[1], Zhicheng Ma[1], Zhiru Li[1], Xu Zhang[2], Fangjun Li[2], Hongzhong Ma[1], Shaotong Pei[3]
[1]State Grid Gansu Electric Power Research Institute
[2]State Grid Gansu Electric Power Company
[3]School of Electrical & Electronic Engineering North China Electric Power University

P 2-19 Interface Stress Simulation of 200kV Gas-filled Plug-in DC Cable Termination

Haitian Wang[1], Yi Luo[1], Tobias Fechner[1], Chong Zhang[2], Zhengtong Lu[3], Mingyu Zhou[1]
[1]Global Energy Interconnection Research Institute Europe
[2]Global Energy Interconnection Research Institute Co., Ltd. State Key Laboratory of Advanced Transmission Technology
[3]Marine Power Transmission Technology Research Center State Grid Zhoushan Power Supply Company

P 2-20 Noise Analysis and Device Improvement of Composite Probe for Space Charge Measuring Based on PIPWP Method

Jiaying Kong, Yewen Zhang, Zebin Cao, Feihu Zheng, Ting Qian
Department of Electrical Engineering Tongji University

P 2-21 Electric Field Simulation of 10kV Cable Intermediate Joint Based on Ingress Defect

Chenyang Zhang, Zhidong Jia
Tsinghua Shenzhen International Graduate School Department of Electrical Engineering

P 2-22 Transformer Defects Detection Method Based on Visible and Infrared Fusion Images

Yifeng Han[1], Yan Dai[2], Li Liu[2], Donglian Qi[1], Rui Han[2], Xiongwei Jiang[2]
[1]Electrical and Electronic Engineering Department Zhejiang

University
[2]State Grid Zhejiang Electric Power Co., Ltd., Electric Power Research Institute

P 2-23 Two Methods of Simulating Corona Current Pulses in SF_6 Under Negative DC Voltage

Wei Ding, Yanliang He, Anbang Sun, Guanjun Zhang
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University

P 2-24 Simulation of Electric Field and Potential Transfer Arc During the On-Line Process of the Live Working Anti-Vibration Hammer Robot

Chi Yu[1], Weiwei Pan[1], Xinglie Lei[2], Guangkai Yu[2], Weinan Qin[1], Kai Zhu[1], Hongwei Zheng[1]
[1]State Grid Zhejiang Jinhua Electric Power Co., Ltd.
[2]China Electrical Power Research Institute

P 2-25 Analysis on the Flux Leakage Distribution by the 3D FEM Simulation Method under the Different Local and Minor Transformer Winding Defects

Xi Ouyang[1,2], Quan Zhou[1,2], Weigen Chen[1,2], Lin Du[1,2], Hujun Shang[1,2], Junfeng Dai[1,2]
[1]State Key Laboratory of Power Transmission Equipment & System Security and New Technology
[2]School of Electrical Engineering, Chongqing University

P 2-26 Raman Diagnosis Method for Thermal Aging of Insulating Paper Based on AE-LDA and Naïve Bayes

Zewei Wang, Weigen Chen, Fu Wan, Dingkun Yang,
Weiran Zhou
Chongqing University

P 2-27 Research on Lightning Multi-Characteristic Quantity Monitoring System for Transmission Lines

Kaihua Jiang[1], Xiangxian Zhou[1], Yongto Jin[1], Lin Du[2],
Wenhao Wang[1], Rui Han[1]
[1]State Grid Zhejiang Electric Power Research Institute
[2]State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University.

P 2-28 Calculation and Analysis of Induced Current of Open Circuit Breaker in 500kV Substation

Yang Su[1], Gang Liu[1], Xiaoming Zhang[2], Song Yan[2], Kai Ma[2], Daojun Huang[2], Yushun Zhao[1]
[1]School of Electrical Engineering and Automation, Hefei University of Technology
[2]State Grid Anhui Electric Power Maintenance Co., Ltd.

P 2-29 A New Method of Nuclear Magnetic Resonance for Aging State Detection of Composite Insulators
ZhangTing Yu, DaJian Li, LiangYuan Chen
Electric Power Research Institute Guangxi Power Grid Co.

P 2-30 The Diagnosis of Metal Vapor Density After Arc Extinction by Plane Laser-Induced Fluorescence
Shaogui Ai[1], Yiping Fan[1], Yuecheng Li[2], Yujie Gong[2],
Pei Ding[1], Feiyue Ma[1], Xiuguang Li[1], Zhenxing Wang[2]
[1]Power Research Institute of the State Grid Ningxia Power Company Limited Yinchuan
[2]State Key Laboratory of Electrical Insulation and Power Equipment Xi'an Jiaotong University

P 2-31 Study on the Tangent Calculation Method of Frequency-domain Dielectric Loss Angle Based on Improved Kalman Filtering Algorithm
Zhiming Huang, Ran Zhuo, Mingli Fu, Yue Yu, Yan Luo, Chuanhui Cheng, Changting Yu, Hongsheng Zhan, Tao Yang, Jia Mao
CSG Electric Power Research Institute Co., Ltd.

P 2-32 Topology Optimization of Spatial Distribution of Dielectric Properties in Functionally Graded Cable Joint Insulation
Yifan Zhang[1], Bing Luo[1], Yongjie Nie[2], Mingli Fu[1], Shuai Hou[1], Baojun Hui[1], Bing Feng[1], Wenbo Zhu[1], Xianping Zhao[2], Xiangyu Tan[2]
[1]Department of High Voltage Technology, CSG Electric Power Research Institute Co., Ltd.
[2]Electric Power Research Institute, Yunnan Power Grid Co., Ltd.

P 2-33 Molecular Simulation of Adsorption Behavior of Water and Mineral Oil Molecule on Zeolite 3A and 4A
Yukun Ma[1], Zhe Hou[1], Bo Qi[1], Yong Sun[2], Fengquan Jia[1], Jianping Li[2], Jianxin Yang[1], Xiao Yang[1]
[1]State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources North China Electric Power University
[2]Maintenance & Test Center of EHV Power Transmission Company China Southern Power Grid

P 2-34 Simulation of Electrical Performance of Algae Contaminated Silicone Rubber
Shifang Yang[1], Yunpeng Liu[1,2], Lei Sun[3]
[1]Hebei Provincial Key Laboratory of Power Transmission Equipment Security Defense, North China Electric Power University

[2]State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University
[3]Power Transmission and Transformation Technology Center, State Grid Jiangsu Electric Power Co., Ltd. Research Institute

P 2-35 Research and Application of Fault Current Control Methods for Artificial DC Short-circuit Test

Luo Pandian, Xiao Leishi, Sheng Chao, Zhu Lianghe
Electric Power Research Institute of Guangdong Power Grid Corporation Ltd, China Southern Power Grid Company Limited

P 2-36 Gearbox Fault Diagnosis for Wind Turbines Based on Data Augmentation using Improved Generative Adversarial Networks

Chen Shen[1], Jingang Wang[1], Junsheng Chen[2], Bin Zhang[3]
[1]State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University
[2]College of Automation, Chongqing University of Posts and Telecommunications
[3]Engineering & Technology Department China Southern Power Grid Energy Efficiency & Clean Synthesis Energy Co., Ltd.

P 2-37 Numerical Analysis of the Motion Characteristics of Combustion Particles in Gap based on Multi-Physical Field Coupling

Changjie Zhou, Dongping Xiao, Yang Bao
State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University

P 2-38 Application of an Improved Ultraviolet Spectrophotometry Technology for the Determination of Antioxidants in Natural Ester Liquids

Wei Peng[1], Mingxiang Xiong[1], Xianqin Deng[1], Zhiyan Peng[2], Wu Lu[2], Wenbin Zhao[2]
[1]Electric Power Research Institute, State Grid Shanghai Municipal Electric Power Company
[2]College of Electrical Engineering, Shanghai University of Electric Power

P 2-39 Visual Platforms for Ultrasonic Detection of the Stress in GIS/GIL Insulators

Weiguo Li[1], Jinwei Chu[1], Wanying Liu[1], Fusheng Zhou[2], Chao Gao[2], Ruodong Huang[2], Yingying Zhang[2]
[1]Maintenance and Test Center of EHV Power Transmission Company China Southern Power Grid
[2]Electric Power Research Institute, China Southern Power Grid

P 2-40 Integrated Decision-making for Line Loss Online Calculation

and Management Based on Situation Awareness Visualization.
Li Yao[1], Linna Ni[1], Huanlei Yu[2], Qi Ding[1], Jianmin Zhang[2], Jiangming Zhang[1], An Wen[3]
[1]State Grid Zhejiang Marketing Service Center
[2]School of Automation, Hangzhou Dianzi University
[3]Zhejiang Huayun Information Technology Co. Ltd.

P 2-41 Research on the Defect Detection Technology of Abnormal Vibration of GIS Equipment Based on Acoustic Emission Analysis Technology
Xiping Jiang[1], Jian Hao[2], Yongfu Li[1], Qian wang[1], Yingkai Long[1], Xupeng Wang[2]
[1]Chongqing Electric Power Research Institute, State Grid Chongqing Electric Power Company.
[2]Chongqing University

P 2-42 Identification of Icing Thickness Based on the On-line Monitoring of Insulators
Qiran Li[1], Yong Liu[2], Masoud Farzaneh[3], Boxue Du[2]
[1]Tang Shan Electric Power Company
[2]Tianjin University
[3]Université du Québec à Chicoutimi

P 2-43 Molecular Dynamics Simulation of Water Diffusion in Liquid Silicone Rubber
Zhanglei Shi, Zhidong Jia
Tsinghua Shenzhen International Graduate School

P 2-44 Research on the Methods of Measuring High Frequency Small Current in Large Power Frequency Current by Current Transformer
Tonghao Zhou, Jiangyu Liu, Zhe Zhuang, Jiangang Dai, Dehua Zhao, Shengchang Ji
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University

P 2-45 Intelligent Online Monitoring and Diagnosis of a DC Superconducting Current Limiters
Yingdun Hei[1], Xingmei Zhou[1], Yaxiong Tan[2], Jiajun Pan[2], Wei Chen[1], Chuyu Tian[2]
[1]Electric Power Research Institute, Yunnan Power Grid Co., Ltd
[2]State Key Laboratory of Power Transmission Equipment & System Security and New Technology Chongqing University

P 2-46 Low-k Cross-linked Polyimide for Microelectronic Packaging Application
Xiaodi Dong, Mingsheng Zheng, Junwei Zha
School of Chemistry and Biological Engineering, University of Science and Technology Beijing.

Wednesday, April 14th, 11:00-12:00
Poster Session 3: Equipment, Ageing, Life Assessment, etc.
Chairs: Dongxin He (Shandong University)
Peng Wang (Sichuan University)
Venue: Big Banquet Hall 3, 2nd F

P 3-1 Defects Analysis of 550kV OIP Transformer Bushing
Kejie Huang[1], Jianwei Cheng[1], Shuaibing Wang[1], Wei Zhang[1], Linjie Zhao[1], Shan Wang[2]
[1]Operation Technology Support Center Electric Power Research Institute, CSG
[2]High Voltage Research Institute Electric Power Research Institute of Yunnan Power Grid Co., Ltd.

P 3-2 Study on the Developing Regularity of Partial Discharge at the Interface Defects of Cable Accessories under Thermal Cycling
Bin Feng[1], Shuai Hou[1], Lin Zhang[2], Wenbo Zhu[1], Ying Yu[2], Xiaojing Dang[2]
[1]Electric Power Research Institute China Southern Power Grid
[2]Power Technology Research Center Shenzhen Power Supply Co., Ltd.

P 3-3 Seismic Performance of ±800 kV Ultra-High Voltage Converter Transformer-Bushing System
Dexu Zou[1], Linjie Zhao[2], Chang He[2], Qiang Xie[2]
[1]Electric Power Research Institute of Yunnan Power Grid Co.
[2]Electric Power Research Institute of China southern power grid Co., Ltd.

P 3-4 Effects of Conductor Pre-tension on Seismic Performance of Converter Transformer Bushing
Shan Wang[1], Jianwei Cheng[2], Yunlong Chen[2], Qiang Xie[2]
[1]Electric Power Research Institute of Yunnan Power Grid Co., Ltd.
[2]Electric Power Research Institute; China Southern Power Grid

P 3-5 Influencing Factors on the Ampacity of EVs Cables
Yifang Wang[1], Jin Li[1], Xiaoxiao Kong[1], Boxue Du[1], Jing Xu[2], Chuanbin Wang[2]
[1]School of Electrical and Information Engineering, Tianjin University.
[2]Far East Cable Co., Ltd. Jiangsu, China

P 3-6 Seismic Performance and Isolation Design for 220kV Surge Arrester
Hao Li[1], Long Shen[1], Yaolong Wang[1], Xin Wang[2], Zhenyu Yang[3], Qiang Xie[4]

[1]Electric Power Research Institute Yunnan Power Grid Co., Ltd.
[2]Yunnan Power Grid Co., Ltd.
[3]Earthquake Engineering Research & Test Center Guangzhou University.
[4]Department of Civil Engineering Tongji University.

P 3-7 Study on the Current Concentration and Local Heating of the Buffer Layer in HV XLPE Cables

Ying Liu, Jiamei Chen, Heyan Zhang
School of Electrical Engineering, Xi'an Jiaotong University

P 3-8 Study on Pressure Variation Characteristics of Cable Accessories Interface under Temperature Cycling

Shuai Hou[1], Haoyu Wang[2], Ying Yu[2], Bin Feng[1], Wenbo Zhu[1], Yifan Zhang[1]
[1]Electric Power Research Institute, China Southern Power Grid
[2]Power Technology Research Center, Shenzhen Power Supply Co., Ltd.

P 3-9 Transformer Fault Caused by Structure Defect of Resin Impregnated Fiberglass Bushing

Dexu Zou[1], Linjie Zhao[2], Kejie Huang[2], Jianwei Cheng[2], Shuaibing Wang[2], Wei Zhang[2]
[1]High voltage research institute Electric Power Research Institute of Yunnan Power Grid Co., Ltd.
[2]Operation Technology Support Center, Electric Power Research Institute, CSG.

P 3-10 Electro-mechanical Performance Improvement of Pantograph Strip for High-speed Railway

Wenfu Wei, Xiaobo Li, Qianhua Liao, Haozi Zuo, Zefeng Yang, Guangning Wu
Southwest Jiaotong University

P 3-11 Research on A Transition Circuit of Vacuum On-Load Tap-Changer

Geqi Li[1], Ke Wang[1], Shuqi Zhang[1], Fan Yang[1], Peng Li[1], Jinzhong Li[2], Gang Li[1], Xueli Liu[1]
[1]China Electric Power Research Institute
[2]State Grid Corporation of China

P 3-12 Study on Surface Electric Field Distribution Characteristics of Polluted Composite Insulator for ± 800 kV Transmission Line

Chilong Jiang[1], Dehua Zhou[2], Xiao Yang[3], Yuan Yang[3], Tianyan Jiang[3]
[1]State Grid Chenzhou Power Supply Company, Key Laboratory of Intelligent Live Working Technology and Equipment (Robot) of Hunan Province
[2]State Grid Hunan Electric Power Company Limited

[3]Chongqing University of Technology

P 3-13 Breakdown Characteristics and Gap Distance Standardization of Neutral Point Gap in 110 kV and 220 kV Transformers
Mingzhong Liu[1], Rui Han[1], Qingguang Li[2], Zhe Yin[2], Yongkang Zheng[1], Hao Wang[2], Jianjun Tian[2]
[1]State Grid Sichuan Electric Power Research Institute
[2]Beijing Zhongqing Intelligence Technology Co., Ltd

P 3-14 110kV and 220kV Transformer Neutral Point Gap and Arrester Standardization and Relay Protection Configuration
Rui Han[1], Mingzhong Liu[1], Yong Liu[2], Zuoheng Zhu[2], Jie Wu[1], Yonghao Huang[2], Zihong Zhao[2]
[1]State Grid Sichuan Electric Power Research Institute
[2]State Grid Aba Power Supply Company

P 3-15 Application of Intelligent Flexible Technology in Neutral Point Protection of 110kV and 220kV Transformers
Rui Han, Mingzhong Liu, Hua ZHANG, Cheng Long, Shilong Li, Jie Wu, Rongsen Luo
State Grid Sichuan Electric Power Research Institute

P 3-16 Research on Technical Parameters of Safe Operation and Maintenance on 110kV Shared Towers
Jianye Cui[1], Kai Zhu[1], Chunjun Tang[1], Zhun Zhang[2], Qiang Zhu[1], An Chen[1]
[1]Jinhua Power Supply Company State Grid Zhejiang Electric Power Co., Ltd.
[2]China Electric Power Research Institute Co., Ltd.

P 3-17 Structure Design of UHVDC Pure SF_6 Insulated Bushing
Gengsheng Xie, Yunfei Shi, Shifeng Shi, Qingyu Wang,
Peng Liu, Zongren Peng
State Key Laboratory of Electrical Insulation and Power Equipment Xi'an Jiaotong University

P 3-18 Analysis of the Influence of the Structure of the Arc Chamber of the High Voltage SF_6 Circuit Breaker on the Breaking Characteristics of the Capacitor Bank
Yi Wenlong[1,2], Zhao Yisong[1,2], Wang Feiming[1,2], Li Bing[1,2], Zhang Shanshan[1,2]
[1]Liaoning Dongke Power Co., Ltd.
[2]Electric Power Research Institute of State Grid Liaoning Electric Power Supply Co., Ltd.

P 3-19 The Influence of Temperature on Draw Rod System of Converter Ttransformer Grid Side Bushing
Li Xining, Tang Hao, Yang Fan, Cheng Huanchao, Zhang Shuqi
China Electric Power Science Research Institute

P 3-20 The Material Properties and Insulation Design for 35kV Flexible and Torsion Resistant Cable

Fan Xiangyu[1], Xu Jing[2], Gao Jinghui[1], Zhong Lisheng[1], Wang Liang[2], Zhao Xiyuan[1]
[1]State Key laboratory of Electrical Insulation and Power Equipment Xi'an Jiaotong University
[2]Far East Cable Co., Ltd.

P 3-21 Interface Characteristic of Extrusion-Molded Joints of 500kV Submarine Cables

Changji Zheng, Hongkong Zhao, Jiaming Yang
Key Laboratory of Engineering Dielectrics and Its Application Ministry of Education
School of Electrical and Electronic Engineering Harbin University of Science and Technology

P 3-22 Research on the Ice Shedding of UHV Transmission Lines and its Prevention Measures

Xiu Yan, Liming Wang, Fanghui Yin
Engineering Laboratory of Power Equipment Reliability in Complicated Coastal Environments, Tsinghua Shenzhen International Graduate School, Tsinghua University.

P 3-23 Distribution Network Arc Suppression Coil Distributed Compensation and Its Influence on Fault Line Selection

Zhenqiang Li[1], Min Dai[1], Chuanquan Liu[2], Ying Lou[1]
[1]China Electric Power Research Institute, Wuhan
[2]Shanghai Songjiang Power Supply Company

P 3-24 Mechanical Stress Distribution and Reliability Analysis of GIL Tri-post Insulator

Songtao Liu[1], Hucheng Liang[1], Jin Li[1], Liucheng Hao[2], Boxue Du[1], Yaxiang Wang[2]
[1]School of Electrical and Information Engineering Tianjin University
[2]Pinggao Group Co., Ltd.

P 3-25 Characteristics of Glass Insulator Hot Water Deicing

Xiaohong Ma[1], Bingzhe He[2], Zhijin Zhang[2], Qi Yang[1], Lusong Zhang[1], Huan Huang[1]
[1]Electric Power Research Institute, Guizhou Power Grid Co., Ltd
[2]State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University

P 3-26 Research on a Passive Non-interventional Combined Anti-icing Method for Overhead Line Structure

Jun Liu[1], Ran Li[2], Yu Lei[1], Zhijin Zhang[2], Haitao Fu[1]
[1]State Grid Chongqing Electric Power Company

[2]State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University

P 3-27 Research on an Optimal Design Method of Anti-Icing and Anti-Galloping Device Based on Loading Principle

Ran Li[1], Jun Liu[2], Zhijin Zhang[1], Yu Lei[2], Haitao Fu[2]
[1]State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University
[2]State Grid Chongqing Electric Power Company

P 3-28 Effect of Different Operational Conditions on Distribution of Temperature Field in HV Directly Burial Power Cables

Li Liu[1], Jinxian Li[2], Luyao Zhou[1], Shaohua Wang[1], Fan Yang[2]
[1]Research Institute of State Grid Zhejiang Electric Power Corporation
[2]State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University

P 3-29 Study on Mechanical Characteristics of GIL Three Post Insulator Under Different Loads

Xi Chen[1], Yuan La[2], Chao Gao[3], Fusheng Zhou[3], Ruodong Huang[3], Guoli Wang[3], Yao Zheng[3]
[1]Guangdong Power Grid Co., Ltd, China Southern Power Grid
[2]China Southern Power Grid Co., Ltd China Southern Power Grid
[3]Electric Power Research Institute, China Southern Power Grid

P 3-30 The Domestic and Foreign Standard Analysis of T100a Test for High Voltage AC Circuit Breaker.

Xuefeng Guo, Yongqi Yao, Zhijun Wang, Yunpeng Sha, Qi Zuo, Nannan Zhang
R&D Centre Pinggao Group Co., Ltd.

P 3-31 A Preliminary Study on Anti-Explosion Performance of UHV Transformer

Suwen Chen[1], Gan Du[2], Qiang Xie[2], Guanglei Qu[3]
[1]State Key Laboratory for Disaster Reduction in Civil Engineering, Tongji University.
[2]College of Civil Engineering, Tongji University
[3]Transformer Group Co., Ltd. Teba Shenyang

P 3-32 Study of Loss and Junction Temperature in Modular Multilevel Converter under Multi-Constraint Conditions

Shichong Zhang, Baodong Bai, Dezhi Chen
School of Electrical Engineering, Shenyang University of Technology

P 3-33 Surface Charge and Electric Field Distribution along Tri-post Insulators in ±800 kV GIL

Jianan Dong[1], Boxue Du[1], Jin Li[1], Hucheng Liang[1], Hang Yao[1], Yu Chen[2]
[1]Key Laboratory of Smart Grid of Education Ministry, School of Electrical and Information Engineering, Tianjin university
[2]China Electric Power Research Institute

P 3-34 Research on Error Characteristics of Three-phase Two-element Combined Transformer under Simulating Operating Conditions

Cong Lin[1], Fuyong Chen[2], Qingchan Liu[1], Zhaolei He[1], Jun Sun[3], Jixiong Xiao[4]
[1]Metering Center of Yunnan Power Grid Co., Ltd.
[2]Electric Power Research Institute of, Yunnan Power Grid Co., Ltd.
[3]R & D Center, Wuhan Pandian Science and Technology Co., Ltd.
[4]School of Electrical and Electronic Engineering, Hubei University of Technology

P 3-35 A DC Combined Apparatus for DC 1.5 kV Rail Transit Traction Systems

Jiangxiang Peng[1], Haixia Zhang[2], Junhai Wang[2], Bin Xiang[1], Hongxu Li[1], Lei Gao[1], Dongyu Wang[1], Xuedong Wang[1], Zhiyuan Liu[1]
[1]State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University
[2]Hebei Electric Power Equipment Co., Ltd.

P 3-36 Influence of the Length and Thickness of Nonlinear Material on Electric Field Distribution in Cable Terminal

Qinghao Yang[1], Jun Hu[1], Zhikang Yuan[1], Jinzhong Li[2], Yu Yin[3], Hao Tang[3]
[1]State Key Laboratory of Power Systems Department of Electrical Engineering Tsinghua University
[2]State Grid Corporation of China,
[3]China Electric Power Research Institute

P 3-37 Compact Design for 550kV GIS Insulation System

ChaoWang[1], Wendong Li[1], Zhihui Jiang[1], HaoyangYin[1], Xiong Yang[1], Guanjun Zhang[1], Yifan Zhang[2], Mingli Fu[2], Bing Luo[2]
[1]State Key Laboratory of ElectricalInsulation and Power Equipment, Xi'an Jiaotong University
[2]CSG Electric Power Research Institute.

P 3-38 Lightning Protection Performance of 500kV Linear Tower Suspension String Composite Insulator Instead of Porcelain Insulator

Hanyu Zheng[1], Zhijin Zhang[1], Jun Xu[2], Xiaojie Wang [2], Xingliang Jiang[1]
[1]State Key Laboratory of Power Transmission Equipment &

System Security and New Technology Chongqing University
[2]State Grid Fujian Electric Power Research Institute State Grid

P 3-39 Research on Matching Operation of DC Circuit Breaker and Superconducting Fault Current Limiter

Yingdun Hei[1], Xingmei Zhou[1], Yaxiong Tan[2], Minqian Wen[2], Wei Chen[1], Jiajun Pan[2]
[1]Electric Power Research Institute, Yunnan Power Grid Co., Ltd
[2]State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University

P 3-40 Analysis on Bird Damage Accident of Overhead Transmission Lines in Ningxia Region and Optimization Design of Insulating Grading Ring

Zihan He[1], Hong Wu[2], Xiulei Hu[3]
[1]College of Arts and Science, Miami University
[2]Electric Power Research Institute of Ningxia Power Electric Corporation of State Grid
[3]School of Electrical and Electronic Engineering Chongqing University of Technology

P 3-41 On Site Test Research and Application of Flexible Short-circuit Current Suppression Technology Based on 220kV Fast Circuit Breaker

Yuqi Jin, Yong Yang, Xianjun Shao, Shaoan Wang, Lin Zhao, Ning Xu
State Grid Zhejiang Electric Power Company

P 3-42 Study on Mathematical Model of Dual Temperature Arc Plasma in High Voltage SF6 Circuit Breaker

Feiming Wang[1,2], Yisong Zhao[1], Yitao Liu[1], Bing Li[1,2], Wenlong Yi[1,2], Fucheng Lang[1]
[1]Elenctric Power Research Institute of State Grid Liaoning Electric Power Supply Co., Ltd.
[2]Liaoning Dongke Power Co., Ltd.

P 3-43 Simulation Analysis about Anti-DC Effect of Current Transformer with Air Gapped Core

Fuyong Chen[1], Ye Chen[1], Tong Han[1], Cong Lin[4], Ming Cao[1], Jun Sun[2], Shuai Yang[3]
[1]Yunnan Electric Power Research Institute Key Laboratory of CSG for Electric Power Measurement Yunnan Power Grid Co., Ltd.
[2]Wuhan Pandian Science and Technology Co., Ltd.
[3]School of Electrical and Electronic Engineering Hubei University of Technology
[4]Metering Center of Yunnan Power Grid Co., Ltd. Yunnan Power Grid Co., Ltd.

P 3-44 Cloud-model-based Effectiveness Evaluation for Deicing Robots of Overhead Power Lines
Bing Luo[1], Wei Liang[2] , Yanpeng Hao[2], Lin Yang[2],
Tingting Wang[1], Licheng Li[2]
[1]The Institute of China South Power grid
[2]South China University of Technology.

P 3-45 GIS Room Autonomous Inspection System Based on Multi-rotor UAV
Qi Li[1], Yan Dai[2], Rui Han[2], Donglian Qi[1], Yunfeng Yan[1]
[1]College of Electrical Engineering Zhejiang University
[2]State Grid Zhejiang Electric Power Co.Ltd. Electric Power Research Institute.

Wednesday, April 14th, 16:40-18:00
Poster Session 4: Dielectric Phenomenon
Chairs: Xuetong Zhao (Chongqing University)
Yunxiao Zhang (Tsinghua University)
Venue: Big Banquet Hall 3, 2nd F

P 4-1 Thermal Aging Dependent Surface Charge Characteristics of Fluorinated Oil-Paper Insulation Under the Harmonic Superimposed DC Voltages
Wenbo Zhu[1], Mingli Fu[1], Baojun Hui[1], Shuai Hou[1],
Yifan Zhang[1], Bin Feng[1], Boxue Du[2], Jin Li[2], Jinpeng Jiang[2]
[1]Electric Power Research Institute, China Southern Power Grid
[2]The School of Electrical and Information Engineering, Tianjin University

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Ziru Zha, Senkun Mei, Zhenxing Wang, Zhiyuan Liu
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