4th IEEE International Conference on Dielectrics

Technical Program

Palermo, Italy, July 3-7, 2022

Sponsored by

DEIS IEEE

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Conference locations

Botanical Garden

On July 3rd, all events will take place in the Botanical Garden located in Via Lincoln 2, 90133 Palermo.
The Botanical Garden of the University of Palermo is one of the most important academic institutions in Italy. Considered a huge open-air museum, it boasts over two hundred years of activity that allowed it to be studied in Sicily, Europe and across the Mediterranean Sea, of countless plant species, many of which originate in tropical and subtropical regions.
The peculiarity of this Garden is today represented by the great richness of host species that make it a very rich place of different flora expressions. It is part of the Museum System Services Centre of the University of Palermo.
Starting from 14:30, in the Botanical Garden the *reception desk* for the *check-in* and *registration* will be open until 19:00.
The **Workshop** will take place in the "***Sala Lanza"*** of the Botanical Garden. After that, the **Welcome Cocktail** will be offered to the participants.



Mondello

Gala Dinner will be held at the ancient bathing establishment "*Alle Terrazze*" located in the Mondello beach.

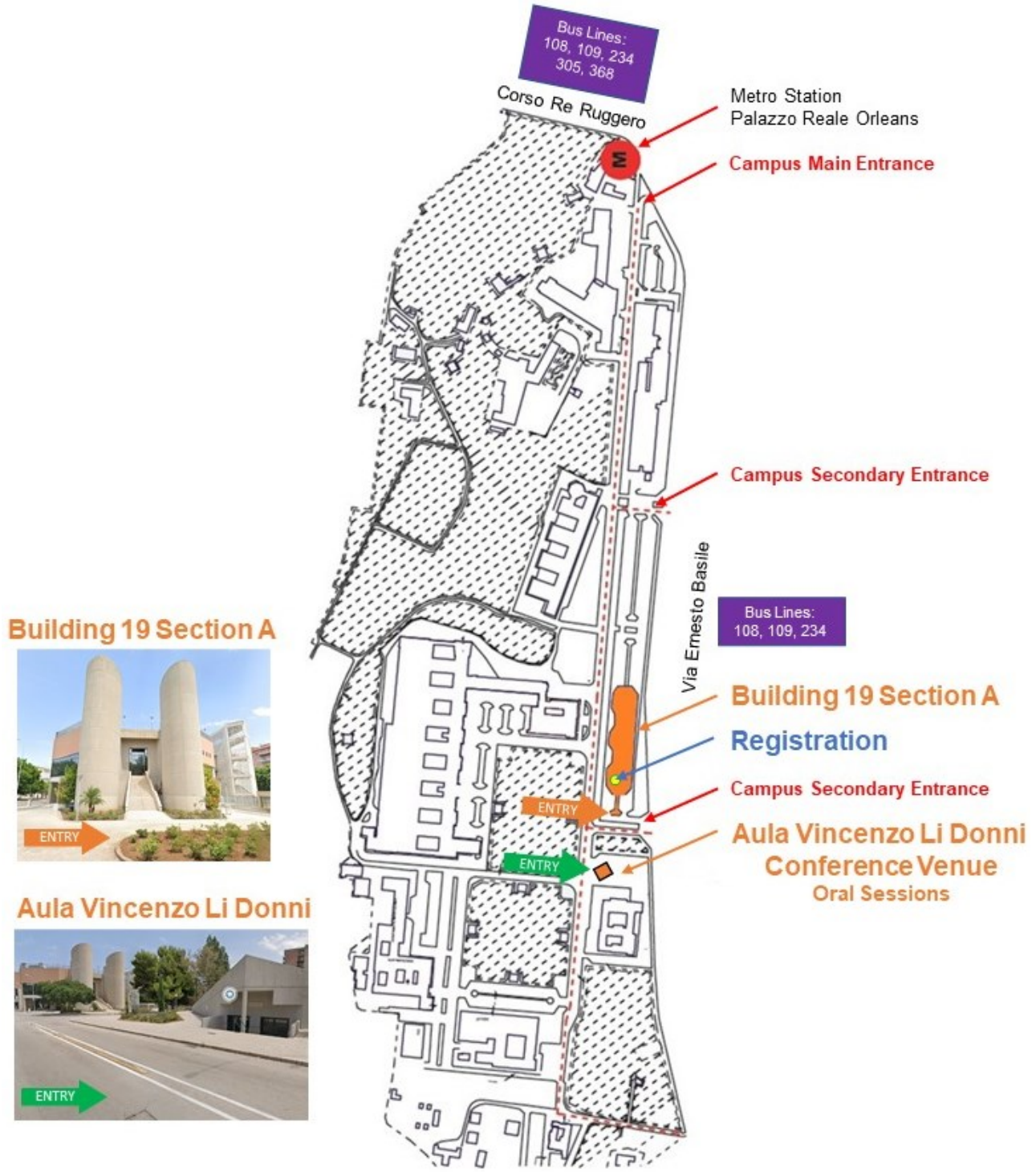

Cefalù

The social event includes a visit to the seaside small town of Cefalù and its Norman Duomo.



Campus of the University of Palermo

From 4th to 7th July, all events will take place in the University Campus located in Viale delle Scienze, 90128 Palermo.
The main conference room is the ***Aula Vincenzo Li Donni***, where the *Opening Session*, *Oral Sessions, E. O. Forster Memorial Lecture* and the *Dakin Award Lecture* will take place. Further rooms are located in **Section A of Building 19**, where the *reception desk* for the *check-in* and *registration* as well as the workstation for *poster sessions* are present. Coffee break and lunch will take place in the same **Section A of Building 19**.



Check-in and registration

The *reception desk* for the *check-in* and *registration* will be open on Sunday 3rd at the Botanical Garden from 14:30 to 19:00. On Monday 4th the *reception desk* will be open at the Building 19 from 7:00 to 14:00. The other days it will always be possible to register from 8:00 to 14:00 at the Building 19 desk.

General information

Oral (plenary) presentations:
The plenary oral sessions will all take place in the Aula Vincenzo Li Donni and live-streamed via Zoom.

Presenters: Each author has 20 minutes available, maximum 15 minutes for the presentation and 5 for the questions. Presenters can use the house style of their institution for slides and provide either a PPT or PDF file. Presentation files for attendees that take part via remote attendance need to be uploaded as PPT or PDF copy by June 26, 2022. This is to enable the session chairs to show the presentation slides via Zoom, in case there are technical issues preventing any authors to do so themselves. Only session chairs and co-chairs will have access to presentation files, and the files will be deleted after the conference. Sessions will typically open 15-30 minutes before the start to allow session chairs to add to the computer the presentations of in person presenters and to verify microphones and/or camera are working for remote presenters and the ability to share their screen.
Participants: In order to save bandwidth and to allow for smooth proceedings, remote participants will be muted and not be able to share their video-feed when logging in. After logging in, please confirm that you are muted and that your camera is disabled. If you have a question to a presenter, please use the chat functionality to bring attention to yourself. Session chairs will then address you and enable you to use your microphone to ask a question. Please start your question by stating your name and affiliation. In case you have no functioning microphone, you can also ask questions in the chat, which will then read out by the session chair. Questions can be written in the chat during the presentation, you do not need to wait for the presentation to end.

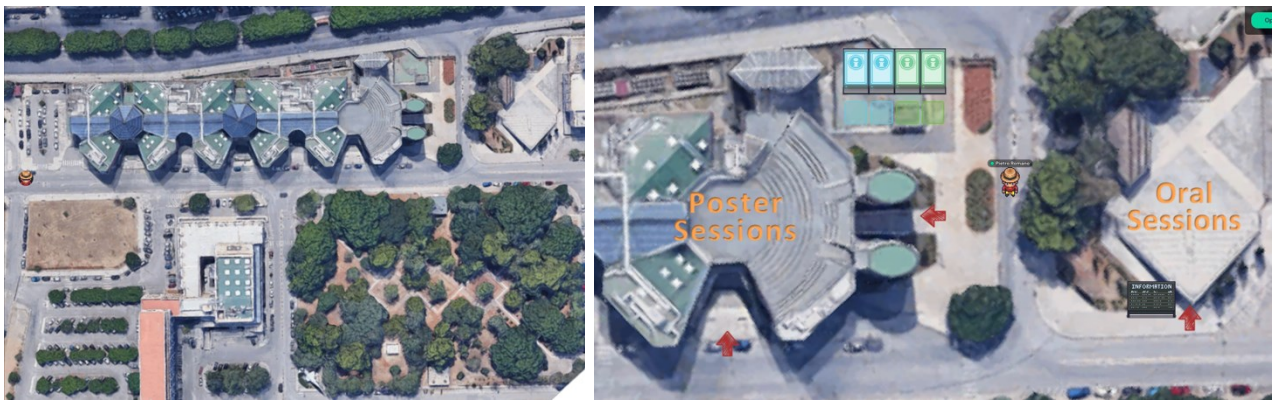
Poster presentations (Gather App):
All participants, in person and virtual, attend the poster sessions on Gather App (https://ww.gather.town). Moving with personal avatar on the virtual map you can participate in the poster sessions in the same way as the “real” poster sessions, but **without the need to print the poster**. Each poster session, which will be held in real time as scheduled, has a dedicated virtual room and each author has a virtual poster panel in which their poster is displayed as an A0 size image for a time of 1 hour and 40 minutes. The authors who present the poster have a position assigned and indicated with a coloured circle at the bottom left of each poster. The other participants will be able to access the rooms and, approaching the posters, view them and interact with the author via video camera and computer audio. Papers will be published in the conference proceedings only if at least one of the authors is present near the poster for the entire time of the session. It will be up to the session chairs to verify the presence of the authors.
The link to the IEEE ICD 2022 Gather environment will be provided to all registered conference attendees. All authors of a poster presentation have to send the poster as an A0 png or jpeg image (width: 841mm height: 1189 mm), with a resolution not less than 60 pixel/cm and maximum size of 5 Mb, via ConfTool by June 26, 2022.
Attendees in person will have some classrooms dedicated to poster sessions where they can connect their personal computer to the electricity network and to the Wi-Fi network. These classrooms are equipped with Schuko CEE 7/4 electrical sockets and Italian *bipasso*

sockets. Please be careful if you need to bring an adapter. Usb-type headphones with microphone will be provided by the organization but do not forget to bring your own too. Further details will be provided on the Conference website.

All conference times are **Central European Time (CET)**. Please use a time-zone converter to establish what local time the sessions start for you.

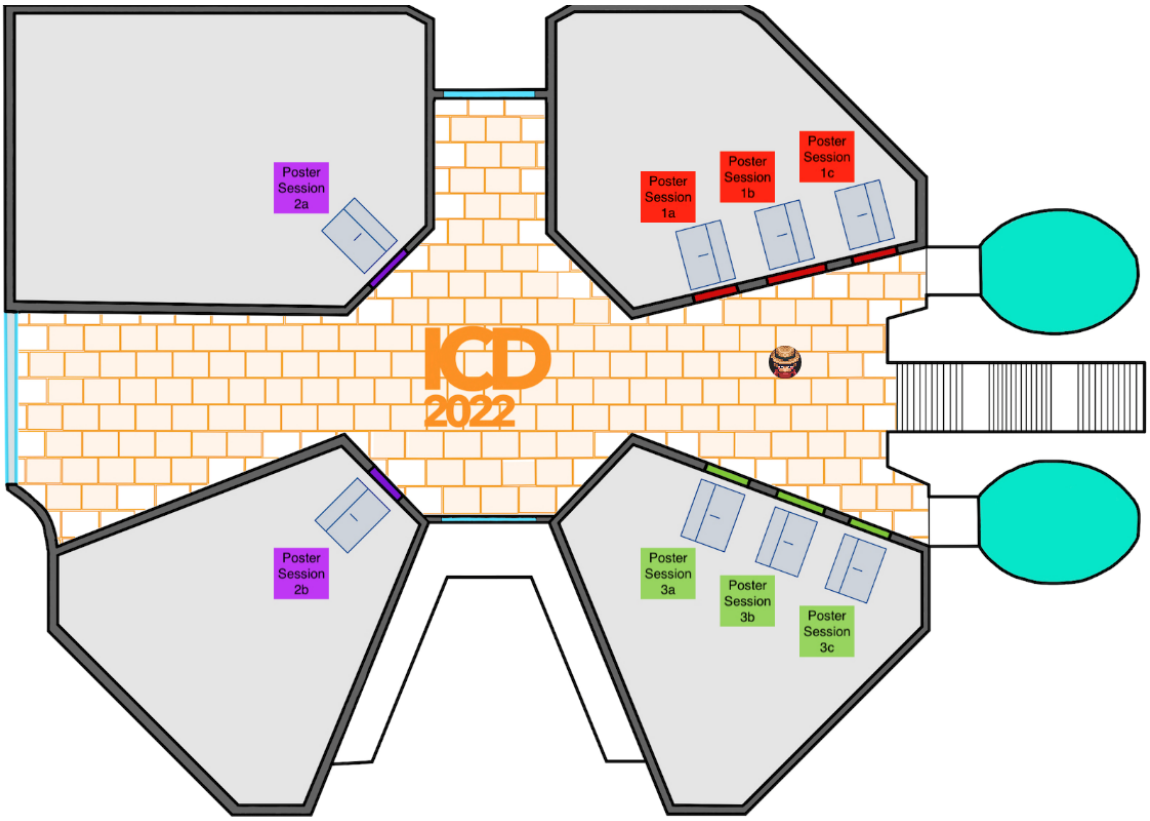
Gather virtual UNIPA Campus

The ICD Gather app environment replicate the real map of the Palermo University Campus and the buildings where the Conference will take place live.



ICD 2022 Gather map of the Palermo University Campus

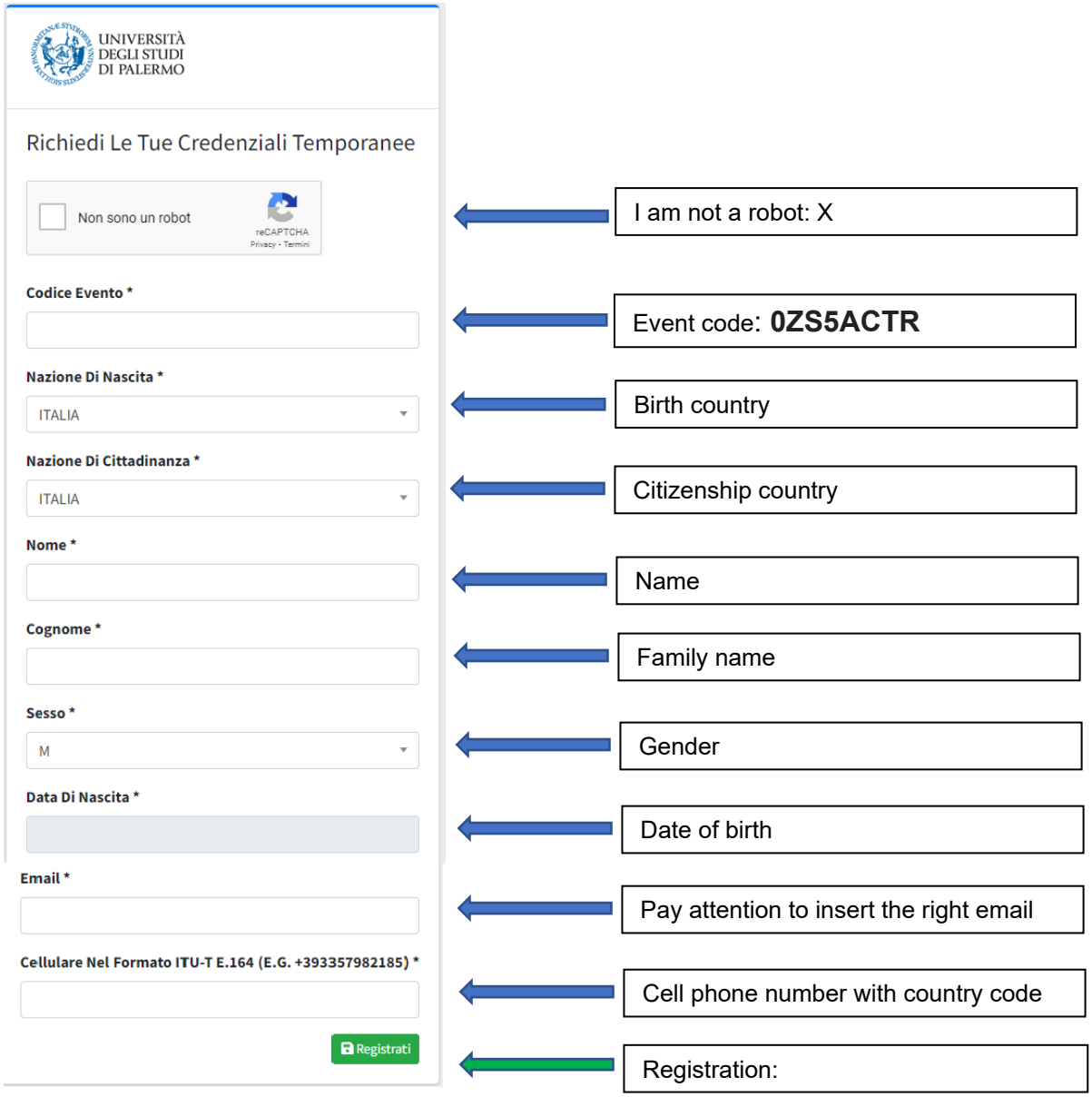
Poster sessions take place in the virtual building 19 where you can find as many rooms as poster sessions.



Internal map of the building 19 with poster session rooms

Wi-Fi Connection

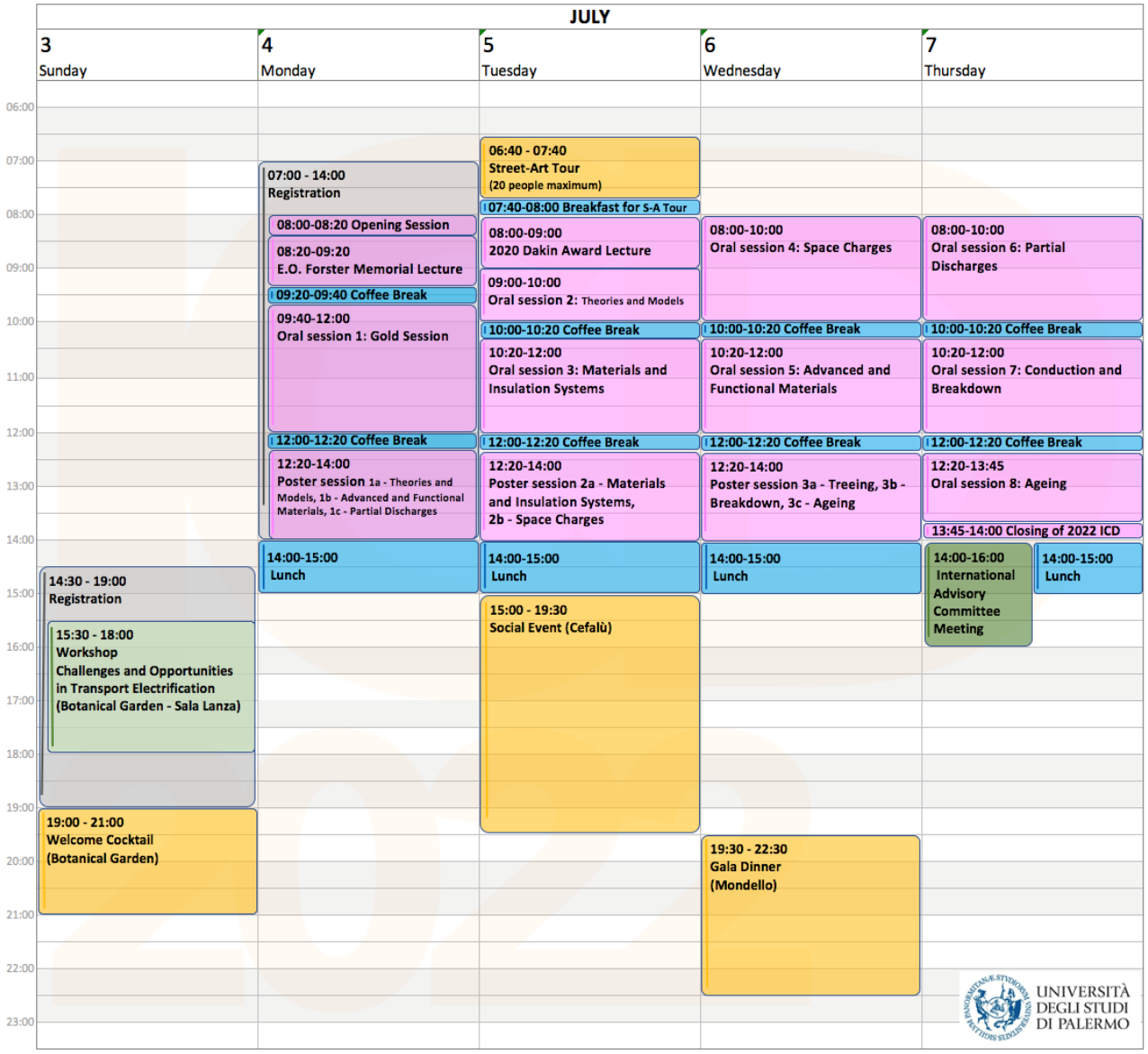
All the facilities of the University of Palermo are equipped with ***eduroam*** wi-fi connection. As an alternative, you can connect with the local wi-fi, ***wifi-unipa-wpa***, following this simple procedure:
Connect to the link:
https://acube.unipa.it/ospiti/registrazione
This screen will appear and you will need to fill out the form.



After clicking on the green registration button, you will receive by email (for Italian only by sms) a temporary username and password to access to the local ***wifi-unipa-wpa***.
Before the departure from your country check that the ***eduroam*** connection is working well or register to obtain the credentials to access the local network

Important note:
In person attendees, remember to bring your laptop to attend the poster sessions.

Conference Agenda



IEEE ICD 2022 Conference Schedule

Date: Sunday, 03/July/2022			
15:30pm - 18:00pm	Workshop: Challenges and Opportunities in Transport Electrification – Aula Lanza Thierry Lebey - Ian Cotton - Andrea Cavallini - Alberto Rumi - Thomas Andritsch		
Date: Monday, 04/July/2022			
8:00am - 8:20am	Opening Session		
8:20am - 9:20am	E.O. Forster Lecture: E.O. Forster Memorial Lecture by Professor Jan van Turnhout – Aula Vincenzo Li Donni Chair: **Peter Morshuis**		
9:40am - 12:00pm	Oral Session 1: Gold Session – Aula Vincenzo Li Donni Chair: **Peter Morshuis** Chair: **Thomas Andritsch**		
12:20pm - 2:00pm	Poster Session 1a: Theories and Models - Gather room 1a Chair: **Paolo Seri**	Poster Session 1b: Advanced and Functional Materials – Gather room 1b Chair: **Davide Fabiani**	Poster Session 1c: Partial Discharges - Gather room 1c Chair: **Detlef Wald**
Date: Tuesday, 05/July/2022			
8:00am - 9:00am	2020 Dakin Award Lecture by Professor Gary Stevens - Kinectrics UK – Aula Vincenzo Li Donni Chair: **Davide Fabiani**		
9:00am - 10:00am	Oral Session 2: Theories and Models – Aula Vincenzo Li Donni Chair: **Severine Le Roy** Chair: **Giuseppe Rizzo**		
10:20am - 12:00pm	Oral Session 3: Materials and Insulation Systems – Aula Vincenzo Li Donni Chair: **Antonios Tzimas** Chair: **Mikael Unge**		
12:20pm - 2:00pm	Poster Session 2a: Materials and Insulation Systems - Gather room 2a Chair: **Orestis Vryonis**	Poster Session 2b: Space Charges - Gather room 2b Chair: **Gilbert Teyssedre**	
Date: Wednesday, 06/July/2022			
8:00am - 10:00am	Oral Session 4: Space Charges – Aula Vincenzo Li Donni Chair: **Naohiro Hozumi** Chair: **Kai Wu**		
10:20am - 12:00pm	Oral Session 5: Advanced and Functional Materials – Aula Vincenzo Li Donni Chair: **Sombel Diaham** Chair: **Ioana Preda**		
12:20pm - 2:00pm	Poster Session 3a: Treeing - Gather room 3a Chair: **George Chen**	Poster Session 3b: Breakdown - Gather room 3b Chair: **June-Ho Lee**	Poster Session 3c: Ageing - Gather room 3c Chair: **Ludovic Boyer**
Date: Thursday, 07/July/2022			
8:00am - 10:00am	Oral Session 6: Partial Discharges – Aula Vincenzo Li Donni Chair: **Andrea Cavallini** Chair: **Juan M. Martínez-Tarifa**		
10:20am - 12:00pm	Oral Session 7: Conduction and Breakdown – Aula Vincenzo Li Donni Chair: **Antonino Imburgia** Chair: **Hucheng Liang**		
12:20pm - 2:00pm	Oral Session 8: Ageing – Aula Vincenzo Li Donni Chair: **Erling Ildstad** Chair: **Eric David**		

Program

Monday 04/July/2022

E. O. Forster Memorial Lecture

Time: Monday, 04/July/2022: 8:20am - 09:20pm
Session Chair: Peter Morshuis

In Eric Forster's spirit, in pursuit of highly charged electret fibers for filter-media like face masks and open-cell electret foam for energy harvesting.

Professor Jan van Turnhout
Delft University of Technology, the Netherlands.

Oral Session 1: Gold Session

Time: Monday, 04/July/2022: 9:40am - 12:00pm
Session Chair: Peter Morshuis
Session Chair: Thomas Andritsch

1-1 Effect of Polycyclic Aromatic Compounds Content on Electrical Tree and Partial Discharge of XLPE

Heyu Wang[1], Zhonglei Li[1], Mingsheng Fan[1], Shuofan Zhou[1], You Wu[1], Boxue Du[1], Zhuoran Yang[2]
[1]School of Electrical and Information Engineering, Tianjin University, Nankai District, Tianjin 300072, China; [2]State Grid Jiangsu Electric Power Co., LTD. Nanjing Power Supply Company, Nanjing 210019, Jiangsu Province, China;

1-2 Investigation of Thermal Conductivity and Breakdown Strength in Polypropylene/Ultra-High Molecular Weight Polyethylene Blends

Phichet Ketsamee, Thomas Andritsch, Alun Vaughan
University of Southampton, United Kingdom;

1-3 Performances of a PCB-based Loop Antenna Inductive Sensor for Partial Discharges Detection

Sinda Kaziz[1,2], Antonino Imburgia[3], Denis Flandre[4], Giuseppe Rizzo[3], Pietro Romano[3], Fabio Viola[3], Guido Ala[3], Fares Tounsi[4]
[1]University of Monastir, Tunisia; [2]Faculty of Sciences of Monastir, Tunisia; [3]L.E.PR.E. H.V. Laboratory, Department of Engineering, University of Palermo, Italy; [4]SMALL Group, ICTEAM Institute, University catholique of Louvain, Belgium;

1-4 Calculation of Electric Field Profile within HVDC Cable Insulation in the Presence of Voltage Polarity Reversals

Bassel Diban[1], Giovanni Mazzanti[1], Massimo Marzinotto[2], Antonio Battaglia[2]
[1]University of Bologna, Italy; [2]TERNA, Roma, Italy;

1-5 Surface Charge Measurement of Insulating Spacer Simulating Temperature Gradient Environment in DC-GIS

Hajime Shimakawa[1], Masahiro Sato[1], Akiko Kumada[1], Kunihiko Hidaka[1], Takanori Yasuoka[2], Yoshikazu Hoshina[2], Motoharu Shiiki[2]
[1]The University of Tokyo, Japan; [2]Toshiba Energy Systems & Solutions Corporation;

1-6 Effect of mechanical loading history on the electrical breakdown strength of dielectric elastomers

Emmanuel Taine[1,2], Thomas Andritsch[2], Istebreq A. Saeedi[2], Peter H. F. Morshuis[3]
[1]The Tony Davies High Voltage Laboratory, University of Southampton, UK; [2]SBM Offshore R&D Laboratory, France; [3]Solid Dielectric Solutions, The Netherlands;

1-7 Partial Discharge Charge Estimation In Gas-Insulated Substations Using Electric and Magnetic Antennas

Christian Mier Escurra[1], Armando Rodrigo Mor[2]
[1]Delft University of Technology; [2]Universidad Politecnica de Valencia;

Poster Session 1a: Theories and Models

Time: Monday, 04/July/2022: 12:20pm - 2:00pm
Session Chair: Paolo Seri

1a-1 Towards the plasma-polymer simulation in treeing branches

Andrea Barbareschi Villa[1], Roger Schurch[2], Luca Barbieri[1], Giacomo Buccella[3], Roberto Malgesini[1], Daniele Palladini[1]
[1]Ricerca Sul Sistema Energetico – RSE, Via Rubattino 54, Milan, Italy; [2]Universidad Tecnica Federico Santa Maria, Avenida Espana 1680, Valparaiso, Chile; [3]CMIC Department "Giulio Natta", Politecnico di Milano, Piazza Leonardo da Vinci 32, 20133, Milan, Italy;

1a-2 Analysis of Small Reactance overload Faults in a 750kV Strongly Coupled Parallel Single Circuit Erection Line

Shan LI[1], Yadi XIE[1], Rui DANG[2], Fenglei MU[2], Xiunan CHU[3]
[1]State Grid Xinjiang Electric Power Research Institute, Xinjiang, Urumqi, 830011, China; [2]State Grid Xinjiang Electric Power Company, Xinjiang, Urumqi, 830011, China; [3]State Grid Xinjiang Maintenance Company, Xinjiang, Urumqi, 830011, China;

1a-3 Suppressing Metal Particle Lifting in GIS/GIL by Surface Fluorinated Epoxy Spacer

Yuhuai Wang[1], Jin Li[1], Wenbo Zhu[2], Jin He[3], Chi Zhang[3], Hao Chen[4], Cheng Zhang[4]
[1]School of Electrical and Information Engineering, Tianjin University; [2]Electric Power Research Institute, China Southern Power Grid; [3]State Grid Tianjin Electric Power Research Institute; [4]Extra High Voltage Branch Company, State Grid Jiangsu Electric Power Co., Ltd.;

1a-4 Modelling and Characterization of Partial Discharge Activity versus Applied Voltage, Test Frequency and Temperature

Erling Ildstad[1], Torstein Aakre[2]
[1]NTNU, Norway; [2]SINTEF Energy Research, Norway;

1a-5 Effect of Insulating Binders on the Performance of Supercapacitors

Kingshuk Chatterjee, Nandini Gupta
IIT Kanpur, India;

1a-6 The Effect of Surface Traps on The Interfacial Charge Dynamics in Layered Dielectrics

Balaji Sriram[1], Nandini Gupta[2]
[1]Indian Institute of Technology Kanpur (IITK), India; [2]Indian Institute of Technology Kanpur (IITK), India;

1a-7 Unsupervised Machine Learning for Blind Separation of Multiple PD Sources

Mauro Palo[1], Benjamin Schubert[1], Jianguo Wei[1], Weilin Liu[1], Marcello Polenghi[2], Emanuele Giovanni Carlo Ogliari[2]
[1]Global Energy Interconnection Research Institute Europe GmbH, Germany; [2]Politecnico di Milano, Italy;

1a-8 Diffusion Characteristics of Solid Repair Medium in Cable Buffer Layer

Pengxian Song[1], Xiaohui Zhu[1], Xu Li[1], Jing Fang[1], Zhanpeng Wei[1], Longji Li[1], Hao Liu[2], Qi Li[2], Xiaoxiao Kong[2], Boxue Du[2]
[1]State Grid Tianjin Electric Power Research Institute, Tianjin 300072, China; [2]School of Electrical and Information Engineering, Tianjin University, China;

1a-9 Focusing on the Effects of Longitudinal Heat Exchange on Electric Field and Temperature Distribution in HVDC Cable

Andrea Cristofolini, Bassel Diban, Giovanni Mazzanti, Giacomo Pierotti, Arturo Popoli
University of Bologna, Italy;

1a-10 Electron traps in polyethylene due to water

Mikael Unge[1,2], Sarath Kumara[1], Anh Hoang[3], Amirhossein Abbasi[3], Claire Pitois[1]
[1]NKT HV Cables AB, Technology Consulting, SE-722 26 Västerås, Sweden; [2]Department of Fibre and Polymer Technology, School of Engineering Sciences in Chemistry, Biotechnology and Health, KTH Royal Institute of Technology, SE-100 44, Stockholm, Sweden; [3]NKT HV Cables AB, R&D, SE-371 23 Karlskrona, Sweden;

1a-11 Simulation of electric fields in insulation of a DC model cable under temperature gradient

Anh Hoang1, Sarath Kumara2, Amirhossein Abbasi1, Mikael Unge2, Claire Pitois2
[1]NKT HV Cables AB, R&D, SE-371 23 Karlskrona, Sweden; [2]NKT HV Cables AB, Technology Consulting, SE-722 26 Västerås, Sweden;

1a-12 Simulation of ionic contribution on space charge characteristics of XLPE insulations

Sarath Kumara[1], Anh Hoang[2], Mikael Unge[1], Amirhossein Abbasi[2], Claire Pitois[1]
[1]NKT HV Cables AB, Technology Consulting, SE-722 26 Västerås, Sweden; [2]NKT HV Cables AB, R&D, SE-371 23 Karlskrona, Sweden;

1a-13 Impact of nanometric processes linked to charge generation on the macroscopic behaviour in polyethylene

Quyen Mai Hoang[1], Severine Le Roy[2]
[1]Faculty of Electrical Engineering, Hanoi University of Industry, Hanoi, Vietnam; [2]LAPLACE, Université de Toulouse, CNRS, INPT, UPS, Toulouse, France;

1a-14 A Townsend's secondary ionization coefficient estimation method for partial discharge inception voltage prediction for insulating polymers

Youcef Kemari[1,2], Cyril Van De Steen[1], Guillaume Belijar[1], Lionel Laudebat[2], Sombel Diaham[2], Zarel Valdez-Nava[2], Cédric Abadie[1]
[1]IRT Antoine de Saint Exupery, Toulouse, France; [2]Laboratoire Plasma et Conversion d'Énergie (LAPLACE), Toulouse, France;

1a-15 Comparison between modelling and measurements of PDIV on electrical machines for aeronautics

Benjamin Daguse, Héléna Gressinger, Thierry Lebey, Robin Acheen, Sabrina Ayat
SAFRAN SA, France;

1a-16 Study and Numerical Simulation of a Duct-type ESP with Wavy Collecting Electrodes and Different Circular Corona Electrodes Radius

Angel Asipuela Gonzalez, Mo'ath Bani Fayyad, Iváncsy Tamás
Budapest University of Technology and Economics, Hungary;

1a-17 Cable Degradation Positioning Algorithm Based on Broadband Impedance Spectrum

Yufei Yao[1], Tao Han[1], Qiang Li[1], Youcong Huang[2], Zhongnan Zheng[2]
[1]School of Electrical and Information Engineering, Tianjin University,Tianjin 300072, China; [2]Electric Power Research Institute of Fujian Power Co.Ltd. Fuzhou 350000, China;

1a-18 High-precision Estimation of Dielectric Elastomer Generator Output Considering Leakage Charge

Yu Hisada[1], Muneaki Kurimoto[1], Shinichi Mitsumoto[2], Yasuo Suzuoki[3]
[1]Nagoya University, Japan; [2]National Institute of Technology Toyota College, Japan; [3]Aichi Institute of Technology, Japan;

1a-19 A Novel UHF Antenna for Partial Discharge Detection Based on Fractal Theory

Boxue Du, Yanqi Zhao, Xiaoxiao Kong, Yun Chen, Qi Li, Yifang Wang, Lu Wang, Rundong Xue
Tianjin University, China, People's Republic of;

1a-20 An Improved Vivaldi Antenna for the UHF Partial Discharge Detection

Xiaoxiao Kong[1], Yanqi Zhao[1], Qi Li[1], Boxue Du[1], Wenbo Zhu[2], Jing Mu[3]
[1]Tianjin University, Tianjin, China; [2]China Southern Power Grid Electric Power Research Institute, Guangzhou, China; [3]State Grid Jibei Electric Power Company Limited Management Training Center, Beijing, China;

1a-21 Research on the Residual Stress Detection of Epoxy Resin Based on Acoustoelastic Effect

Rundong Xue[1], Yun Chen[1,2], Xiancai Han[3], Boyuan Cui[2], Yifang Wang[1], Xiaoxiao Kong[1], Boxue Du[1]
[1]Tianjin University, Tianjin, China; [2]China Electric Power Research Institute, Beijing, China; [3]UHV Construction Department of State Grid Corporation of China, Beijing, China;

Poster Session 1b: Advanced and Functional Materials

Time: Monday, 04/July/2022: 12:20pm - 2:00pm
Session Chair: Davide Fabiani

1b-1 Prediction of Lifetime in Surge Resistant Enamel Twisted Pair by Partial Discharge Degradation under Repetitive Impulse Voltage Application

Masahiro Kozako[1], Yuki Zenda[1], Shota Kodama[1], Masayuki Hikita[1], Noriyuki Hayashizaka[2], Nobutaka Fujimoto[2], Hideyuki Kikuchi[3]
[1]Kyushu Institute of Technology, Japan; [2]Sumitomo Seika Chemicals Co., Ltd, Japan; [3]Hide Technology LLC., Japan;

1b-2 Defects caused by degradation – A stumbling block for nanocomposites in thin film capacitors

Siegfried Werner, Joachim Kaschta, Dirk W. Schubert
Friedrich-Alexander-University Erlangen-Nuremberg, Germany;

1b-3 Non-Linear Dielectric Spectroscopy of P(VDF-TrFE-CFE) Films for Non-Volatile Memory Applications

Thulasinath Raman Venkatesan[1,2], David Smykalla[3], Bernd Ploss[3], Michael Wübbenhorst[2], Reimund Gerhard[1]
[1]University of Potsdam, Germany; [2]KU Leuven, Belgium; [3]University of Applied Sciences Jena, Germany;

1b-4 Study of the Electrical Properties of Thin Silica Layers with a Single Plane of AgNPs Embedded Near the Surface

Charles Rigoudy, Kremena Makasheva, Christina Villeneuve-Faure, Gilbert Teyssedre, Laurent Boudou
LAPLACE, Université de Toulouse, CNRS, INPT, UPS, Toulouse, France;

1b-5 Dielectric Analysis and Thermal Stability of Polyaryletherketone (PAEK)/Sr2TiMnO6 (STMO) Composites

A Ashokbabu, P Thomas
Central Power Research Institute, Bangalore 560080, India;

1b-6 Metal-organic Framework/ Polypropylene films with enhanced High-temperature Breakdown Strength

Ke Chen, Boxue Du, Meng Xiao, Jianhang Zhang
Tianjin University, People's Republic of China;

1b-7 Effect of Interface Thickness on Tuning Dielectric Properties of PVDF-TiO2 Nanodielectrics

Florin Ciuprina[1], Laura Andrei[1], Stefania Bădilă[2], Denis Panaitescu[2]
[1]University Politehnica of Bucharest, Romania; [2]ICECHIM Bucharest, Romania;

1b-8 Effect of nanofillers in HVDC insulations on surface partial discharge activity

Paolo Seri[1], Gabriele Neretti[1], Christoph Diendorfer[2]
[1]University of Bologna, Italy; [2]University of Applied Sciences Upper Austria, Austria;

1b-9 Dielectrophoretic Chain Assembly of BaTiO3 Particles in Silicone Gel Composites

Trong Trung Le, Zarel Valdez-Nava, Sombel Diaham
LAPLACE, Université de Toulouse, France;

1b-10 Study on the influence of electrospinning coating on polypropylene surface on the electrical property

Jianhong Song[1], Zepeng Lv[1], Haipeng Li[1], Kai Wu[1], Zhiqiang Chen[2], Jia Wei[2], Fan Guo[2]
[1]Xi'an Jiaotong University, China, People's Republic of; [2]State Key Laboratory of Intense Pulsed Radiation Simulation and Effect, Northwest Institute of Nuclear Technology; Xi'an, China;

1b-11 The Effect of Agglomeration on the Electrical Percolation of Polyimide/Graphene Nanocomposites

Imadeddine benfridja[1,2,3], Sombel Diaham[3,4], Bernard Stenson[4], Baoxing Chen[5], Tadhg Kennedy[1,2]
[1]Department of Chemical Sciences, University of Limerick, Limerick, Ireland; [2]Bernal Institute, University of Limerick, Limerick, Ireland; [3]University of Toulouse, LAPLACE Institute, UPS, Toulouse, France; [4]Analog Devices International, Limerick, Ireland; [5]Analog Devices Incorporation, Wilmington, MA, USA.;

1b-12 Comparison of TixSi1-xO2 mixed oxide and TiO2 in SiO2 nanocomposite dielectric properties at nanoscale

Villeneuve-Faure Christina[1], Mitronika Maria[2], Boudou Laurent[1], Ravisy William[2], Besland Marie-Paule[2], Richard-Plouet Mireille[2], Goulet Antoine[2]
[1]LAPLACE, Université de Toulouse, CNRS, INPT, UPS, Toulouse, France, [2]Université de Nantes, CNRS, Institut des Matériaux Jean Rouxel, IMN, Nantes, France;

1b-13 Impact of fabrication process of polyethylene / boron nitride nanocomposite on morphology and dielectric properties

Villeneuve-Faure Christina[1], Lahoud-Dignat Nadine[1], Lantin Benoit[1], Arinero Richard[2], Ramonda Michel[2], Semsarilar Mona[3], Bechelany Mikhael[3], Le Roy Severine[1], Castellon Jerome[2]
[1]LAPLACE, Université de Toulouse, CNRS, INPT, UPS, Toulouse, France, [2]IES, Université de Montpellier, Montpellier, France; [3]IEM –UMR 5635, Univ Montpellier, ENSCM, CNRS, Montpellier, France;

1b-14 Compliant Electrode Self-clearing in Electroactive Polymer Actuators

Zihang Xu[1], Zepeng Lv[1], Chen Zhang[1], Kai Wu[1], Peter Morshuis[2], Aurore Claverie[3]
[1]School of Electrical & Electronic Engineering, Xi'an Jiaotong University, Xi'an, China; [2]Solid Dielectric Solutions, Leiden, the Netherlands; [3]SBM Offshore, Carros, France;

1b-15 Charge Regulation and Flashover Suppression by Surface Nonlinear Conductivity Spacer

Jia'nan Dong[1], Boxue Du[1], Hang Yao[1], Hucheng Liang[1], Chi Zhang[2]
[1]School of Electrical and Information Engineering, Tianjin University, Tianjin, China; [2]Extra-high Voltage Branch Company, State Grid Jiangsu Electric Power Co., Ltd, Jiangsu, China;

1b-16 Thermo-electrical aging of 3D printed PLA conductive composites: Dependence on printing orientation.

J. Crespo-Miguel, Juan M. Martínez-Tarifa, G. Robles, D. Garcia-Gonzalez, A. Arias
Universidad Carlos III de Madrid, Spain;

1b-17 Electric Field Control by Bulk Permittivity and Surface Conductivity Gradient Material for HVDC GIL Spacer

Hang Yao[1], Boxue Du[1], Hucheng Liang[1], Jianan Dong[1], Zehua Wang[2]
[1]School of Electrical and Information Engineering, Tianjin University, Tianjin, China; [2]State Grid Tianjin Power Chengnan Power Supply Branch, Tianjin, China;

1b-18 Electric Field Regulation by Multi-dimensional Functional Materials for DC-GIS Spacer

Jianan Dong, Boxue Du, Hucheng Liang, Hang Yao
天津大学, China, People's Republic of;

Poster Session 1c: Partial Discharges

Time: Monday, 04/July/2022: 12:20pm - 2:00pm
Session Chair: Detlef Wald

1c-1 Vacuum Degree Prediction Technology of Vacuum Interrupter through ACDC partial discharge Measurement

Seungmin Bang, Hyun-Woo Lee, Bang-Wook Lee
Hanyang university, Korea, Republic of (South Korea);

1c-2 Temperature effect on conservative PDIV prediction models based on Paschen's Law

Manuel Gomez de la Calle[2], Yan Vania Cleaz[1], Angel M. Gómez[1], Guillermo Robles[1], Juan M. Martínez-Tarifa[1]
[1]Universidad Carlos III de Madrid, Spain; [2]Comillas Pontifical University; Airbus Defense and Space;

1c-3 Partial Discharge Pulse Clustering Analysis using Wavelet Decomposition in Power Cables

Geonhyuk Park, Sungho Yoon, Beom An, Sanggoon Lee, Jeongtae Kim
DAEJIN UNIVERSITY, Republic of Korea, Korea, Republic of (South Korea);

1c-4 Statistical analysis techniques for Partial Discharges measurement under DC voltage

Alessio Di Fatta[1], Pietro Romano[1], Antonino Imburgia[1], Giuseppe Rizzo[2], Vincenzo Li Vigni[2], Marco Albertini[3], Stefano Franchi Bononi[3]
[1]University of Palermo, Italy; [2]Prysmian Electronics, Palermo, Italy; [3]Prysmian Group, Milan, Italy;

1c-5 DC Surface Discharge Characteristics for Effecting Icicle Growth of HVDC Outdoor Insulators

Chao Li[1], Yong Liu[1], Han Zhang[1], B. X. Du[1], Masoud Farzaneh[2], Qiran Li[3]
[1]Tianjin University, China, People's Republic of; [2]Université du Québec à Chicoutimi, Canada; [3]State Grid Tangshan Power Supply Company,China, People's Republic of;

1c-6 The combined effect of a corona discharge and moisture on hydrophobicity of silicone rubber

Karina Poluektova, Sergey Vasilkov, Michail Tiuterev
Saint-Petersburg State University, Russian Federation;

1c-7 Temperature Gradient Affecting Electrical Tree Growth in EPDM for HVDC Cable Accessories

Fan Li, Boxue Du, Xiaoxiao Kong, Ying Zhang, Yifang Wang, Qi Li, Rundong Xue
School of Electrical and Information Engineering, Tianjin University, China, People's Republic of;

1c-8 Partial discharge defect recognition tool for MV/HV DC equipment

Matthieu Dalstein[1], Marc Medlock[1], Guy Clerc[1,2], Emmanuel Boutleux[1,2], François Wallart[1], Cong-Thanh Vu[1], Frank Jacquier[1], Alain Girodet[1]
[1]SuperGrid Institute, France; [2]Laboratoire Ampère, France;

1c-9 Combined Electrical and Thermal Stress on Twisted Pairs: Study of the Variation over Time of the Partial Discharges Inception Voltage

Francesco Guastavino, Eugenia Torello
University of Genova, Italy;

1c-10 Investigation of discharge activity between rolling drops on an inclined plane

Anastasiya Slesarenko, Sergei Vasilkov, Karina Poluektova
Saint Petersburg State University, Russian Federation;

1c-11 The Impact of Partial Discharges on Their Inception Voltage on the Surface of Silicone Rubber

Sergei Vasilkov, Anton Trofimuk
St. Petersburg State University, Russian Federation;

1c-12 Study of Trapping Process in BOPP by Coupled Space Charge and Photo-stimulated Discharge Techniques

Duvan Mendoza Lopez, Gilbert Teyssedre, Laurent Berquez, Laurent Boudou
LAPLACE Laboratory, University of Toulouse, UPS and CNRS;

1c-13 Characterization of defects in aluminum nitride substrates through partial discharge measurements

Ivan Semenov[1], Ingrid Gunheim Folkestad[1], Kaveh Niayesh[1], Lars Lundgaard[2]
[1]NTNU, Norway; [2]SINTEF, Norway;

1c-14 Influence of Water Content Level on Partial Discharge Inception Voltage for Capacitively Graded Oil-Paper Insulation

Ivan Novko[1], Tomislav Župan[1], Igor Žiger[2]
[1]Končar – Electrical Engineering Institute Ltd., Croatia; [2]Končar – Instrument Transformers Inc., Croatia;

1c-15 Dielectric Characterization of Impregnating Varnishes for Inverter-Fed Motors

Alberto Rumi, Jacopo Gabriele Marinelli, Andrea Cavallini
University of Bologna, Italy;

Tuesday 05/July/2022

2020 Dakin Award Lecture

Time: Tuesday, 05/July/2022: 8:00am - 09:00pm
Session Chair: Davide Fabiani

Living Dielectrics?

Professor Gary Stevens
Kinectrics, United Kingdom

Oral Session 2: Theories and Models

Time: Tuesday, 05/July/2022: 9:00am - 10:00am
Session Chair: Severine LE ROY
Session Chair: Giuseppe RIZZO

2-1 Critical Analysis of a Bipolar Charge Transport Model Using Mathematical Tools for Solving Inverse Problems

khaled hallak[1], Fulbert Baudoin[1], Virginie Griseri[1], Florian Bugarin[2], Stéphane Segonds[2]
[1]LAPLACE, University of Toulouse, CNRS, INPT, UPS, France.; [2]ICA, University of Toulouse, UPS, INSA, ISAE, France;

2-2 Band alignment at Pt/PTFE interface: XPS experiment and first-principles calculation

Rurika Yoshinaga, Haruto Suzuki, Ryo Okano, Masaki Kobayashi, Akiko Kumada, Masahiro Sato
The University of Tokyo, Japan;

2-3 Molecular Dynamics Simulation of DBEGA/MHHPA System with Different Curing Degree

Pengxaing Guo, Jin Li, Xiaoxiao Kong, Yifang Wang, Fan Li, Boxue Du
School of Electrical and Information Engineering, Tianjin University;

Oral Session 3: Materials and Insulation Systems

Time: Tuesday, 05/July/2022: 10:20am - 12:00pm
Session Chair: Antonios Tzimas
Session Chair: Mikael Unge

3-1 Dry-type High Voltage Capacitors

Amanda Velazquez-Salazar[1], Olatoundji George Gnonhoue[1], Eric David[1], Ioana Preda[2]
[1]Ecole de Technologie Supérieure, Montreal, Canada; [2]University of Applied Sciences of Western Switzerland, Fribourg, Switzerland;

3-2 Effect of crystalline morphology on electric and thermal properties of β-polypropylene for HVDC cable insulation

Jianmei Cao[1,2], Kui Li[1], Yunqi Xing[1], Hao Zhang[2], Zhibin Fan[2], Jiwei Zhang[3]
[1]Key Laboratory of Reliability and Intelligence of Electrical Equipment, Hebei University of Technology, Tianjin 300130, China; [2]Electric Power Research Institute of State Grid Shandong electric power company, jinan 250002, China; [3]State Grid Jinan power supply company, jinan 250012, China;

3-3 Partial Discharge Characteristic of Hairpin Windings for Inverter-Fed Motors

Chuxuan He[1], Michael Beltle[1], Stefan Tenbohlen[1], Thomas Hubert[2], Stefan Schmidt[2], Jörg Schneider[2]
[1]University of Stuttgart, Germany; [2]Dr. Ing. h.c. F. Porsche AG, Germany;

3-4 Targeted Thermal and Electrical Properties of Rubber Materials for HVDC Cable Accessories

Thi Thu Nga Vu[1], Séverine Le Roy[2], Gilbert Teyssedre[2]
[1]Electric Power university, Hanoi, Vietnam; [2]Laplace, University of Toulouse - CNRS, France;

3-5 Inkjet printing: a new technique for manufacturing solid insulation systems

Ioana Preda[1], Dominique Rolle[2], Sebastian Filliger[1], Natalia Carrie[1], Gilbert Gugler[1]
[1]iPrint / HES-SO / HEIA Fribourg, Switzerland; [2]Energy / HES-SO / HEIA Fribourg, Switzerland;

Poster Session 2a: Materials and Insulation Systems

Time: Tuesday, 05/July/2022: 12:20pm - 2:00pm
Session Chair: Orestis Vryonis

2a-1 On the Dielectric Relaxation Characteristics of Epoxy Resin Cured by Co-anhydride Hardener

Yifang Wang, Boxue Du, Xiaoxiao Kong, Yun Chen, Qi Li, Fan Li, Rundong Xue
Tianjin University, China, People's Republic of;

2a-2 Adaptation of the impregnation conditions of insulating transformer solids to the use of natural esters

Sandra Tresgallo[1], Jaime Sanz[1], Cristian Olmo[1], Cristina Méndez[1], Pedro Quintanilla[1], Diego F. García[2], Carlos Vila[3]
[1]University of Cantabria, Spain; [2]Universidad del Valle, Colombia; [3]Iberdrola, Spain;

2a-3 Effect of Biaxial Orientation Process on Dielectric Properties of Polypropylene for Film Capacitor

B. X. Du, Yongping Hou, Meng Xiao, Haoliang Liu, Z. Y. Ran
Tianjin University, China, People's Republic of;

2a-4 Study on the Influence of Cross-linked Network Modifiers on the Dielectric Properties of Epoxy Resin

Fan Li, Boxue Du, Xiaoxiao Kong, Yun Chen, Yifang Wang, Rundong Xue, Qi Li
School of Electrical and Information Engineering, Tianjin University, China, People's Republic of;

2a-5 Evaluation of TSCC method on polypropylene films: deviations from isothermal method

Marco Michelazzi, Davide Fabiani, Paolo Seri
DEI, University of Bologna, Italy;

2a-6 Effect of Icing Thickness on Insulating Properties of 10 kV Insulated Overhead Lines during the Line Galloping

Zhihui Wang[1], Yong Liu[1], Hao Wang[1], B. X. Du[1], Hongbao Zong[2], Qiran Li[3]
[1]Tianjin University, China, People's Republic of; [2]Power Cable Company of State Grid Tianjin Electric Power Corporation, China, People's Republic of; [3]State Grid Tangshan Power Supply Company,China, People's Republic of;

2a-7 Defect Detection and Recognition of Insulation Pull Rod Based on the Ultrasonic Method

Rundong Xue[1], Yun Chen[1,2], Xiancai Han[3], Boyuan Cui[2], Xiaoxiao Kong[1], Boxue Du[1]
[1]Tianjin University, Tianjin, China; [2]China Electric Power Research Institute, Beijing, China; [3]UHV Construction Department of State Grid Corporation of China, Beijing, China;

2a-8 Impact of Dielectric Material and Contact Region on Internal Resistance of Metallized Film Capacitors

Avnish Kumar Upadhyay[1], Sarath Kumara[1,2], Yuriy V. Serdyuk[1]
[1]Chalmers University of Technology, Sweden; [2]NKT HV Cables, Sweden;

2a-9 Comparison of Frequency Dependent and Pi Section HVDC Cable Models in the Presence of Harmonics

Arshad Arshad, Brian G. Stewart
University of Strathclyde, United Kingdom;

2a-10 Dielectric and Mechanical Properties of Silicone Rubber for Cable Termination at Low Temperature

Qi Li[1], Xiaoxiao Kong[1], Boxue Du[1], Pengxian Song[2], Qinghua Tang[2], Longji Li[2], Dewen Zhang[3]
[1]School of Electrical and Information Engineering, Tianjin University, China; [2]State Grid Tianjin Electric Power Research Institute, Tianjin, China; [3]State Grid Heilongjiang Electric Power Company, Harbin, China;

2a-11 Investigation of the Loss Tangent and Permittivity of Solid Insulation Materials at Medium Frequency

Jan Vocke, Albert Moser
RWTH Aachen University, Germany;

2a-12 Multiscale properties of polymeric insulating materials: from microscale polarizability to macroscale permittivity

Simone Vincenzo Suraci, Davide Fabiani
LIMES (Laboratory of Innovative Materials for Electrical Systems) – DEI University of Bologna, Bologna, Italy., Italy;

2a-13 Effect of Thermal Treatment on the Dielectric Performance of a Silicone Rubber

Orestis Vryonis[1], Thomas Andritsch[1], Alun S. Vaughan[1], Peter Morshuis[2], Aurore Claverie[3]
[1]The Tony Davies High Voltage Laboratory, University of Southampton, Southampton, UK; [2]Solid Dielectric Solutions, Leiden, the Netherlands; [3]Single Buoy Moorings Inc., Marly, Switzerland;

2a-14 The Influence of Temperature on the Dielectric Losses of Epoxy Resin Under Harmonic Distorted Voltages

Thomas Linde[1], Karsten Backhaus[1], Stephan Schlegel[1], Jun Ting Loh[2], Stefan Kornhuber[2]
[1]Institute of Electrical Power Systems and High Voltage Engineering, Technische Universität Dresden; [2]Department of High Voltage Engineering/ Materials/Electromagnetic Theory, University of Applied Sciences Zittau/Görlitz;

2a-15 Interference of Stray Gases in the Diagnosis of Low temperature Faults in Soybean-Based Natural Esters

Matias Meira[1], Raúl Álvarez[2], Carlos Verucchi[1], Leonardo Catalano[2]
[1]INTELYMEC (UNCPBA) and CIFICEN (UNCPBA-CICPBA-CONICET), Olavarría, Argentine Republic; [2]IITREE-LAT-FI-UNLP, La Plata, Argentine Republic;

2a-16 Influence of Plasticizers on the Properties of Ethylene-Propylene-Diene Monomer (EPDM) for High Voltage Cable Accessories

Bo Qiao, Wenpeng Li, Xin Chen, Chong Zhang, Xiaoning Shi
State Key Laboratory of Advanced Power Transmission Technology（State Grid Smart Grid Research Institute co.LTD);

2a-17 Polyimide-based Integrated Transformers and Capacitors for High Voltage Galvanic Isolation

Marco Salina[1], Fabrizio Cerini[2], Linda Montagna[1], Silvia Adorno[2], Dario Paci[2], Donata Asnaghi[1]
[1]STMicroelectronics, Agrate Brianza, Italy; [2]STMicroelectronics, Cornaredo, Italy;

2a-18 Electrical properties of XLPE insulation obtained by the new LSHC® production process

Álvaro Pérez[1], Denis Labbé[2], Jerome Castellon[3]
[1]REPSOL, Spain; [2]P&M Cable Consulting; [3]Univ Montpellier, CNRS;

2a-19 Dielectric Properties of Bisphenol-A Epoxy Resin Cured with Mixed Anhydride

Songtao Liu[1], Jin Li[1], Pengxiang Guo[2], Guanfei Zhao[2], Xiaoxiao Kong[1], Boxue Du[1]
[1]School of Electrical and Information Engineering, Tianjin University; [2]Weihai Company of State Grid Shandong Electric Power Company;

2a-20 Effects of Curing Degree on the Dielectric Properties of Anhydride Cured Epoxy Resin

Pengxaing Guo, Jin Li, Xiaoxiao Kong, Yifang Wang, Fan Li, Boxue Du
School of Electrical and Information Engineering, Tianjin University;

2a-21 Investigating the I-V characteristics of an HTV silicone rubber for MVDC electrical insulation

Igor Silva[1,2], François Gentils[2], Pascal Rain[1]
[1]Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, F-38000 Grenoble, France; [2]Schneider Electric, Rue Henri Tarze, 38000 Grenoble, France;

2a-22 Relative Permittivity and Dielectric Dissipation Factor of Palm Fatty Acid Ester with Different Nitrogen Fine Bubbles Generation Times

Norimitsu Takamura, Nobutaka Araoka, Masahiro Fujimura, Masahiro Hanai
Fukuoka University, Japan;

2a-23 Dielectric Performance of Physicochemical Treated Metallized Film Under Electro-Thermal Stresses

Haider M. Umran[1,2], FEIPENG WANG[1]
[1]CQU, China, People's Republic of China; [2]University of Karbala, Karbala 1125, Iraq;

2a-24 Improved Flashover Characteristics of Surface Modified Epoxy by Ion Beam Treatment

Inzamam Ul Haq[1], Feipeng Wang[1], Shakeel Akram[2], Yuyang Yan[1]
[1]Chongqing University, China, People's Republic of; [2]College of Electrical Engineering, Sichuan University, Chengdu 610065, China.;

2a-25 Hazard, Label, and Volatile Organic Compound Free Impregnation Resin for Rotating Machines

Keiza Ann Fernandes, Simon Rost
Elantas Europe GmbH, Germany;

2a-26 Comparison of Thermal Degradation between Soft and Hard Epoxy Resins

Yoshimichi Ohki, Hiroyuki Ishii, Naoshi Hirai
Waseda University, Japan;

2a-27 Corona resistant enamels developed in Elantas Europe: an opportunity for sustainability

Giovanna Biondi
ELANTAS EUROPE Srl., Italy;

Poster Session 2b: Space Charges

Time: Tuesday, 05/July/2022: 12:20pm - 2:00pm
Session Chair: Gilbert Teyssedre

2b-1 Set-Up for Space Charge Measurement with LIPP-Method During Aging of Polymeric Insulating Materials Under High DC Voltage

Henry Hirte[1], Sebastian Braun[2], Stefan Kornhuber[1], Peter Werle[2]
[1]University of Applied Sciences Zittau / Görlitz, Germany; [2]Leibniz University Hannover, Germany;

2b-2 Effect of Humidity on Charge Accumulation on Polymer-Air Interfaces under DC Stress

Daniel Svensson[2], Olof Hjortstam[1], Sarath Kumara[2], Yuriy Serdyuk[2]
[1]Hitachi Energy Research, Sweden; [2]Chalmers University of Technology;

2b-3 Space Charge Measurement of Thick Insulating Materials

Xiaoxin LI, Masaki Utagawa, YEONG-GUK AN, Tomohiro Kawashima, Yoshinobu Murakami, Naohiro Hozumi
Toyohashi University of Technology, Japan;

2b-4 Space Charge Behavior under Different Electric Fields in Acrylic Elastomer

Chen Zhang[1], Zepeng Lv[1], Zihang Xu[1], Kai Wu[1], Peter Morshuis[2], Aurore Claverie[3]
[1]School of Electrical & Electronic Engineering, Xi'an Jiaotong University, Xi'an, 710049, China; [2]Solid Dielectric Solutions, Leiden, the Netherlands; [3]SBM Offshore, Carros, France;

2b-5 Measurement of Surface Electric Field Distribution in Thick Polymer Film

Yuxiao Yang, Feihu Zheng, Yewen Zhang
Tongji Uniersity, China, People's Republic of;

2b-6 Investigation on Charge Transport Model Considering the Influence of Ionized Charges

Yifei He, Kai Wu, Yang Wu, Chunyang Zhang, Zepeng Lv
State Key Lab. of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, China, People's Republic of;

2b-7 Measurement of Electric Field Distribution in Thin Polyimide Film

Qian Wei, Feihu Zheng, Yewen Zhang
Tongji University, China, People's Republic of;

2b-8 Equivalent charge distribution in PVDF films using Electro-Acoustic-Reflectometry (EAR)

Étienne Maréchal, Emmanuel Géron, Stéphane Holé
CNRS/ESPCI/SU, France;

2b-9 Space charge measurement under very low voltage for assessing interface effects due to measurement conditions

Lin Zheng, Stéphane Holé
SU/ESPCI/CNRS, France;

2b-10 Coupled Temperature/Space Charge Measurements in Dielectrics using a Thermal Step applied by a Coolant Liquid

Abdellah OUKMS, Petru NOTINGHER, Serge AGNEL
IES, Université de Montpellier, CNRS, Montpellier, France;

2b-11 Space Charge Characteristics of Epoxy/BN nanocomposites by using Surface Modification

Leiyu Hu, Weiwang Wang, Qihang Jiang, Shixin Yu, Yong Feng
Xi'an Jiaotong University, China, People's Republic of;

2b-12 The Influence of Additives on the Space Charge and Conduction Characteristics of the Thermoplastic Insulators for the HVDC Cables

Chul-Ho Kim, JUNE-HO LEE
Hoseo University, Korea, Republic of (South Korea);

2b-13 Effect of Structural Morphology on Space Charge Characteristics of Epoxy/paper Composites

Jingxin Wang, Zongliang Xie, Peng Liu, Zongren Peng
State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University;

2b-14 Uncertainties of the Pulsed Electroacoustic Method: Peak Positions of Embedded Charge Distributions

Zachary Gibson, JR Dennison
Utah State University, United States of America;

2b-15 Pockels Effect based diagnostic for live surface charging studies: Principles, practice and challenges

Anne Limburg[1], Lars Mentink[1], Tom Oosterholt[2], Stein van Eden[2], Jeroen Raaymakers[2], Sander Nijdam[1]
[1]Department of Applied Physics, Eindhoven University of Technology, PO box 513, 5600 MB Eindhoven, The Netherlands; [2]ASML Netherlands B.V., De Run 6501, 5504 DR Veldhoven, The Netherlands;

2b-16 Crystallization Effects on Space Charge Accumulation in Polypropylene under DC Voltage

Luming Zhou, George Chen
University of Southampton, United Kingdom;

2b-17 Effect of Gamma-Irradiation on Creation and Dynamic of Space Charge in PTFE

Ali Mezouar[1], Virginie Griseri[2], Nadia Saidi-Amroun[1], Gilbert Teyssedre[2], Mohamed SaidiAIDI[1]
[1]University of Sciences and Technology Houari Boumediène (USTHB), Algeria; [2]LAPLACE, Université de Toulouse and CNRS, 118 Route de Narbonne, 31062 Toulouse Cedex 9, France;

2b-18 Simulation of AC Space Charge in XLPE under Needle-Plate Electrode

Qiang Li, Xin Zhao, Yufei Yao, Tao Han
School of Electrical and Information Engineering, Tianjin University, Tianjin 300072, China;

2b-19 Effects of Pre-crosslinking on the Aggregate Structure and Space Charge Properties of XLPE

You Wu[1], Boxue Du[1], Zhonglei Li[1], Yuming Dong[1], Heyu Wang[1], Hao Liu[1], Zhenpeng Zhang[2], Chao Fu[2], Shaoxin Meng[2], Chao Peng[2]
[1]Key Laboratory of Smart Grid of Education Ministry, School of Electrical and Information Engineering, Tianjin University, Tianjin 300072, China; [2]State Key Laboratory of Power Grid Environmental Protection, China Electric Power Research Institute, Wuhan 430073, China;

2b-20 Electret Properties of Layered Structures Based on Low Density Polyethylene Films

Andrey Rychkov[1], Alexey Kuznetsov[1], Anna Guliakova[1], Dmitry Rychkov[2]
[1]Herzen State Pedagogical University, Russia; [2]Deggendorf Institute of Technology, Germany;

2b-21 Observation of Dipole Polarization in Epoxy Resin using PEA Method at High Temperature under High DC Stress

Kosuke Sato, Naho Saito, Hiroaki Miyake, Yasuhiro Tanaka
Tokyo city university, Japan;

2b-22 Polarization Charge Measurement under DC/AC Voltage Using the Improved PEA Method

Kazuki Endo, Kaisei Enoki, Hiroaki Miyake, Yasuhiro Tanaka
Tokyo City University, Japan;

2b-23 Effect of Electrode Material Type on Space Charge Characteristics in Polymers

Tianwei Ren, jingxin Wang, Zongliang Xie, Tianlei Xu, Xi Pang, Peng Liu, Zongren Peng
Xi'an jiaotong University, China, People's Republic of;

2b-24 Influence of Hardener Stoichiometry in Epoxy Resin on Space Charge Accumulation Characteristics at High Temperature Under High Electric Field

Naho Saito, Tatsuya Iwasaki, Kosuke Sato, Hiroaki Miyake, Yasuhiro Tanaka
Tokyo city university, Japan;

2b-25 Space Charge Accumulation Behavior on Fluorinated Polymer Irradiated with Protons at Different Fluxes

Kaisei Enoki, Kazuki Endo, Hiroaki Miyake, Yasuhiro Tanaka
Tokyo City University, Japan;

Wednesday 06/July/2022

Oral Session 4: Space Charges

Time: Wednesday, 06/July/2022: 8:00am - 10:00am
Session Chair: Naohiro Hozumi
Session Chair: Kai Wu

4-1 Impact of additives and fillers on space charge behavior of polyethylene insulation: investigation and modeling

Daniele Mariani, Simone Vincenzo Suraci, Davide Fabiani
LIMES (Laboratory of Innovative Materials for Electrical Systems) – DEI University of Bologna, Bologna, Italy., Italy;

4-2 Study of the electrical properties of HVDC XLPE cable after type test

Maya MOURAD, Servane HALLER, Priscillia DANIEL, Sophie IGLESIAS, Ludovic BOYER, Martin HENRIKSEN
Supergrid Institute, France;

4-3 Effect of Antioxidants on Mechanical, Electrical, and Thermal Oxidative Properties of Polypropylene-based Semiconducting Screen

Xintong Ren[1], George Chen[1], Mingyu Zhou[2], Haitian Wang[2], Yi Luo[2]
[1]Tony Davies High Voltage Laboratory, University of Southampton, Southampton, United Kingdom; [2]Global Energy Interconnection Research Institute Europe, Berlin, Germany;

4-4 Two-dimensional Space Charge Measurement of Scaled Cable Joint Model

Shafira Zahra[1], Masaki Utagawa[1], Tomohiro Kawashima[1], Yoshinobu Murakami[1], Naohiro Hozumi[1], Peter Morshuis[2], Young-il Cho[3], Yoon-hyoung Kim[3]
[1]Toyohashi University of Technology, Japan; [2]Solid Dielectric Solutions, the Netherlands; [3]LS Cable & System Ltd., Korea;

4-5 Space Charge Measurement on Full-sized HVDC Joint with Voltage Class up to 150 kV

Yoonhyoung Kim[1], Youngil Cho[1], Sunkak Kim[1], Wookyoung Lee[1], Naohiro Hozumi[2], Peter Morshuis[3]
[1]LS Cable & System, Korea, Republic of (South Korea); [2]Toyohashi University of Technology, Japan; [3]Solid Dielectric Solutions, the Netherlands;

4-6 Experimental considerations on the effect of space charge accumulation on partial discharges activity for alternative and commercially available wire insulations

Hadi Naderiallaf[1], Paolo Giangrande[1], Michael Galea[2]
[1]University of Nottingham, United Kingdom; [2]University of Malta, Malta;

Oral Session 5: Advanced and Functional Materials

Time: Wednesday, 06/July/2022: 10:20am - 12:00pm
Session Chair: Sombel Diaham
Session Chair: Ioana Preda

5-1 Dynamic Mechanical Response in Epoxy Nanocomposites Incorporating Various Nano-Silica Architectures

Sunny Chaudhary[1], Orestis Vryonis[1], Michael Feuchter[2], Alun Vaughan[1], Thomas Andritsch[1]
[1]University of Southampton, United Kingdom; [2]University of Leoben, Austria;

5-2 Comparison between AC and DC polarization methods of piezoelectric nanofibrous layers

Giacomo Selleri, Leonardo Gasperini, Lorenzo Piddiu, Davide Fabiani
Università di Bologna, Italy;

5-3 Engineered Interfaces in Extruded Polyphenylsulfone-Boron Nitride Composite Insulation

Tiffany Williams[1], Baochau Nguyen[2,1], Andrew Woodoworth[1], Marisabel Kelly[1]
[1]NASA John H. Glenn Research Center, United States of America; [2]University Space Research Association;

5-4 Study on Partial Arc Discharge Propagation Characteristics of SR/SiO2 Nanocomposites

Hao Wang[1], Yong Liu[1], Zhihui Wang[1], B.X. Du[1], Sheng Gao[2], Xianghuan Kong[3]
[1]School of Electrical and Information Engineering, Tianjin University, Tianjin 300072, China; [2]Binhai District Power Supply Company of State Grid Tianjin Electric Power Company, Tianjin, China; [3]Xuzhou Power Supply Branch State Grid Jiangsu Electric Power Limited Corporation, Xuzhou, China;

5-5 Impact of the interphase dielectric properties on the electric field distribution in LDPE/BN nanocomposites

C. Villeneuve-Faure[1], N. Lahoud Dignat[1], B. Lantin[1], R. Arinero[2], M. Ramonda[2], M. Semsarilar[3], M. Bechelany[3], S. Le Roy[1], J. Castellon[2]
[1]LAPLACE, Université de Toulouse, CNRS, INPT, UPS, Toulouse, France; [2]IES, Université de Montpellier, Montpellier, France; [3]IEM –UMR 5635, Université de Montpellier, ENSCM, CNRS, Montpellier, France;

Poster Session 3a: Treeing

Time: Wednesday, 06/July/2022: 12:20pm - 2:00pm
Session Chair: George Chen

3a-1 Relationship Between Electrical Treeing Degradation and DCIC-Q(t) Characteristics of XLPE Insulation

Heyu Wang[1], Zhonglei Li[1], Shuofan Zhou[1], Mingsheng Fan[1], You Wu[1], Boxue Du[1], Zhuoran Yang[2]

[1]School of Electrical and Information Engineering, Tianjin University, Nankai District, Tianjin 300072, China; [2]State Grid Jiangsu Electric Power Co., LTD. Nanjing Power Supply Company, Nanjing 210019, Jiangsu Province, China;

3a-2 Electrical Tree Growth Characteristics of Fiber Reinforced Epoxy Resin under Tensile Stress

Lu Wang[1], Yun Chen[1,2], Xiancai Han[3], Boyuan Cui[2], Rundong Xue[1], Xiaoxiao Kong[1], Boxue Du[1]

[1]Tianjin University, Tianjin, China; [2]China Electric Power Research Institute, Beijing, China; [3]UHV Construction Department of State Grid Corporation of China, Beijing, China;

3a-3 Effect of Assistant Crosslinker (TAIC) on Improving Water Tree Resistance of Crosslinked Polyethylene

Qiang Li, Yufei Yao, Xin Zhao, Tao Han

School of Electrical and Information Engineering, Tianjin University Tianjin 300072, China;

3a-4 Effect of Water Tree on Broadband Impedance Spectrum of 10 kV cable

Yufei Yao[1], Tao Han[1], Qiang Li[1], Youcong Huang[2], Zhongnan Zheng[2]

[1]School of Electrical and Information Engineering, Tianjin University, Tianjin 300072, China; [2]Electric Power Research Institute of Fujian Power Co. Ltd, Fuzhou 350000, China;

3a-5 Electrical Tree Growth under Square Wave Voltages with DC Bias

Faisal Mohammed Aldawsari, Harry McDonald, Simon Rowland

University of Manchester, United Kingdom;

3a-6 Effects of Mechanical Stress on Electrical Tree Growth in Epoxy Resin at High Temperature

Fan Li, Boxue Du, Yun Chen, Lu Wang, Ying Zhang, Yifang Wang, Xiaoxiao Kong

School of Electrical and Information Engineering, Tianjin University, China, People's Republic of;

3a-7 Simulating electrical trees propagation using a kinetic model and cellular automata

Nicolas Pinto[1], Roger Schurch[1], Alejandro Angulo[1], Andrea Villa[2]

[1]Universidad Tecnica Federico Santa Maria, Chile; [2]Ricerca sul Sistema Energetico (RSE), Italy;

3a-8 Electrical Treeing of Epoxy Resin under Tensile and Compressive Stresses

Bo Xue Du[1], Wen Jin Zhang[1], Hu Cheng Liang[1], Liu Cheng Hao[2], Duan Peng Yuan[2], Ya Xiang Wang[2], Bo Yuan Cui[3], Yun Chen[3]

[1]School of Electrical and Information Engineering, Tianjin University, Tianjin 300072, China; [2]Pinggao Group Co., Ltd, Pingdingshan 467000, China; [3]China Electric Power Research Institute, Beijing 100085, China;

3a-9 Investigation of PRPD during electrical tree initiation and growth in a needle-free void geometry

Juliana Beca, Simon Rowland, Harry McDonald

University of Manchester, United Kingdom;

3a-10 A Three-Dimensional Stochastic Model for the Study of Treeing in Epoxy and its Nanocomposites

Moon Moon Bordeori, Nandini Gupta

Indian Institute of Technology Kanpur, India;

3a-11 Effect of Grounded Needles on Electrical Treeing in XLPE Cable Specimens under AC Stress

Frances Hu, Christopher Emersic, Harry McDonald, LuJia Chen, Simon Rowland, Richard Gardner

The University of Manchester, United Kingdom;

3a-12 Electrical Tree Structures in Negative DC Fields Superimposed with AC Ripples

Fang Liu[1], Simon M. Rowland[1], Qiance Zhang[2], Harry McDonald[1]

[1]Department of Electrical and Electronic Engineering, The University of Manchester, United Kingdom; [2]Henry Royce Institute, The University of Manchester, United Kingdom;

3a-13 Enhancement of Electrical Tree Resistance of Epoxy Insulation under Bipolar Square Wave Voltage by Micro-SiO2 Doping

Xiaopeng Zha[1,2], Zhaoliang Xing[1], Shaowei Guo[1], Huize Cui[1], Chuang Zhang[2], Yiwei Long[2], Dongxu An[2], Jianying Li[2]

[1]State Key Laboratory of Advanced Power Transmission Technology, Global Energy Interconnection Research Institute Co., Ltd., Beijing 102200, China; [2]State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an 710049, China;

3a-14 Electrical Treeing Characteristics in Glass Fiber Reinforced Epoxy Resin

Renyong Zhao[1], Jin Li[1], Yun Chen[2], Boyuan Cui[2], Yun Teng[3], Xiaoxiao Kong[1], Boxue Du[1]

[1]Key Laboratory of Smart Grid of the Ministry of Education, School of Electrical and Information Engineering, Tianjin University; [2]China Electric Power Research Institute; [3]State Grid Jiangsu Electric Power Co., Ltd., Research Institute;

Poster Session 3b: Breakdown

Time: Wednesday, 06/July/2022: 12:20pm - 2:00pm
Session Chair: June-Ho Lee

3b-1 Effect of Cellulose Contamination on the Breakdown Voltage and Thermal Generated in PFAE under Lightning Impulse with DC Voltage Superimposed

Sarizan Bin Saaidon[1], M. A. Talib[2], M.N.K.H. Rohani[3], N. A. Muhamad[4], M. Kamarol[5]

[1]UNIVERSITI SAINS MALAYSIA, & CIAST Malaysia; [2]TNB Research Sdn. Bhd. Research Institution Area, Kajang Selangor, Malaysia; [3]School of Electrical System Engineering, Universiti Malaysia Perlis, Arau Perlis; [4]School of Faculty of Engineering, Universiti Teknologi Brunei, Gadong, Brunei; [5]School of Electrical and Electronic Engineering, Universiti Sains Malaysia, Penang, Malaysia;

3b-2 AC and Negative Lightning Impulse Breakdown Voltages of Palm Fatty Acid Ester with Different Nitrogen Fine Bubbles Generation Times

Masahiro Fujimura, Norimitsu Takamura, Nobutaka Araoka, Masahiro Hanai
Fukuoka University, Japan;

3b-3 Effects of Nitrogen Fine Bubbles Generating Time and Standing Time on Resistivity and Negative Lightning Impulse Breakdown Voltage of Pure Water in Nitrogen or Air Atmosphere

Kazuki Tsuchiya[1], Norimitsu Takamura[1], Nobutaka Araoka[1], Douyan Wang[2], Takao Namihira[2], Masahiro Hanai[1]

[1]Fukuoka University, Japan; [2]Kumamoto University, Japan;

3b-4 Improved Breakdown Strength of Polypropylene Capacitor Film Based on Surface Grafting

Haoliang Liu, B. X. Du, Meng Xiao, Z. Y. Ran
Tianjin University, China, People's Republic of;

3b-5 Parylene Deposition Improving Dielectric Properties of Biaxially Oriented Polypropylene Capacitor Film

Haoliang Liu, B. X. Du, Meng Xiao, Z. Y. Ran
Tianjin University, China, People's Republic of;

3b-6 Multilayer Constructed Polypropylene Film Improving Breakdown Strength Based on Parylene Blending

Haoliang Liu, B. X. Du, Meng Xiao, Z. Y. Ran
Tianjin University, China, People's Republic of;

3b-7 Lightning Impulse and AC Breakdown Characteristics of SF6 and its Alternatives

Prem Ranjan[1], Qinghua Han[1], Faisal O. Bahdad[1], Abir Alabani[1], Lujia Chen[1], Ibrahim Iddrissu[2], Luke van der Zel[3]

[1]Department of Electrical and Electronic Engineering, The University of Manchester, Manchester, M13 9PL, UK; [2]National Grid Electricity Transmission plc, 1-3 Strand, London, WC2N 5EH, UK; [3]Power Delivery and Utilization, Electric Power Research Institute, NC, 28262-7097, USA;

3b-8 Improved breakdown performances of PP films based on molecular chain and aggregate structure design

Zhaoyu Ran, Boxue Du, HaoLiang Liu, Xiao Meng, Jiwen Xing
Tianjin university, China, People's Republic of;

3b-9 Breakdown characteristics of epoxy dielectric film under high frequency square wave voltage

Shixin Yu, Weiwang Wang, Qihang Jiang, Leiyu Hu, Jiefeng He
Xi'an Jiaotong University, China, People's Republic of;

3b-10 Effect of Acetophenone on Dielectric Properties of Low-density Polyethylene

Kai Shang[1], Mingru Li[1], Dekang Wen[2], Huan Niu[1], Yang Feng[1], Shihang Wang[1], Shengtao Li[1], Zhi Xu[2]
[1]State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China; [2]State Grid Shanghai Municipal Electric Power Company, Shanghai, China;

3b-11 Pre-breakdown leakage current of tangential dielectric interfaces with different coupling pressures

Antonio Settembre[1], Roberto Candela[2], Andrea Cavallini[1], Paolo Seri[1]
[1]University of Bologna, Italy; [2]Prysmian Electronics, Italy;

3b-12 Dielectric Strength Measurement for Different Materials During Dry Arcing Band and Flashover

Adeel Ahmad[1], Azam Nekahi[1], Arshad Khan[2]
[1]Glasgow Caledonian univeristy, United Kingdom; [2]University of strathclyde, United Kingdom;

3b-13 Effect of antioxidants on pre-crosslinking and DC breakdown characteristics of XLPE cable insulation

Zhicheng Si[1], Jiacai Li[1], Jialiang Yuan[2], Shihang Wang[1], Shengtao Li[1], Tiecheng Lou[2]
[1]Xi'an Jiaotong University, State Key Laboratory of Electrical Insulation and Power Equipment; [2]State Grid Shanghai Municipal Electric Power Company;

3b-14 High-temperature Breakdown Property of P(VDF-TrFE) Composite for Film Capacitor

Boxue Du, Jianhang Zhang, Meng Xiao, Jiwen Xing, Zhaoyu Ran, Haoliang Liu
Tianjin University, China, People's Republic of;

3b-15 The Effect of Pulse Voltage Application on the Threshold Electric Field Strength of the Transition from Coalescence to Non-Coalescence

Vladimir Chirkov, Bogdan Chernykh, Grigorii Utiugov
St. Petersburg State University, Russian Federation;

3b-16 Effect of Gamma Radiation on the High-temperature Breakdown Strength of Polypropylene Films for Capacitors

Meng Xiao, Yuning Song, Boxue Du
Tianjin University, China, People's Republic of;

3b-17 Thickness Dependence of Epoxy-Based Composites with BaTiO3 Particles on AC Electrical Breakdown Strength

Arnaud Escriva[1,2], Sombel Diaham[1], Vincent Bley[1], Zarel Valdez-Nava[1], Trung Trong Le[1], Toni Youssef[2], Rabih Khazaka[2], Stéphane Azzopardi[2]
[1]LAPLACE, Université de Toulouse, France; [2]SAFRAN TECH, France;

3b-18 High-temperature Breakdown Performance Improvement of Polypropylene Films Based on Furfuryl Sulfide Graft Modification

Yishuo Zhao, Meng Xiao, BoXue Du
Key Laboratory of Smart Grid of Education Ministry, School of Electrical and Information Engineering, Tianjin University, Tianjin 300072, China;

3b-19 Effect of Gamma Radiation Modification on Crystallization and Breakdown Properties of Polypropylene

Yuning Song, Meng Xiao, Boxue Du
Tianjin University, China, People's Republic of;

Poster Session 3c: Ageing

Time: Wednesday, 06/July/2022: 12:20pm - 2:00pm
Session Chair: Ludovic Boyer

3c-1 Dielectric Properties of Metal Deactivator/PP Composite Films for Capacitors After Thermal Aging

Boxue Du, Jianhang Zhang, Meng Xiao, Ke Chen
Tianjin University, China, People's Republic of;

3c-2 Diagnosis Method for Thermal Aging and Water Tree Aging of XLPE Cable Based on Lissajous Figure and Current Harmonic Characteristic Quantity

Yuan Xia, Zhen Qin, Lijun Yang, Wei Li
State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University ,Chongqing, China;

3c-3 Potential of Metal Passivators in Improving the Insulation Performance of Polypropylene Films for Capacitors

Boxue Du, Jianhang Zhang, Meng Xiao, Jiwen Xing, Zhaoyu Ran, Haoliang Liu
Tianjin University, China, People's Republic of;

3c-4 Thermal aging of enameled wire: dielectric markers and structural properties drift correlation

Louiza Fetouhi[1,2], Marie Sabatou[1], Mateusz Sczcepanski[1,2], Samuel Pin[1], Cécilien Thomas[1], Guillaume Belijar[1]
[1]IRT Saint-Exupéry, France; [2]Nidec-Leroy Somer (Angoulême-France), France;

3c-5 Electrical ageing and temperature cycling of XLPE insulation saturated with water

Torbjørn Andersen Ve[1], Cédric Lesaint[1], Hans Helmer Sæternes[1], Sverre Hvidsten[1], Athanasios Mermigkas[1], Håvard Bærug[1], Øystein Hestad[1], Amar Abideen[2], Frank Mauseth[2]
[1]SINTEF Energy Research, Norway; [2]Norwegian University of Science and Technology (NTNU), Norway;

3c-6 Insulation Properties of Twisted-pair of Polyvinyl Formal Wires with Artificial Pinhole and Thermal Stress in Mineral Oil

Yuki Zenda[1], Shota Kodama[1], Masahiro Kozako[1], Masayuki Hikita[1], Yusuke Okubo[2], Kosuke Shimomura[2], Takeshi Tanaka[2]
[1]Kyushu Institute of Technology, Japan; [2]DAIHEN Corporation, Japan;

3c-7 Degradation Diagnosis of 110 kV XLPE Cable Joint Based on Magnetic Field Characteristic Analysis

Han Zhang[1], Yong Liu[1], Hao Wang[1], Chao Li[1], B.X. Du[1], Xuejia Dong[2], Xingwang Huang[3]
[1]School of Electrical and Information Engineering, Tianjin University, Tianjin 300072, China; [2]Shijiazhuang Power Supply Branch of State Grid Hebei Electric Power Limited Corporation, China; [3]State Grid Hebei Electric Power Research Institute, Shijiazhuang, China;

3c-8 Relationship Between Typical Defects of Power Cable Systems and the Harmonic Characteristics of Grounding Currents

Hao Wang[1], Yong Liu[1], Zhihui Wang[1], B.X. Du[1], Zehua Pan[2], Hongjing Liu[2], Hongbao Zong[3]
[1]School of Electrical and Information Engineering, Tianjin University, Tianjin 300072, China; [2]State Grid Beijing Electric Power Research Institute, Beijing, China; [3]Power Cable Branch, State Grid Tianjin Electric Power Company, Tianjin, China;

3c-9 Research on Damp Aging Evolution of Cable Joints based on PDC method

Shiyu Ma[1], Kai Zhou[3], Guangya Zhu[2], Aiqing Li[4]
[1]College of Electrical Engineering,Sichuan University, China,; [2]College of Electrical Engineering,Sichuan University, China,; [3]College of Electrical Engineering, Sichuan University, China,; [4]College of Electrical Engineering, Sichuan University, China;

3c-10 Research on Damp Aging Evolution of Cables Joints Using PDC Method and Dynamic Bayes

Pengcheng Sha[1], Kai Zhou[2], Guangya Zhu[3], Aiqing Li[4]
[1]College of Electrical Engineering, Sichuan University, China; [2]College of Electrical Engineering, Sichuan University, China; [3]College of Electrical Engineering, Sichuan University, China; [4]College of Electrical Engineering, Sichuan University, China;

3c-11 Advanced TCAD Simulation of Tunnel Oxide Degradation for EEPROM Applications

Franck Matteo[1,2], Roberto Simola[1], Jérémy Postel-Pellerin[2], karine Coulié[2]
[1]STMicroelectronics Rousset; [2]Aix-Marseille University, CNRS, IM2NP;

3c-12 Study of new ecological magnet wires performances during thermal aging tests

Giovana Pereira dos Santos Lima[1], Sonia Ait-Amar[1], Gabriel Velu[1], Philippe Frezel[2]
[1]Univ. Artois, UR 4025, Laboratoire Systèmes Electrotechniques et Environnement (LSEE), F-62400 Béthune, France, France; [2]Green Isolight International, 62113 Labourse;

3c-13 Numerical Analysis of Breakdown Phenomena for Polymeric Insulators After Thermal Aging Process

Minhee Kim, Su-Hun Kim, Hyeong-Jun Kim, Se-Hee Lee
Kyungpook national university, Korea, Republic of (South Korea);

3c-14 Electrical Resistance Tomography (ERT) applied to Epoxy composites

Nandini Gupta[1], P K Agnihotri[2], Rishab Phartiyal[1]
[1]I I T Kanpur; [2]I I T Ropar;

3c-15 Comparison of dissipation factor behaviour at lower temperatures for new and pre-aged MV PILC cables

Ann-Catrin Uhr-Müller, Christian Weindl
Coburg University of Applied Sciences and Arts, Germany;

3c-16 Improved anti-aging performances based on doping of organic additives of PP films for capacitors

Zhaoyu Ran, Boxue Du, HaoLiang Liu, Xiao Meng, Jiwen Xing
Tianjin university, China, People's Republic of;

3c-17 The Influence of Thermal-Oxidative Ageing on Electrical Properties of Polypropylene

Xiwen Wu, Thomas Andritsch, George Chen
University of Southampton, United Kingdom;

3c-18 Algorithm for single interpretation of dissolved gas analysis

Matias Meira[1], Raúl Álvarez[2], Carlos Verucchi[1], Leonardo Catalano[2]
[1]INTELYMEC (UNCPBA) and CIFICEN (UNCPBA-CICPBA-CONICET), Olavarría, Argentine Republic; [2]IITREE-LAT-FI-UNLP, La Plata, Argentine Republic;

3c-19 An Investigation on Discharge Fault of Outdoor Oil-Filled Cable Terminal at Low Temperature

Qi Li, Xiaoxiao Kong, Yifang Wang, Fan Li, Rundong Xue, Boxue Du
Tianjin University, China;

3c-20 Surface Charging and Flashover Behaviors of Polished Epoxy Spacers under AC Voltage

Yuhuai Wang[1], Jin Li[1], Tianhui Li[2], Chi Dong[2], Jin He[3], Rong Chen[3], Qinghua Tang[3], Chun He[3]
[1]School of Electrical and Information Engineering, Tianjin University; [2]State Grid Hebei Electric Power Research Institute; [3]State Grid Tianjin Electric Power Research Institute;

3c-21 Initiation and Development of Mechanical Crack in Tri-post Insulator of GIL

Songtao Liu[1], Jin Li[1], Hucheng Liang[1], Yaxiang Wang[2], Duanpeng Yuan[2], Liucheng Hao[2], Boxue Du[1]
[1]Key Laboratory of Smart Grid of the Ministry of Education, School of Electrical and Information Engineering, Tianjin University; [2]Pinggao Group Co., Ltd;

3c-22 Numerical and experimental evaluation of dielectric properties of thermally aged insulating paper used in power transformers

Mónica Díaz[1], Cristina Méndez[1], Cristian Olmo[1], Carlos Vila[2], Fernando Delgado[1]
[1]Electrical and Energy Engineering Department, University of Cantabria, Spain; [2]Department of Standardization and Maintenance of Transformers, Iberdrola;

3c-23 A modification of the Norris failure criterion for the prediction of the mechanical failure of the aged paper insulation in the windings of a power transformer

Carmela Oria[1], Diego Ferreño[2], Isidro Carrascal[2], Alfredo Ortiz[1], Inmaculada Fernández[1]
[1]Electrical and Energy Engineering Department, Universidad de Cantabria, Spain; [2]Laboratory of Science and Engineering of Materials, Universidad de Cantabria, Spain;

Thursday 07/July/2022

Oral Session 6: Partial Discharges

Time: Thursday, 07/July/2022: 8:00am - 10:00am
Session Chair: Andrea Cavallini
Session Chair: Juan M. Martínez-Tarifa

6-1 Predictability of PD inception in defects included in HVDC cables by conductivity models calibrated through experiments

Giuseppe Rizzo[1], Vincenzo Li Vigni[1], Antonino Imburgia[2], Pietro Romano[2], Roberto Candela[1], Guido Ala[2]
[1]Prysmian Electronics, Prysmian Group, Palermo, Italy; [2]L.E.PR.E. H.V. Laboratory, Department of Engineering, University of Palermo, Italy;

6-2 Breakdown Properties of Epoxy and Ceramic Substrates Embedded in Liquids at High Temperature

Joko Muslim[1,2], Olivier Lesaint[1], Rachelle Hanna[1], Ngapuli Sinisuka[3]
[1]G2Elab, CNRS and Grenoble University, France; [2]PLN Indonesia, Jakarta 12160, Indonesia; [3]Institut Teknologi Bandung (ITB), Bandung 40132 Indonesia;

6-3 Simulation analysis of partial discharge in random wounding insulation systems in aeronautical conditions

Cyril Van de Steen, Cédric Abadie, Guillaume Belijar
IRT Saint Exupery, France;

6-4 High-Field and High-Frequency Dependencies of Intrinsic Dielectric Properties and Lifetime in Polyimide at Sub-PDIV

Sombel Diaham[1,2], Gavin Sheehan[2], Keith Bennett[3], Paul Lambkin[2], Matt Canty[2], Baoxing Chen[3]
[1]LAPLACE, University of Toulouse, France; [2]Analog Devices Int., Limerick, Ireland; [3]Analog Devices Inc., Wilmington, MA, USA;

6-5 Surface Charge Inducing Flashover on Basin-type Spacer under DC Stress

Hang Yao[1], Boxue Du[1], Jia'nan Dong[1], Hucheng Liang[1], Cheng Zhang[2]
[1]School of Electrical and Information Engineering, Tianjin University, Tianjin, China; [2]Extra-high Voltage Branch Company, State Grid Jiangsu Electric Power Co., Ltd, Jiangsu, China;

6-6 Effects of Transient Voltages on Discharge Inception of Tri-post Insulator in DC-GIL

Jianan Dong, Boxue Du, Hucheng Liang, Hang Yao
天津大学, China, People's Republic of;

Oral Session 7: Conduction and Breakdown

Time: Thursday, 07/July/2022: 10:20am - 12:00pm
Session Chair: Antonino Imburgia
Session Chair: Hucheng Liang

7-1 Comparative study on ionic conduction of polar and nonpolar polymers using molecular dynamics simulations

Haruto Suzuki, Akiko Kumada, Masahiro Sato
The University of Tokyo, Japan;

7-2 Modeling of the Electric Field in High Voltage Direct Current Gas Insulated Transmission Lines

Christoph Jörgens, Hendrik Hensel, Markus Clemens
University of Wuppertal, Germany;

7-3 Insulating materials characterization for the development of MV/HV DC equipment

Caterina Toigo, Antoine Perez, Thanh Vu-Cong, Sophie Iglesias, Maya Mourad, Servane Haller, Frank Jacquier, Alain Girodet
SuperGrid Institute, France;

7-4 Coordinating Analysis of Leakage Current and Arc Development for Icing Flashover Prediction of HVDC Outdoor Insulators

Chao Li[1], Yong Liu[1], Han Zhang[1], B. X. Du[1], Masoud Farzaneh[2], Di Zhang[3]
[1]Tianjin University, China, People's Republic of; [2]Université du Québec à Chicoutimi, Canada; [3]State Grid Hubei Electric Power Company, China, People's Republic of;

7-5 Effect of Long-Chain Branched Structures on Breakdown Strength of Polypropylene Films at High Temperatures

Meng Xiao, Mengdie Zhang, Boxue Du, Zhaoyu Ran, Haoliang Liu
Tianjin University, China, People's Republic of;

Oral Session 8: Ageing

Time: Thursday, 07/July/2022: 12:20pm - 2:00pm
Session Chair: Erling Ildstad
Session Chair: Eric David

8-1 Current measurements on HVDC XLPE model cable during type test

Ludovic Boyer, Priscillia L. Daniel, Martin Henriksen, Xavier FESTAZ
Super Grid Institute, France;

8-2 DC Electrical Trees in Polymer Insulation Inflicted by Rapidly Decreasing Short Circuit Voltage Flanks

Thomas John Hammarstroem, Sarath Kumara, Xiangdong Xu, Amir Pourrahimi, Christian Müller, Yuriy Serdyuk
Chalmers University of Technology, Sweden;

8-3 The role of thermal relaxations and semicrystalline microstructure in charging currents of XLPE

Amir Masoud Pourrahimi, Sung-Woo Cho, Saleem Anwar, Mohsin Saleemi, Claire Pitois, Amirhossein Abbasi
NKT HV cables AB, Sweden;

8-4 Coupling Effect of Electrical and Mechanical Stresses on Bursting Breakdown of Tri-post Insulator

Bo Xue Du[1], Zhi Jun Guo[1], Hu Cheng Liang[1], Liu Cheng Hao[2], Duan Peng Yuan[2], Ya Xiang Wang[2], Bo Yuan Cui[3], Yun Chen[3]
[1]School of Electrical and Information Engineering, Tianjin University, Tianjin 300072, China; [2]Pinggao Group Co., Ltd, Pingdingshan 467000, China; [3]China Electric Power Research Institute, Beijing 100085, China;

8-5 Comparative Study on Different Outer Corona Protection Materials for High-Voltage Rotating Machines

Lena Elspaß[1], Karsten Backhaus[1], Jürgen Stahl[2], Schlegel Stephan[1]
[1]Institute of Electrical Power Systems and High Voltage Engineering, Technische Universität Dresden, Germany; [2]VEM Sachsenwerk GmbH;

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