

Preliminary program (Last revision 18th April)

20th IEEE International Conference on Dielectric Liquids

Date: Sunday, 23/Jun/2019

4:30pm - 7:30pm **Registration**

7:00pm - 8:30pm **Welcome Reception**

Date: Monday, 24/Jun/2019

8:00am - 10:00am Registration

8:45am - 9:30am Opening Ceremony

9:30am - 10:00am S0: Tropper Lecture

ID: 1368 / S0: 1

Transport of Heat and Mass with Electrical Field – from Earth to Space

Jamal Yagoobi

WPI, United States of America

10:00am - 10:30am Coffee Break

10:30am - 12:30pm S1: Basic Properties and Fundamental Studies

ID: 1271 / S1: 1

Investigation of the factors affecting the dielectric dissipation factor of synthetic and natural esters

Penelope May Livesey, Mark Lashbrook, Russell Martin

M&I Materials, United Kingdom

ID: 1116 / S1: 2

Thermodynamic Model for the Mobility of Oxygen Anions in Dense Neon Gas

Armando Francesco Borghesani¹, Frederic Aitken²

¹University of Padua, Italy; ²University Grenoble Alpes, C.N.R.S., G2Elab

ID: 1278 / S1: 3

The Relationship Between the Physical, Chemical, and Functional Properties of Insulating Liquids

Edward Casserly

Ergon, United States of America

ID: 1134 / S1: 4

Numerical Study of the Thermal Excitation Applied to a Dielectric Liquid Film

Paul Leblanc¹, Thierry Paillat¹, Paul Daniel Stanley Clermont¹, Xavier Sidambarompoulé², Jeans-Charles Laurentie², Petru Notingher²

¹Institut Pprime (CNRS - Université de Poitiers - ISAE-ENSMA), France; ²IES, Université de Montpellier, CNRS, MONTPELLIER, FRANCE

ID: 1121 / S1: 5

Electron Self-Trapping in Vortex Rings in Superfluid Helium

Alexey Khrapak, Sergey Bronin

Joint Institute for High Temperatures RAS, Russian Federation

ID: 1293 / S1: 6

Pressure Dependent Propagation of Positive Streamers in a long Point-Plane Gap in Transformer Oil

Dag Linhjell¹, Lars E. Lundgaard¹, Mikael Unge²

¹SINTEF Energy Research, Norway; ²ABB Corporate Research, Västerås, Sweden

ID: 1131 / S1: 7

Infrared Cathodoluminescence of Xe₂ Excimers in Dense He-Xe Gas Mixtures

Federico Chiossi¹, Armando Francesco Borghesani¹, Giovanni Carugno²

¹University of Padua, Italy; ²INFN Sez. Padova, Italy

ID: 1216 / S1: 8

Excitation processes as a pathway for electron solvation in non-polar liquids

Daniel Cocks¹, Ron White²

¹Australian National University, Australia; ²James Cook University, Australia

12:30pm - 1:30pm

Lunch

1:30pm - 3:00pm

S2: Special Session on Electro-hydrodynamics

ID: 1200 / S2: 1

Experimental analysis of the conduction pumping phenomenon created by seven pair of asymmetric flushed electrodes

Christophe Louste¹, Philippe Traore¹, Pedro Vasquez², Jamal Seyed Yagoobi³

¹P¹ institute University of Poitiers, France; ²Dpt. Fisica Aplicada III E.T.S.I., Universidad de Sevilla;

³Department of Mechanical Engineering Worcester Polytechnic Institute

ID: 1236 / S2: 2

Effect of Electric Nusselt number on Electro-Thermo-Convection in dielectric liquid subjected to unipolar injection

Dantchi Koulova¹, Hubert Romat², Philippe Traore²

¹Bulgarian Academy of Sciences, Bulgaria; ²P¹ Institute of Poitiers, Department of Fluids, Thermal and Combustion Sciences, EHD Team, CNRS / University of Poitiers/ ENSMA ISAE Futuroscope, France.

ID: 1133 / S2: 3

A Non-destructive Thermal Stimulus Method as a Tool for studying the Electrical Double Layer

Xavier Sidambarompoulé¹, Jean Charles Laurentie¹, Petru Notingher¹, Thierry Paillat², Paul Leblanc², Alain Toureille¹, Gérard Touchard², Olivier Guille¹

¹IES, Université de Montpellier, CNRS, MONTPELLIER, FRANCE; ²Institut Pprime, CNRS - Université de Poitiers - ISAE-ENSMA, POITIERS, FRANCE

ID: 1344 / S2: 4

Mapping the thickness of falling liquid films under ionic wind by a light absorption technique

Daniele Testi

DESTEC, University of Pisa, Italy

ID: 1118 / S2: 5

Conditions for explosive growth of free surface perturbations for a dielectric liquid in a normal electric field in confined axisymmetric geometry

Konstantin Bobrov¹, Nikolay Zubarev^{1,2}, Olga Zubareva¹

¹Institute of Electrophysics, UB RAS, Russian Federation; ²Lebedev Physical Institute, RAS, Russian Federation

ID: 1340 / S2: 6

Conduction currents in ester liquids and mineral oil under DC stress

Qingjiang Xue Xue, Igor Timoshkin, Mark Wilson, Martin Given, Scott MacGregor

University of Strathclyde, United Kingdom

3:00pm - 3:30pm

Coffee Break

3:30pm - 5:30pm

P1-1: Poster Session on Basic Properties and Fundamental Studies

ID: 1317 / P1-1: 1

Time-dependent dielectric behavior of mineral oil under the influence of different DC voltage conditions

Hans-Peter Öttering¹, Patrick Rumpelt², Andreas Küchler¹, Frank Jenau², Ronny Fritsche³

¹FHWS University of Applied Sciences Würzburg-Schweinfurt, Germany; ²TU Dortmund University, Dortmund, Germany; ³Siemens AG, Nürnberg, Germany

ID: 1125 / P1-1: 2

15 min DC breakdown tests with liquid nitrogen

Stefan Fink, Volker Zwecker

KIT, Germany

ID: 1169 / P1-1: 3

Influence of the voltage growth rate on the partial discharge inception voltage (PDIV) in biodegradable transformer oil

Maciej Jaroszewski¹, Abderrahmane Beroual², Maciej Żuk¹

¹Wroclaw University of Science and Technology, Faculty of Electrical Engineering, Poland; ²Ecole Centrale de Lyon, University of Lyon, AMPERE CNRS UMR 5005, 36 Avenue Guy de Collongue, 69134 Ecully, France

ID: 1136 / P1-1: 4

Suspension Stability of Transformer Oil-based Nanofluids

Xinyi Ma, Ming Dong, Yang Li, Jiacheng Xie, Chongxing Zhang

Xi'an Jiaotong University, People's Republic of China

ID: 1314 / P1-1: 5

Influence of the Electrode Surface Roughness on the Electrical Conductivity of Pure Paraffin

Christian Dotterweich¹, Fabian Dax¹, Markus Zink¹, John Popp², Torsten Staab², Gerhard SEXTL², Frank Berger³

¹Hochschule für angewandte Wissenschaften Würzburg-Schweinfurt, Germany; ²Julius-Maximilians-Universität Würzburg, Germany; ³Technische Universität Ilmenau, Germany

ID: 1338 / P1-1: 6

Impact of Oil-Based Nanofluids on Partial Discharge Activity

Eman G. Atiya¹, Diaa-Eldin A. Mansour¹, Mohamed A. Izzularab²

¹Tanta University, Egypt; ²Minoufiya University, Egypt

ID: 1238 / P1-1: 7

Investigation of Temperature Effect on Conductance Characteristics of Transformer Oil-based Nanofluids

Xinyi Ma, Ming Dong, Yang Li, Ming Ren

Xi'an Jiaotong University, China, People's Republic of

ID: 1305 / P1-1: 8

New equation for calculating electronic polarizability using refractometry

Dmitriy N. Putintsev¹, Nikolay M. Putintsev²

¹Institute for Systems Analysis, FRC CSC RAS, Russian Federation; ²Murmansk State Technical University

ID: 1304 / P1-1: 9

The theoretical study of dielectric properties of water using the modified Onsager-Kirkwood-Fröhlich theory

Dmitriy N. Putintsev¹, Nikolay M. Putintsev²

¹Institute for Systems Analysis, FRC CSC RAS, Russian Federation; ²Murmansk State Technical University

ID: 1157 / P1-1: 10

Comparative Dielectric properties of 1,2-dichloroethane with n-methylformamide and n,n-dimethylformamide using Time Domain Reflectometry Technique

Shagufta Tabassum¹, V. P Pawar²

¹Research Scholar, Maharashtra Udayagiri Mahavidyalaya, Udgir-4137517, Latur, Maharashtra, India, India; ²Principal, Sunderrao Solanke Mahavidyalaya, Majalgaon-431131, Beed, Maharashtra, India

ID: 1298 / P1-1: 11

Microwave Dielectric Characterization of Atarax-Methanol Binary Using Time Domain Reflectometry Technique

Shafiyoddin Sayyad¹, Ashok Dongre², Ashok Kumbharkhane³, Prakash Khirade⁴

¹Milliya Arts, Science and Management Science College, Beed, India; ²Vasantdada Patil College, Patoda, India; ³S. R. T. M. University Nanded, India; ⁴Dr. B. A. M. University, Aurangabad, India

ID: 1319 / P1-1: 12

Effect of Cumyl Alcohol in Multilayer Dielectric on Space Charge Build Up

Benny Reinmart^{1,3}, Gilbert Teyssedre², Severine Le Roy², Ngapuli Irmea Sinisuka¹

¹Bandung Institute of Technology, Indonesia; ²Université Paul Sabatier, LAPLACE, France; ³PT. PLN (Persero), Indonesia

ID: 1186 / P1-1: 13

Electrothermal Coupling Simulation of Termination Insulation of Superconducting Energy Pipeline

Bo Song, Xuze Gao, Ming Ren, Tianxin Zhuang, Ming Dong

Xi'an Jiaotong University, China, People's Republic of

ID: 1249 / P1-1: 14

DC breakdown and space charge characteristics of mineral oil impregnated thermally upgraded paper with different ageing conditions

Runhao Zou, Jian Hao, Ruijin Liao

State Key Laboratory of Power Equipment & System Security and New Technology College of Electrical Engineering Chongqing University, China, People's Republic of

ID: 1178 / P1-1: 15

Electron transport and propagation of negative streamers in liquid rare gases

Sasa Dujko¹, Ilija Simonovic¹, Danko Bosnjakovic¹, Zoran Petrovic^{1,2}, Ronald White³

¹Institute of Physics Belgrade, Serbia; ²Serbian Academy of Sciences and Arts, Serbia; ³James Cook University, Australia

ID: 1219 / P1-1: 16

THE INFLUENCE OF POLARITY EFFECT AND INTERNAL IMPURITY ON THE BREAKDOWN VOLTAGE OF PALM OIL UNDER INHOMOGENEOUS ELECTRIC FIELD

Moch Dhofir, Rini Nur Hasanah, Hadi Suyono

Universitas Brawijaya, Indonesia

ID: 1218 / P1-1: 17

THE BREAKDOWN VOLTAGE OF PALM OIL UNDER INHOMOGENEOUS ELECTRIC FIELD

Rini Nur Hasanah, Moch Dhofir, Hadi Suyono

Universitas Brawijaya, Indonesia

ID: 1174 / P1-1: 18

SPACE CHARGE EFFECT ON THE ELECTROPHYSICAL CHARACTERISTICS OF LIQUID DIELECTRICS

Borys Dikarev, Genadii Karasev, Serhii Sokolovsky, Oleksii Karasev

Prydniprovska State Academy of Civil Engineering and Architecture, Ukraine

ID: 1335 / P1-1: 19

The effects of TiO₂ nanoparticles on insulation and charge transport characteristics of aged transformer oil

Yang Ge, Zhen Sun, Yuzhen Lv, Meng Huang, ChengRong Li

NCEPU, China, People's Republic of

ID: 1220 / P1-1: 20

THE INFLUENCE OF WATER CONTAMINANTS ON THE BREAKDOWN VOLTAGE AND LEAKAGE CURRENT OF PALM OIL UNDER INHOMOGENEOUS ELECTRIC FIELD

Hadi Suyono, Moch Dhofir, Rini Nur Hasanah

Universitas Brawijaya, Indonesia

ID: 1143 / P1-1: 21

Temperature dependence of the shear viscosity of mineral oils and natural esters

Luigi Calcarà¹, Giovanni De Bellis^{1,2}, Massimo Pompili¹

¹DIAEE-Dept of Astronautical, Electrical and Energy Engineering, Sapienza University of Rome, Italy;

²CNIS-Research Center on Nanotechnology Applied to Engineering, Sapienza University of Rome, Italy

3:30pm - 5:30pm

P1-2: Poster Session on Electro-hydrodynamics

ID: 1274 / P1-2: 1

Study of the Dielectric Behavior of HFE-7000 in Function of Electric Field and Temperature Variations

Michelle Nassar¹, Christophe Louste¹, Nicolas Chauris¹, Philippe Traore¹, Jamal Seyed-Yagoobi², Michel Daaboul³, Anny Michel¹

¹Institute Pprime, France; ²Worcester Polytechnic Institute, USA; ³University of Balamand, Lebanon

ID: 1330 / P1-2: 2

Computation the effective dielectric constant of nano-probe local surrounding by solvatochromic spectral shift measurement of organic dye molecule

Peter Lebedev-Stepanov, Anastasia Stepko

Photochemistry Center FSRC "Crystallography Photonics" RAS, Russian Federation

ID: 1190 / P1-2: 3

Dielectric droplet on a superhydrophobic substrate in an electric field

Alexandr Leonidovich Kupershtokh^{1,2}, Dmitry Alexandrovich Medvedev²

¹Novosibirsk State University; ²Institute of Hydrodynamics of Siberian Branch of RAS

ID: 1191 / P1-2: 4

EHD Pumping in Flexible Conic Nozzle

Pedro A Vazquez¹, Jamal Seyed-Yagoobi², Philippe Traore³, Christophe Louste³

¹Universidad de Sevilla, Spain; ²Worcester Polytechnic Institute; ³Institut PPRIME

ID: 1232 / P1-2: 5

Experimental study and numerical simulation of partial discharges in deformed bubbles in transformer oil

Denis I. Karpov¹, Sergey M. Korobeynikov^{1,2}, Marina B. Meredova¹, Alexander V. Ridel^{1,2}, Alexander V. Ovsyannikov², Alexander L. Kupershtokh¹

¹Lavrentyev institute of hydrodynamics of Siberian branch of russian academy of sciences, Russian Federation; ²Novosibirsk State Technical University

ID: 1339 / P1-2: 6

Heat Transfer Enhancement in a Dielectric Coolant by Electroconvection in Point-Plane Geometry

Daniele Testi

DESTEC, University of Pisa, Italy

ID: 1284 / P1-2: 7

Analytical model of the flow electrification of a liquid under charging conditions

Stanley Paul Daniel Clermont

Laboratoire des Sciences de l'Environnement et de l'Energie (LS2E), Haiti

ID: 1119 / P1-2: 8

Conical structures on the surface of a liquid with ion current in the space-charge limited mode

Mark Belyaev¹, Nikolay Zubarev^{1,2}, Olga Zubareva¹

¹Institute of Electrophysics, UB RAS, Russian Federation; ²Lebedev Physical Institute, RAS, Russian Federation

ID: 1126 / P1-2: 9

Numerical simulation of the wave breaking process on the surface of a dielectric liquid in a tangential electric field

Evgeny Kochurin

Institute of Electrophysics, Ural Division of RAS, Russian Federation

ID: 1103 / P1-2: 10

Experimental Investigation of the Influence of Electric Charge on the Behavior of Water Droplets in Electric Fields

Jens-Michael Löwe, Volker Hinrichsen

Technische Universität Darmstadt, High-Voltage Laboratories, Germany

ID: 1144 / P1-2: 11

The Streamer Discharge Simulation of Transformer Oil-based Nanofluid

Xinyi Ma, Ming Dong, Yang Li, Ming Ren

Xi'an Jiaotong University, China, People's Republic of

ID: 1192 / P1-2: 12

Numerical study of electrically induced flow by conduction mechanism in a blade-plane configuration.

Philippe Traoré¹, Christophe Louste¹, Umesh Seth¹, Pedro Vazquez², Jamal Yagoobi³

¹Institut PPRIME, France; ²Universidad de Sevilla, Spain; ³Worcester Polytechnic Institute, USA

ID: 1193 / P1-2: 13

Numerical investigation of EHD pumping through conduction phenomenon in a rectangular channel.

Philippe Traoré¹, Christophe Louste¹, Umesh Seth¹, Pedro Vazquez², Jamal Yagoobi³

¹Institut PPRIME, France; ²Universidad de Sevilla, Spain; ³Worcester Polytechnic Institute, USA

7:30pm - 10:30pm

CARGILL Evening

Date: Tuesday, 25/Jun/2019

8:00am - 10:00am Registration

8:30am - 10:00am S3: Special Session on Synthetic and Natural Esters in TSO-DSO Transformer Applications

ID: 1355 / S3: 1

Assessment of Oxidative Stability and Physical Properties of High Oleic Natural Ester Oils

Racha Seemamahannop¹, Shubhen Kapila¹, Kritin Bilyeu¹, Vander Tumiatti², Massimo Pompili³

¹University of Missouri, United States of America; ²SEA MARCONI TECHNOLOGIES S.a.s.; ³University of Roma "La Sapienza"

ID: 1135 / S3: 2

Increasead Lodability of Transformers Immersed in Natural Esters

Fabio Scatiggio, Francesco Maria Pepe, Simone Sacco, Claudio Angelo Serafino

TERNA RETE ITALIA, Italy

ID: 1318 / S3: 3

Experience of Synthetic Ester Filled Transformers in SP Energy Networks

ShengJi Tee, David Walker, Malcolm Bebbington

SP Energy Networks, United Kingdom

ID: 1334 / S3: 4

Natural ester liquid-filled transformers power the Olympic Games

Kevin James Rapp¹, Revin Wang², Alan Sbravati¹, Roberto Ignacio³, Vander Tumiatti⁴, Massimo Pompili⁵

¹Cargill, Plymouth, MN United States of America; ²Cargill China; ³Cargill Brazil; ⁴Sea Marconi, Turin, Italy; ⁵University of Roma-Sapienza

ID: 1307 / S3: 5

Investigation of the Total Flow Rates in Oil Natural Transformer Refilling Scenarios

Xiang Zhang¹, Zhongdong Wang¹, Qiang Liu¹, Attila Gyore², Kevin Rapp³

¹The University of Manchester, United Kingdom; ²M&I Materials; ³Cargill Bioindustrial- Global Dielectric Fluids Technology

ID: 1358 / S3: 6

Fire simulation tests of mineral oil and natural esters transformers

Michele Mazzaro¹, Domenico De Bartolomeo¹, Luigi Calcara², Massimo Pompili², Fabio Scatiggio³, Andrea Valant³, Massimo Rebolini³, Elisabetta Bemporad⁴, Alessandro Ledda⁴, Flavio Mauri⁵, Mauro Salvadori⁵, Alfonso Sturchio⁵, Marco Falconi⁶, Antonella Vecchio⁶

¹Italian Ministry of Home Affairs National Fire and Rescue Service Dept., Italy; ²University of Roma "La Sapienza", Italy; ³Terna Rete Italia, Italy; ⁴Italian National Institute for Insurance against Accidents at Work (INAIL), Italy; ⁵e-distribuzione, Italy; ⁶ISPRA Dept. for Geological Survey of Italy

10:00am - 10:30am Coffee Break

10:30am - 12:15pm S4: Special Session on Synthetic and Natural Esters in TSO-DSO Transformer Applications

ID: 1227 / S4: 1

Smoke Tests of Natural Esters and Mineral Oils under Transformer Fire Conditions

Riccardo Pedriali¹, Giorgio Campi¹, Fabio Scatiggio², Alessandro Ledda³, Luigi Calcara⁴, Massimo Pompili⁴

¹A&A Fratelli Parodi Spa, Italy; ²Terna Rete Italia, Italy; ³INAIL, Italy; ⁴Università di Roma "La Sapienza", Italy

ID: 1234 / S4: 2

Kraft and diamond dotted paper thermally aged in mineral oil and natural ester: mechanical characterisation

Cristina Fernández-Diego, Isidro Carrascal, Alfredo Ortiz, Inmaculada Fernández, Fernando Delgado, Cristian Olmo

University of Cantabria, Spain

ID: 1233 / S4: 3

Preliminary Studies on Soluble and Colloidal Decomposition Products in Ester Filled Transformers

Mohan Rao Ungarala, Issouf Fofana, Luc Loiselle
ViAHT - UQAC, Canada

ID: 1248 / S4: 4

Influence of Pressure in Sealed Tube Ageing Test

Thomas Prevost¹, Jinesh Malde², Brad Greaves¹, Russell Martin²
¹Weidmann Electrical Technology Inc.; ²M&I Materials Inc

ID: 1253 / S4: 5

Fundamental study on natural ester use in instrument transformers

Fabrizio Negri
Trench Italia, Italy

ID: 1237 / S4: 6

Insulating Ester Liquids - Testing Methods and Diagnostic Characteristics

Ronny Fritsche, Ivanka Dr. Atanasova-Hoelein, Michael Geissler
SIEMENS AG, Germany

ID: 1310 / S4: 7

Effect of Field Uniformity on Positive Streamer Characteristics of a Synthetic Ester under Lightning Impulse

Shuhang Shen, Qiang Liu, Zhongdong Wang
The University of Manchester, United Kingdom

12:15pm - 12:30pm

Conference Group Photo

12:30pm - 1:30pm

Lunch

1:30pm - 3:00pm

S5: Measurement, Monitoring and Diagnostic Techniques in High Voltage Equipments

ID: 1364 / S5: 1

Stirring effect in dielectric liquids breakdown voltage determination

Martin Baur¹, Jens Knauel¹, Luigi Calcara², Silvia Sangiovanni², Massimo Pompili²
¹BAUR GmbH, Austria; ²University of Roma "La Sapienza", Italy

ID: 1296 / S5: 2

Investigation on Gassing Behavior of Various Insulation Liquids in Power Transformers

Kristin Homeier, Mohammad Taghi Imani, Moritz Kuhnke, Peter Werle
Leibniz Universität Hannover IfES Schering-Institute, Germany

ID: 1167 / S5: 3

Diagnosis of transformers based on vibration data taxonomy

Amirhossein Tavakoli^{1,2,3}, Letizia De Maria², Daniele Bartalesi², Baudillos Valecillos³, Ugo Piovan³, Simone Garatti¹, Sergio Bittanti¹
¹Politecnico di Milano, Italy; ²RSE, Italy; ³Trafoexpert, Switzerland

ID: 1214 / S5: 4

Partial Discharge Defect Recognition in Power Transformer using Random Forest

Ismail Hartanto Kartojo^{1,2,3}, Yan-Bo Wang², Guan-Jun Zhang², Suwarno Suwarno³
¹PLN, Indonesia; ²State Key Laboratory, Xi'an Jiaotong University, China; ³Bandung Institute of Technology, Indonesia

ID: 1365 / S5: 5

FT IR and X-Ray Photoelectron Spectral(XPS) Evidence for interaction between Natural Ester and Cellulose paper

Srinivasa narasimhan Chakravarthula, Sohan Beldar, Girish Morde, Rohit Dolasiya

SAVITA OIL TECHNOLOGIES LIMITED, India

ID: 1155 / S5: 6

High frequency permittivity measurements of dielectric liquids with a new technique of coplanar waveguides

Mohamed Amine Ben aissa¹, Amine Mokraoui¹, Hocine Moulai¹, Abderrahmane Beroual²

¹USTHB, University of Science and Technology Houari Boumediene, Algeria; ²University of Lyon, Ecole Centrale de Lyon, Ampere Laboratory CNRS UMR 505

3:00pm - 3:30pm

Coffee Break

3:30pm - 5:30pm


S6: Partial Discharges

ID: 1110 / S6: 1

Prebreakdown and Breakdown Phenomena in Liquid Nitrogen under Pulsed Heating for Superconducting Applications

Raphaël Chassagnoux^{1,2}, Olivier Lesaint², Nelly Bonifaci², Olivier Gallot-Lavallée², Pierre Legendre¹, Christophe Creusot¹, Alain Girodet¹

¹SuperGrid Institute, 23 rue Cyprian, 69628 Villeurbanne, France; ²Univ. Grenoble Alpes, CNRS, Grenoble INP, G2Elab, 38000, Grenoble, France

 S6_1-1110_a.pdf

ID: 1228 / S6: 2

Partial Discharge Measurements on Dibenzyltoluene for High Temperature Encapsulant Application up to 350°C

Joko Muslim^{1,2}, Rachelle Hanna¹, Olivier Lesaint¹, Ngapuli Irmea Sinisuka³

¹Université Grenoble Alpes, CNRS, Grenoble INP, G2Elab, France; ²PLN Indonesia, Indonesia; ³Institut Teknologi Bandung (ITB), Indonesia

 S6_2-1228_a.pdf

ID: 1127 / S6: 3

Partial Discharge Characteristics caused by Metallic Particles under DC Condition on Oil Immersed Insulation

Yoshitaka Miyaji, Soichiro Kainaga, Manabu Yoshimura, Hirotaka Muto, Kenichi Suga

Mitsubishi Electric Corp., Japan

 S6_3-1127_a.pdf

ID: 1160 / S6: 4

Comparison of Dissolved Gases in Natural Ester under Partial Discharges

Korraya Jongvilaikasem, Sakda Maneerot, Kittipod Jariyanurat, Norasage Pattanadetch

King Mongkut's Institute of Technology Ladkrabang, Thailand

 S6_4-1160_a.pdf

ID: 1270 / S6: 5

The Effect of Bubble Flow on Partial Discharge Characteristics of FC-72 Dielectric Liquid

Shenyang Mo¹, Tengfei Fan¹, Jiayu Xu¹, Xuebao Li¹, Zhibin Zhao¹, Xiang Cui¹, Jinyuan Li², Fei Yang²

¹State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources, North China Electric Power University, Beijing, China; ²Global Energy Interconnection Research Institute

 S6_5-1270_a.pdf

ID: 1229 / S6: 6

Streamer Generation and Propagation in Dibenzyltoluene and Ester liquids under High Temperature

Joko Muslim^{1,2}, Olivier Lesaint¹, Rachelle Hanna¹, Ngapuli Irmea Sinisuka³

¹Université Grenoble Alpes, CNRS, Grenoble INP, G2Elab, France; ²PLN Indonesia, Indonesia; ³Institut Teknologi Bandung (ITB), Indonesia

 S6_6-1229_a.pdf

7:30pm - 10:30pm

Conference Banquet

Date: Wednesday, 26/Jun/2019

8:00am - 10:00am Registration

8:30am - 10:00am S7: Electrical Discharges and Breakdowns

ID: 1332 / S7: 1

Structure analysis of streamers in transformer liquids under impulse voltages

Wu Lu, Wenbin Zhao, Feng Li, Yuan Gao

Shanghai University of Electric Power, China, People's Republic of

ID: 1164 / S7: 2

Lightning impulse withstand of insulating liquid in terms of unified weak-link theory

Mladen Marković

Končar D&ST, Croatia

ID: 1222 / S7: 3

Impedance Analysis of Underwater High Current Pulse Discharge

Yi Liu^{1,2,3}, Yang Liu^{1,2,3}, Yijia Ren^{1,2,3}, Siwei Liu^{1,2,3}, Fuchang Lin^{1,2,3}, Liangli Xiong^{1,2,3}

¹State Key Laboratory of Advanced Electromagnetic Engineering and Technology, Huazhong University of Science and Technology, Wuhan, Hubei Province, China; ²School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, Wuhan, Hubei Province, China; ³Key Laboratory of Pulsed Power Technology, Huazhong University of Science and Technology, Ministry of Education, Wuhan, Hubei Province, China

ID: 1168 / S7: 4

On polarity effect of underwater impulse breakdown

Xiandong Li, Xianping Chen, Jian Li

Chongqing University, China, People's Republic of

ID: 1255 / S7: 5

AC Breakdown Performance Analysis of SF6/N2 and SF6/CO2 Gas Mixtures for Ring Main Unit (RMU) Switchgear Application

Nur Farhani Ambo¹, Hidayat Zainuddin¹, Muhammad Saufi Kamarudin², Jamaludin Mohd Wari³

¹Universiti Teknikal Malaysia Melaka, Malaysia; ²Universiti Tun Hussein Onn Malaysia, Malaysia; ³Indkom Engineering Sdn. Bhd.

10:00am - 10:30am Coffee Break

10:30am - 12:30pm S8: Electrical Discharges and Breakdowns

ID: 1139 / S8: 1

Creeping Discharges at Liquid/solid and Gas/Solid Interfaces: Analogies and Involving Mechanisms

Abderrahmane Beroual

University of Lyon, Ecole Centrale de Lyon, AMPERE Lab CNRS, France

ID: 1175 / S8: 2

Experimental Discharge Initiation Study for Paper

Dejan Vukovic¹, Marco Milone¹, Olof Hjortstam², Håkan Faleke²

¹ABB AG, Bad Honnef, Germany; ²ABB Corporate Research, Västerås, Sweden

ID: 1308 / S8: 3

Effects of Moisture and Oil Flow on White Mark Propagation on Pressboard in an Ester Liquid

Yiming Huang, Qiang Liu, Zhongdong Wang

The University of Manchester, United Kingdom

ID: 1198 / S8: 4

Discharge Characteristics with Impulse Voltage Application in Ester Oil/Pressboard Composite Insulation System

Taichi Yamada¹, Yusuke Nakano¹, Masahiro Kozako¹, Masayuki Hikita¹, Shigeyoshi Yoshida², Soichiro Kainaga², Manabu Yoshimura², Kenichi Suga²

¹Kyushu Institute of Technology, Japan; ²Mitsubishi Electric Corporation, Japan

ID: 1303 / S8: 5

Assessing the Production and Loss of Electrons from Conduction Currents in Mineral Oil

Marley Becerra, Mauricio Aljure, Janne Nilsson

KTH Royal Institute of Technology, Sweden

ID: 1187 / S8: 6

Effects of Discharge Patterns and Pulse Width on Hydrogen Peroxide Formation by Pulsed Electrical Discharge in Water

Jiaye Wen, Yuan Li, Mengyao Zhang, Guanjun Zhang

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, Shaanxi, P.R. China

ID: 1162 / S8: 7

Three-Parameter Weibull Distribution Curves for LIBV of Pressboard Samples Impregnated with Natural Ester and Mineral Oil

Artur Klarecki, Pawel Rozga

Lodz University of Technology, Poland

ID: 1363 / S8: 8

Propagation of Surface Discharges in Nomex and Cellulose Boards Immersed in Transformer Oils

Thirumurugan Chandrasekaran¹, Ganesh balu Kumbhar², Ramesh Oruganti¹

¹IIT MANDI, India; ²IIT ROORKEE, India

12:30pm - 1:30pm

Lunch

1:30pm - 3:00pm

S9: Applications and Performances of Dielectric Liquids in High Voltage Equipments

ID: 1224 / S9: 1

Non-standard PD inception voltage testing of liquid dielectrics used in transformers

Maks Babuder¹, Ivo Kobal¹, Tim Gradnik¹, Maja Končan-Gradnik¹, Carl Wolmarans²

¹Elektroinštitut Milan Vidmar, Slovenia; ²Nynas, Sweden

ID: 1153 / S9: 2

Time and Space Transition of DC Electric Field Distributions in Oil-Pressboard Composite Insulation in AC/DC Converter Transformer

Ryuichi Nakane¹, Katsumi Kato², Naoki Hayakawa³, Hitoshi Okubo¹

¹Aichi Institute of Technology; ²National Institute of Technology, Niihama Collage; ³Nagoya University

ID: 1210 / S9: 3

The conformity of DGA interpretation techniques: Experience from transformer 132 units

Worawich Angsusatra, Kantitat Sasompholsawat, Jompatara Siriworachanyadee, Norasage Pattanadech

King Mongkut's Institute of Technology Ladkrabang, Thailand

ID: 1360 / S9: 4

Life Cycle Management of Natural Esters & Transformers according to IEC Standards: Case History of Envirotemp FR3 Fluid & TransfoClean Solution in Brasil

Vander Tumiatti¹, Kevin Rapp², Shubhen Kapila³, Massimo Pompili⁴, Riccardo Maina¹

¹SEA MARCONI TECHNOLOGIES S.a.s., Italy; ²Cargill Bioindustrial, United States of America; ³University of Missouri, United States of America; ⁴University of Roma "La Sapienza"

ID: 1161 / S9: 5

Studies for the use of a dielectric liquid as insulator in a wireless HV generator

Piergiorgio Antonini³, Enrico Borsato¹, Giovanni Carugno², Flavio Dal Corso², Claudio Fanin², Alberto Facco³, Renato Gobbo¹, Leonardo La Torre³, Fabio Montecassiano², Matteo Pegoraro², Marco Poggi³, Pierluigi Zotto¹

¹Padova University, Italy; ²INFN, Sez. di Padova, Italy; ³INFN, Laboratori Nazionali di Legnaro, Italy

ID: 1327 / S9: 6

Comparison of X-Wax Formation in Different Insulation Liquids

Moritz Kuhnke, Peter Werle

Leibniz Universität Hannover, Germany

3:00pm - 3:30pm

Coffee Break

3:30pm - 7:30pm

Visit Sistina Chapel

Date: Thursday, 27/Jun/2019

8:00am - 10:00am Registration

8:30am - 10:00am S10: Special Session on Alternative gasses on SF6 having much less greenhouse impact

ID: 1343 / S10: 1

SF6 Gas Replacement in Pulsed High Voltage Coaxial Cables

Tobias Stadlbauer, Thomas Kramer, Dimitrios Kontelis, Laurent Ducimetiere, Luc Sermeus, David Woog
CERN, Switzerland

ID: 1292 / S10: 2

Insulation Characteristics of Spacer Filled with Different Gas insulating mediums Under Superimposed Voltage of DC and Impulse

Jingrui Wang¹, Zhiyuan Wang², Jian Wang¹, Yanan Chang¹, Qi Hu¹, Xiaoru Ni¹, Qingmin Li¹
¹State Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources North China Electric Power University, Beijing 102206, China; ²State Grid Beijing Electric Power Co., Ltd. Chaoyang Power Supply BR, Beijing 100124, China

ID: 1179 / S10: 3

Electron transport coefficients and negative streamer dynamics in CF3I-SF6 gas mixtures

Sasa Dujko¹, Jasmina Atic¹, Danko Bosnjakovic¹, Zoran Petrovic^{1,2}, Jaime de Urquijo³
¹Institute of Physics Belgrade, Serbia; ²Serbian Academy of Sciences and Arts, Serbia; ³Instituto de Ciencias Físicas, Universidad Nacional Autónoma de México

ID: 1321 / S10: 4

Prediction of breakdown voltage value in SF6-N2 gases mixture under DC voltage with the influence of conducting particles by analyzing experimental data using ANN

Hafiz Muhammad Azib Khan, Qingmin Li, Jian Wang, Jingrui Wang, Yanan Chang
Key Laboratory of Alternate Electrical Power System with Renewable Energy Sources North China Electric Power University, Beijing 102206, China

ID: 1281 / S10: 5

Calculation of Thermodynamic Properties of C4F7N/CO2 Mixed Gas

Zhen Zhang, Xin Lin, Jia Zhang
School of Electrical Engineering, Shenyang University of Technology, China, People's Republic of

ID: 1324 / S10: 6

Study on Electric Strength and Synergistic Effect of C3F7CN-CO2 Gas Mixture by Steady State Townsend Method

Zhikang Yuan, Youping Tu, Chengqian Yi, Yi Cheng, Ying Zhang, Xin Ai, Cong Wang
North China Electric Power University, China, People's Republic of

10:00am - 10:30am Coffee Break

10:30am - 12:30pm S11: Applications and Performances of Dielectric Liquids in High Voltage Equipments

ID: 1256 / S11: 1

Determination of Epoxy Resin in Transformer Oils by FTIR Method and the Study of Its Damage

Yaohong Zhao
Electric Power Research Institute of Guangdong Power Grid Co., Ltd., China, People's Republic of

ID: 1149 / S11: 2

Investigation on Thermal Aging Mechanism of Cellulose Paper in Oil Immersed Transformer

Daosheng Liu^{1,2}, Christopher Garang Deng¹, Xiangdong Xu², Jing Ye¹, Xiaofan Li¹, Kammeugue Noubissi Romaric¹
¹Jiangxi University of Science and Technology, China, People's Republic of; ²Electric Power Engineering, Chalmers University of Technology, Sweden

| | |
|-------------------------|--|
| | <p>ID: 1203 / S11: 3</p> <p>Potential Usage of Magnetic Liquids in High Voltage Test Devices</p> <p>Mislav Trbušić, Jože Pihler, Anton Hamler University of Maribor, Slovenia</p> |
| | <p>ID: 1366 / S11: 4</p> <p>Global footprint of free breathing transformer with Natural ester.</p> <p>Rajaram Ramchandra Shinde Cargill India Pvt. Ltd, India</p> |
| | <p>ID: 1165 / S11: 5</p> <p>Interturn insulation characteristics for transformer windings using three ester types under lightning impulse voltage</p> <p>Katsunori Miyagi¹, Ryoichi Hanaoka¹, Keiichiro Matsushita², Kiyoshi Wakimoto² ¹Kanazawa Institute of Technology, Japan; ²Meidensha Corporation</p> |
| | <p>ID: 1252 / S11: 6</p> <p>Effect of maghemite nanoparticles on insulation and cooling behaviour of a natural ester used in power transformers</p> <p>Cristian Olmo, Cristina Méndez, Inmaculada Fernández, Félix Ortiz, Agustín Santisteban, Alfredo Ortiz University of Cantabria, Spain</p> |
| | <p>ID: 1156 / S11: 7</p> <p>Transient Thermal Condition of Natural Oil-cooled Disc-type Winding</p> <p>Saeed Khandan Siar, Stefan Tenbohlen University of Stuttgart, Germany</p> |
| | <p>ID: 1104 / S11: 8</p> <p>Analysis on Extending Service Life of Aged Transformers by Oil Replacement with Novel 3-Element Mixed Insulation Oil</p> <p>Dawei Feng¹, Jian Hao¹, Ruijin Liao¹, Xin Chen¹, Xiong Liu², Tao Yang³ ¹Chongqing University, China, People's Republic of; ²State Grid Chongqing Electric Power CO. LTD. Chongqing Electric Power Research Institute, China, People's Republic of; ³State Grid Henan Electric Power CO. LTD. Henan Electric Power Research Institute</p> |
| 12:30pm - 1:30pm | Lunch |
| 1:30pm - 3:30pm | P2-1: Poster Session on Synthetic and Natural Esters |
| | <p>ID: 1122 / P2-1: 1</p> <p>The analysis of cellulose particles bridging in natural ester oil under DC voltage</p> <p>Tao Zhao, Minglin Fan, Nijie Chao, Yunpeng Liu, Zhongyuan Zhang North China Electric Power University, China</p> |
| | <p>ID: 1130 / P2-1: 2</p> <p>Novel Qualification of Natural Ester Liquids for Power Transformer Use</p> <p>Fabio Scatiggio¹, Alan Sbravati², Luca Lombini³, Kevin Rapp² ¹Terna Rete Italia, Italy; ²Cargill Bioindustrial, United States of America; ³Tamini Trasformatore, Italy</p> |
| | <p>ID: 1241 / P2-1: 3</p> <p>Analysis of Water Solubility in natural-ester based nanodielectric fluids.</p> <p>Daniel Pérez-Rosa, Victor Antonio Primo Cano, Belén García, Juan Carlos Burgos Universidad Carlos III de Madrid, Spain</p> |
| | <p>ID: 1202 / P2-1: 4</p> <p>Analysis of Particle Size Distribution and Other Parameters of Nanoparticles in Natural Ester Oil</p> <p>Pavel Totzauer¹, Jozef Kúdelčík², Jaroslav Hornak¹, Ondřej Michal¹, Pavel Trnka¹, Václav Mentlík¹</p> |

¹University of West Bohemia, Czech Republic; ²University of Žilina, Slovakia

ID: 1235 / P2-1: 5

Impregnation processes of insulation rigid components of cellulose in synthetic ester and mineral oil

Alfredo Ortiz¹, Jaime Sanz¹, Severiano Perez¹, Cristina Fernández-Diego¹, Ernesto Iván Diestre², Ismael Vela²

¹University of Cantabria, Spain; ²Repsol Technology Center, Spain

ID: 1128 / P2-1: 6

Investigation on the Compatibility of Transformer Construction Materials with Natural Ester

Yuan Wang¹, Xiaojing Zhang¹, Haichuan Yu¹, Xin Li², Yang Xu¹

¹Xi'an Jiaotong University, China, People's Republic of; ²Electric Power Research Institute of Guangdong Power Grid Corporation, China, People's Republic of

ID: 1280 / P2-1: 7

Study on Bubble Formation of Different Moisture Content Oil-impregnated Paperboards in Natural Ester Oil

Nijie Chao, Tao Zhao, Minglin Fan, Yunpeng Liu

North China Electric Power University, China, People's Republic of

ID: 1207 / P2-1: 8

Analysing the impact of moisture on the AC Breakdown Voltage of natural-ester based nanodielectric fluids

Víctor Antonio Primo Cano, Daniel Pérez Rosa, Belén García, Juan Carlos Burgos

Universidad Carlos III de Madrid, Spain

ID: 1185 / P2-1: 9

Synthesis of Trimethylolpropane Esters as Potential Insulating Oil Base Stocks

Feipeng Wang, Kaizheng Wang, Jian Li, Qiu Huang Han, Qi Zhao, Kelin Hu

Chongqing University, China, People's Republic of

ID: 1158 / P2-1: 10

Influence of Location of Pressboard Barrier on the Development of Electrical Discharges in Synthetic Esters and Mineral Oil at Negative LIV

Bartłomiej Pasternak¹, Paweł Rozga¹, Kevin Rapp²

¹Lodz University of Technology, Poland; ²Cargill - Dielectric Fluids

ID: 1291 / P2-1: 11

Thermal and Dielectric Properties of Processed Mahua oil

Ann Pamla Cruze¹, K.S.Lokesh Kaggare²

¹Central Power Research Institute, India; ²JSS Science and Technology University, Mysore, India

ID: 1312 / P2-1: 12

Investigation of AC breakdown strength and frequency varied dielectric response of the non-conventional vegetable oil

Mrutyunjay Maharana¹, Niharika Baruah¹, Sisir Kumar Nayak¹, Niranjan Sahoo¹, Manas Chakraborty²

¹IIT Guwahati, India; ²RTL, Central Power Research Institute Guwahati

ID: 1349 / P2-1: 13

Moisture Effects on Partial Discharge Inception Voltage in Natural Esters

Emeric Tchamdjio Nkouetcha, Ghislain Mengata Mengounou, Adolphe Moukengue Imano

University of Douala, Cameroon

ID: 1350 / P2-1: 14

Temperature Effects on Partial Discharge Inception Voltage in Natural Esters

Emeric Tchamdjio Nkouetcha, Ghislain Mengata Mengounou, Adolphe Moukengue Imano

University of Douala, Cameroon

ID: 1359 / P2-1: 15

Comparison of the charge trapping tendency between ester impregnated cellulose sheets and mineral oil ones

Fabrizio Negri¹, Andrea Cavallini²

¹Trench Italia, Italy; ²DEI Dipartimento di Ingegneria dell'Energia Elettrica, Bologna

ID: 1329 / P2-1: 16

Real-world aging comparison of natural ester liquid and mineral oil filled distribution transformers

Yaohong Zhao¹, Yihua Qian¹, Bin Wei², Ruifeng Wang³, Kevin James Rapp⁴, Yang Xu⁵

¹Guangdong Electric Power Grid Co. Guangzhou, China; ²Xiayang Power Supply Bureau of Shaanxi Power Grid Co., Ltd; ³Cargill, China; ⁴Cargill, Plymouth, MN United States of America; ⁵State Key Lab - Xi'an Jiaotong University, Shaanxi Xi'an, China

1:30pm - 3:30pm

P2-2: Poster Session on Nanoparticles, applications in insulating fluid and measurements

ID: 1289 / P2-2: 1

Nanoparticle Polarization Effect on the Permittivity of the Dielectric Liquid

Niharika Baruah, Mrutyunjay Maharana, Sujita Srichandana Dey, Sisir Kumar Nayak

Indian Institute of Technology, Guwahati, India

ID: 1105 / P2-2: 2

The effect of MgO nanoparticles on the breakdown voltage, thermal conductivity and gassing tendency of synthetic esters.

Thomas Paramanandam, Nandini E Hudedmani

Central Power Research Institute, India

ID: 1150 / P2-2: 3

Suppression Mechanism of TiO₂ for the Partial Discharge of Oil-paper Insulation in Intensive Electric Field

Daosheng Liu¹, Yajie Wu¹, Xiangdong Xu², Jing Ye¹, Jiachen Li¹

¹Jiangxi University of Science and Technology, China, People's Republic of; ²Electric Power Engineering, Chalmers University of Technology, Sweden

ID: 1309 / P2-2: 4

Research on DC Breakdown Performance of Nanofluid-impregnated Pressboard Based on TiO₂ Nanoparticles

Bingliang Shan, Yupeng Ying, Mingkang Niu, Yang Ge, Meng Huang, Chengrong Li

North China Electric Power University, China, People's Republic of

ID: 1240 / P2-2: 5

Streamer Simulation in Nanodielectric Fluids at Different Fe₃O₄ nanoparticle Concentrations

Johnatan Mauricio Rodríguez-Serna¹, Juan Velasco¹, Ricardo Albarracín-Sánchez¹, Ricardo Frascella¹, Víctor Antonio Primo²

¹Universidad Politécnica de Madrid (UPM) Escuela Técnica Superior de Ingeniería y Diseño Industrial (ETSIDI) Departamento de Ingeniería Eléctrica, Electrónica, Automática y Física Aplicada Ronda de Valencia 3, 28012, Madrid, Spain; ²Universidad Carlos III de Madrid Departamento de Ingeniería Eléctrica Avenida de la Universidad 30, 28911, Leganés, Madrid, Spain

3:00pm - 3:30pm

Coffee Break

3:30pm - 5:00pm

P3-1: Poster Session on Applications and Performances of Dielectric Liquids in High Voltage Equipments

ID: 1267 / P3-1: 1

Test and Estimate Method for Moisture Content of Oil-immersed Transformer

Wenxiang Xue¹, Hui Wang¹, Shuyuan Wang¹, Jinghai Xie², Xiangyu Chen²

¹State Grid Jibei Electric Power Company; ²Jibei Electric Power Economic Research Institute

ID: 1163 / P3-1: 2

Experimental Evaluation and Tests on Ester Oil in Uniform and Non-uniform Field of Non-vacuum Tap Changer

Ramakrishnan Nagarajan

CTR MANUFACTURING INDUSTRIES LIMITED, India

ID: 1263 / P3-1: 3

Investigation on Influence factors for gassing characteristics of oil-paper insulation

Huijuan Wang^{1,2,3}, **Shengtao Li**³, **Shijun Li**³, **Hua Chen**^{1,2}, **Huimin Yu**^{1,2}, **Shujie Ma**^{1,2}

¹PetroChina Lanzhou Lubricating oil R&D Institute; ²PetroChina Lubricant key laboratory; ³State Key Laboratory of Electrical Insulation and Power Equipment ,Xi'an Jiaotong University

ID: 1251 / P3-1: 4

Cooling performance of different dielectric fluids containing nanoparticles in a transformer winding

Agustín Santisteban, **Cristian Olmo**, **Cristina Méndez**, **Fernando Delgado**, **Carlos J. Renedo**, **Félix Ortiz**

University of Cantabria, Spain

ID: 1346 / P3-1: 5

Insulating and aging properties of transformer oil-based nanofluids

Muhammad Rafiq, **Lv Yuzhen**, **Li Chenrong**

NORTH CHINA ELECTRIC POWER UNIVERSITY, China, People's Republic of

ID: 1148 / P3-1: 6

Optimization of Mass Fraction and Particle Size of Nano-TiO₂ additives in application of HVDC Transformer Insulation

Daosheng Liu^{1,2}, **Jing Ye**¹, **Xiangdong Xu**², **Christopher Garang Deng**¹, **Xiaofan Li**¹

¹Jiangxi University of Science and Technology, China, People's Republic of; ²Electric power engineering, Chalmers university of technology, Sweden

ID: 1140 / P3-1: 7

Influence of Conductive Nanoparticles on the Breakdown Voltage of Mineral Oil, Synthetic and Natural Ester Oil-based Nanofluids

Usama Khaled¹, **Abderrahmane Beroual**²

¹Department of Electrical Engineering, College of Engineering, King Saud University P.O. Box. 800, Riyadh 11421, Saudi Arabia; ²University of Lyon, Ecole Centrale de Lyon, AMPERE Lab CNRS, France

ID: 1205 / P3-1: 8

Study on temperature distribution in oil-immersed inverted current transformer

Xiaoping Yang¹, **Yiming Wu**², **Jiansheng Li**², **Chao Wei**², **Shengquan Wang**², **Leifeng Huang**³, **Bonan Li**³, **Youyuan Wang**³

¹JiangSu Electric Power Company, Nanjing, China; ²Jiangsu Electric Power Company Research Institute, Nanjing, China; ³Chongqing University Chongqing, China

ID: 1295 / P3-1: 9

The effect of interface of electrode and liquid on space charge injection in transformer oil under impulse voltage

Yu Zhang¹, **Qiulin Chen**², **Shijun Xie**¹, **Potao Sun**², **Chenmeng Zhang**¹, **Lian Ye**², **Zhou Mu**¹, **Wenxia Sima**²

¹State Grid Sichuan Electric Power Research Institute, Chengdu, China, People's Republic of; ²State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, Chongqing, China, People's Republic of

ID: 1195 / P3-1: 10

Dielectric Response Analysis of Mineral Oil Immersed Transformer, Natural Ester(FR3) Immersed Transformer, and Palm Oil Immersed Transformer

Sakda Maneerot, **Phethai Nimsanong**, **Kittipod Jaraiyanurat**, **Norasage Pattanadech**

King Mongkut's Institute of Technology Ladkrabang, Thailand

ID: 1362 / P3-1: 11

A study on high reliability minimum voltage relay immersed in oil for exhausted battery switching on emergency diesel gensets

Alessandro Ruvio, **Stefano Elia**, **Damiano Bracci**

Sapienza University of Rome, Italy

ID: 1239 / P3-1: 12

Experimental Study on The Motion Law of Solid Particles in Oil under Electric Field

Bonan Li¹, Leifeng Huang¹, Youyuan Wang¹, Yuanlong Li¹, Chao Wei², Yuncai Lu²

¹Chongqing University, China, People's Republic of; ²Jiangsu Electric Power Company Research Institute, Nanjing, China

ID: 1109 / P3-1: 13

Gas Production Characteristics and AC Breakdown of a New Three-element Mixed Insulation Oil

Jian Hao¹, Xin Chen¹, Dawei Feng¹, Xiong Liu², Qian Wang², Chenyu Gao¹

¹Chongqing University, People's Republic of China; ²State Grid Chongqing Electric Power CO. Chongqing Electric Power research institute

ID: 1254 / P3-1: 14

The Application of Polyhedral Oligomeric Silsesquioxanes on Vegetable Insulating Oil Modification

Qiu Huang Han, Feipeng Wang, Jian Li, Kaizheng Wang, Qi Zhao, Kelin Hu

Chongqing University, China, People's Republic of

ID: 1268 / P3-1: 15

Experimental Study and XY Model Simulation on the Polarization and Depolarization Characteristics of Oil-paper Insulation

Wenxiang Xue¹, Hui Wang¹, Shuyuan Wang¹, Jinghai Xie², Xiangyu Chen²

¹State Grid Jibei Electric Power Company, China, People's Republic of; ²Jibei Electric Power Economic Research Institute

ID: 1316 / P3-1: 16

Heat Transfer Characteristics of Environmental-friendly Insulation Gas Mixtures

Youping Tu, Geng Chen, Shaocong Wu, Cong Wang, Yi Cheng, Ying Zhang, ZhiKang Yuan

North China Electric Power University, China, People's Republic of

ID: 1264 / P3-1: 17

Compatibility of construction materials used in HVDC Transformer with naphthenic inhibited insulating oil

Umashankar Babuparamashiva, Jagannathan Venkatesan Damal, Yogesh Singh, Ganesh Rajamani

Apar Industries Limited, India

ID: 1183 / P3-1: 18

The Polarization Current and Depolarization Current Characteristics of Mineral Oil, Natural Ester (FR3), Palm Oil, and Liquid Impregnated Pressboards

Jompatara Siriworachanyadee, Phethai Nimsanong, Sakda Maneerot, Norasage Pattanadech, Prakob Kitchaiya

King Mongkut's Institute of Technology Ladkrabang, Thailand

ID: 1154 / P3-1: 19

New Approach to Molded Case Circuit Breakers Maintenance System Using Nanoparticles

Mohammed Shaban, Saad Abdelwahab, Sobhy Dessouky

Suez University, Egypt

ID: 1353 / P3-1: 20

AC Breakdown Voltage Behavior of Deionized Water

Mohammad Taqhi Imani, Peter Werle, Frederik Krüger

Leibniz Universität Hannover, Institute of Electric Power Systems, Germany

ID: 1276 / P3-1: 21

Moisture in power transformer with insulating dielectric fluid – DFR Analysis – FDS frequency domain spectroscopy - cases studies with DFR – FDS experience

Omar Amirouche

ELMA Servizi Industriali srl, Italy

ID: 1257 / P3-1: 22

XEMIS2: A liquid xenon Compton camera to image small animals

Yuwei Zhu¹, Stéphane Acounis¹, Nicolas Beaupère¹, Jean-Luc Beney¹, Julien Bert², Stéphane Bouvier¹, Clotilde Canot¹, Thomas Carlier³, Michel Cherel⁴, Jean-Pierre Cussonneau¹, Sara Diglio¹, Debora Giovagnoli², Jérôme Idier⁵, Françoise Kraeber-Bodéré³, Patrick Le Ray¹, Frédéric Lefèvre¹, Julien Masbou¹, Eric Morteau¹, Jean-Sébastien Stutzmann¹, Dominique Thers¹, Dimitris Visvikis², Yajing Xing¹

¹SUBATECH, IMT Atlantique, CNRS/IN2P3, Université de Nantes, 44307 Nantes, France; ²INSERM, UMR1101, LaTIM, CHRU Morvan, 2 avenue Foch, Brest, 29600, France; ³Centre Hospitalier Universitaire de Nantes, 1 place Alexis-Ricordeau, 44093 Nantes, France; ⁴INSERM U892 équipe 13, 8 quai Moncoussu, 44000 Nantes, France; ⁵LS2N, Ecole Centrale de Nantes, CNRS/Inp, Université de Nantes, 44307 Nantes, France

ID: 1181 / P3-1: 23

Dielectric Response Analysis of Mineral Oil Immersed Transformer Insulation during Manufacturing Process

Tritod Nganpitak, Phethai Nimsanong, Sakda Maneerot, Norasage Pattanadech

King mongkut's institute of technology ladkrabang, Thailand

ID: 1112 / P3-1: 24

Microsecond Break Arc During or After Commutation of Current in a Hybrid DC Switch

Koichi Yasuoka, Yuta Yamada, Mo Chen, Ryo Nakayama, Shoya Kubo, Shungo Zen

Tokyo Institute of Technology, Japan

ID: 1354 / P3-1: 25

DBDS/Corrosion & PCBs: Inventory, Control, Management, Decontamination of Oils & Transformers- International Experience of Diagnostics & Treatments based on BAT/BEP and IEC & CENELEC

Vander Tumiatti, Michela Tumiatti, Carlo Roggero, Riccardo Actis, Riccardo Maina, Simone Maina
SEA MARCONI TECHNOLOGIES S.a.s., Italy

3:30pm - 5:00pm

P3-2: Poster Session on Measurement, Monitoring and Diagnostic Techniques in High Voltage Equipments

ID: 1171 / P3-2: 1

Extraction and analysis on oil immersed paper's obscured low frequency polarization based on Frequency Domain Spectrum

Jiacheng Xie, Ming Dong, Yizhuo Hu, Guanghao Xu

Xi'an Jiaotong University, China, People's Republic of

ID: 1290 / P3-2: 2

Research on the Overheating Fault of HVDC Wall Bushing and its Dignosis Strategies Based on CFD

Huidong Tian¹, Shiyi Zhou¹, Zehua Wu¹, Chuanyang Li², Shoufeng Jin¹, Zongren Peng¹

¹Xi'an Jiaotong University, China, People's Republic of China; ²Department of Electrical, Electronic, and Information Engineering University of Bologna

ID: 1209 / P3-2: 3

Effect of Moisture on Low Frequency Relaxation of Oil-Paper Insulation

Yizhuo Hu, Ming Dong, Jiacheng Xie, Guanghao Xu, Ming Ren, Qi Li

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, China, People's Republic of

ID: 1287 / P3-2: 4

Moisture Detection in Transformer Oil Impregnated Paper Using High-Frequency Depolarization Current Measurements

Yazid Hadjadi, Refat Ghunem, Harold Parks

NRC Metrology, National Research Council Canada, Ottawa

ID: 1225 / P3-2: 5

FTIR-Spectroscopic and Electrical Analysis of Thermally Stressed Liquid Dielectrics

Graeme Martin Smith, A.S Holmes, S.G McMeekin

Glasgow Caledonian University, United Kingdom

ID: 1288 / P3-2: 6

Oxidation Stability of Insulating Liquids by Rapid Small Scale Oxidation Test

Ann Pamla Cruze¹, **K.S.Lokesh Kaggare**², **R.R.Siva Prakash**¹

¹Central Power Research Institute, Bengaluru,India; ²JSS Science and Technology University,Mysore,India

ID: 1208 / P3-2: 7

Fault Diagnosis of Power Transformers Based on Comprehensive Machine Learning of Dissolved Gas Analysis

Chenxi Guo, **Ming Dong**, **Zhanyu Wu**

Xi'an Jiaotong University, China, People's Republic of

ID: 1337 / P3-2: 8

Optical Spectroscopy Analysis of Ester Oils under Thermal Aging Conditions

Abdelrahman M. Alshehawy¹, **Diaa-Eldin A. Mansour**¹, **Mohsen Ghali**²

¹Tanta University, Egypt; ²Egypt-Japan University of Science and Technology, Egypt

ID: 1322 / P3-2: 9

Comparative Study of Furfural's Raman Spectroscopy Detection in oil based on two kinds of Extractants

Weiran Zhou¹, **Weigen Chen**¹, **Chengzhi Zhu**², **Fu Wan**¹, **Haiyang Shi**¹, **Jiayi Zhang**¹, **Shuhua Zhang**¹

¹State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University Chongqing, China; ²State Grid Zhejiang Electric Power Company, Zhejiang, China

ID: 1333 / P3-2: 10

The History and Significance of the Carbon Oxide Ratio

Paul Randall Cox

GE Grid Solutions, United States of America

ID: 1260 / P3-2: 11

Diagnosis of Moisture Content in Oil-immersed Paper Based on Dielectric Loss with Variable Voltage at Power Frequency

Haoxiang Zhao¹, **Yang Li**¹, **Xiaowei Liu**², **Yanhua Han**², **Lu Zhang**², **Danling Zhang**¹, **Haibao Mu**¹, **Guanjun Zhang**¹

¹State Key Lab of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, China; ²State Grid Shaanxi Electric Power Research Institute, Xi'an, China

ID: 1107 / P3-2: 12

Inventory of PCB and state of PCB contamination in Indian electrical industry

Thomas Paramanandam

Central Power Research Institute, India

ID: 1132 / P3-2: 13

Studies on the Criteria for the Classification in Complementary Predictive Techniques applied in the Analysis of the Insulation System of Power Transformers

André Pereira Marques^{1,2}, **Marcos Reginaldo Blanco**¹, **Cacilda de Jesus Ribeiro**³, **Yuri Andrade Dias**³, **Cláudio Henrique Bezerra Azevedo**¹, **José Augusto Lopes Dos Santos**¹, **Leonardo da Cunha Brito**³

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Reliability Study of Furan Level Analysis for Transformer Health Prediction

Maximilian Meissner^{1,2}, **Martin Darmann**¹, **Sigurd Schober**², **Martin Mittelbach**², **Christof Sumereder**³

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A SERS substrate for detecting methanol in transformer oil

Shuhua Zhang¹, **Weigen Chen**¹, **Haiyang Shi**¹, **Fu Wan**¹, **Weiran Zhou**¹, **Jiayi Zhang**¹, **Chengzhi Zhu**²

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Effect of molecular structures of insulating oil on Stray Gassing

Hiroko Tomita, Takashi Ito

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Research on Transformer Oil Multi-frequency Ultrasonic Monitoring Technology Based on Convolutional Neural Network

Yaohong Zhao

Electric Power Research Institute of Guangdong Power Grid Co., Ltd., China, People's Republic of

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Study on Quantitative Analysis Method of Methanol Raman Spectra in Oil By Extraction Technology

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Pollution Degree Detection of Insulators based on Hyperspectral Imaging Technology

Changjie Xia, Ming Ren, Siyun Wang, Bin Wang, Jiacheng Xie, Ran Duan

Xi'an Jiaotong University, People's Republic of China

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Toward an optical monitoring of chemical markers in transformers insulating oil

Letizia De Maria¹, Fabio Scatiggio², Nunzio Cennamo³, Luigi Zeni³, Maria Pesavento⁴

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Advances in Measuring Partial Discharge in Insulating Liquids

Britta Pfeiffer¹, Thomas Renaudin¹, Till Welfonder¹, Luigi Calcara², Silvia Sangiovanni², Massimo Pompili²

¹Omicron Electronics, France; ²University of Roma "La Sapienza", Italy

5:00pm - 6:30pm

Closing Ceremony (Student Awards)