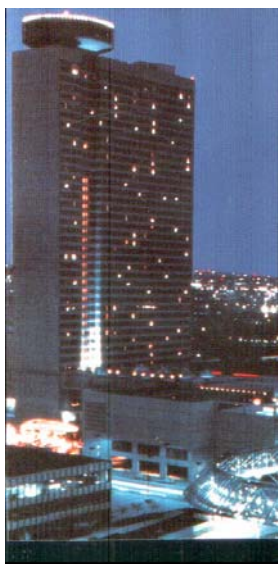


**2006 IEEE/CEIDP**

**IEEE CONFERENCE ON ELECTRICAL  
INSULATION AND DIELECTRIC  
PHENOMENA**



15 – 18 October 2006

Hyatt Regency Crown Center, Kansas City,  
Missouri, USA

**FINAL PROGRAM**

Sponsored by:



Dielectrics and Electrical Insulation  
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The Institute of Electrical and  
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## CONFERENCE INFORMATION

The 2006 Conference on Electrical Insulation and Dielectric Phenomena (CEIDP) is sponsored by the IEEE Dielectrics and Electrical Insulation Society to provide an international forum for the discussion of current research on electrical insulation, dielectric phenomena and related topics. The conference provides an opportunity for specialists from around the world to meet and to discuss ongoing research. Topics of interest to the Conference include: aging; biodielectrics; outdoor insulation; surface flashover; polarization phenomena; measurement techniques; partial discharge measurements; flow electrification; charge storage and transport; electrohydrodynamics; high-field effects; charge and field mapping; treeing; prebreakdown and breakdown in solids, liquids, gases, and vacuum.

### THE WHITEHEAD LECTURE

The Whitehead Memorial Lecture is named in honor of Dr. John Boswell Whitehead, a pioneer in electrical insulation and dielectrics and a long-time contributor to the CEIDP. The Conference opens each year with the Lecture and it is the keynote session of the Conference. The 2006 Whitehead Memorial Lecture will be given by Dr. T. Mizutani on a topic entitled, "*Behavior of Charge Carriers in Organic Insulating Materials*".

### REGISTRATION

All Conference attendees must register for the Conference.

Registration payment on or before September 15, 2006	Closed
Registration payment after September 15, 2006	US \$575
*Reduced registration on or before September 15, 2006	Closed
*Reduced registration after September 15, 2006	US \$375

\*Reduced registration is offered to students, IEEE life members, persons retired and not gainfully employed, and persons who are currently unemployed.

The Conference registration includes: one hardcopy and CD-ROM version of the 2006 Annual Report and the following social functions: Reception, Sunday, October 15, 2006, 1800-2100; Social hour and banquet, Tuesday, October 17, 2006, 1800-2100; Refreshments served during breaks.

Extra banquet tickets may be purchased for spouses and guests.

All fees are due at registration. Payment may be made by check, money order, credit card, or wire transfer. The following credit cards are accepted: American Express, MasterCard, Visa, and Diners Club. All payments are in US dollars.

Conference registration may be submitted online at:

<https://icm3.ieee.org/eventmanager/onlineregistration.asp?eventcode=m80>  
or by using the registration form available on the Conference web site.

The Conference registration desk will be open during the following hours:  
Sunday, October 15 2006 1600-2100;  
Monday, October 16 2006, 0800-1600 and 1900-2000;  
Tuesday, October 17 2006, 0800-1200; and  
Wednesday, October 18 2006, 0800-1200

### HOTEL

All sessions and activities of the 2006 IEEE/CEIDP will be held at the Hyatt Regency Crown Center, Kansas City, MO, USA. The conference

rate is \$124.00 plus tax per night for single or double, triple or quadruple occupancy, and the extra charge for Regency Club and Business Plan accommodations is \$30 and \$20 per room, respectively. To ensure this rate, your hotel reservation and deposit must be received by September 14, 2006.

For online reservation, please use the below link:

<http://crowncenter.hyatt.com/groupbooking/mkcrk2006ieeee>

Also, reservations should be made directly with the Hotel at the following address:

Hyatt Regency Crown Center,  
2345 McGee Street, Kansas City,  
MO, 64108, USA  
(Tel: 816-421-1234, Fax: 816-435-4193)

Be sure to mention that you are attending the 2006 IEEE/CEIDP when making your reservation to receive the Conference room rates.

## **KANSAS CITY, MO, ATTRACTIONS**

### **Arabia Steamboat Museum**

**Non-Technical Tour:** This is the equivalent to a 150 year old Home Depot. The boat sunk many years back 5 miles or so North of KC downtown in the Missouri river and was dug up several years back by a team of folks. The boat contents were pretty much intact, now restored, and on display. It is located in City Market area 4 miles North of the Hyatt hotel and can be reached by the City Bus Service called the MAX for \$3 round trip (all day). You pick up the bus just 2 short blocks from the Hyatt and it delivers you to the front door of the Museum. The Museum can be reached at 816-471-1856. Admissions are in the range of \$11 to \$13 and well worth the trip. Their website is [www.1856.com](http://www.1856.com).

### **Liberty Memorial Museum**

**Non Technical Tour:** The Liberty Memorial Museum is the America's National World War I Museum. It is about a 15 minute walk from the Hyatt through linked hotels and a park . It has been said that it is the most complete museum dedicated to World War I in the entire world. They can be reached at 816-784-1918 and their website is: [www.libertymemorialmuseum.org](http://www.libertymemorialmuseum.org). Admissions are in the \$3 to \$5 range.

### **Linda Hall Library**

**Technical Tour:** The Technical Tour recommendation is Linda Hall Library. It is noted for being one of the finest and complete Science and Technology Libraries and is renowned the world over. It is located adjacent to the University of Missouri at Kansas City and is about 3 miles south of the Hyatt. Their website is [www.lindahall.org](http://www.lindahall.org). and they can be reached at 816-363-4600 or 800-662-1545. A contact name is Kathy Alshouse and her number is 816-926-8727.

## **TRANSPORTATION**

**Airport:** The airport information is Kansas City International Airport - in Kansas City, Missouri. The airport code is MCI. There is a shuttle from the Kansas City Airport to Hyatt Regency Crown Center - it is called the KCI Shuttle. It is \$24.0 round trip, and can be purchased by any baggage claim area at the airport. A Taxi would be approximately \$35.0 from the airport to the hotel.

**Train:** Amtrack comes to Kansas City with a stop right next door to the Hyatt at the historic Union Station. Contact [www.amtrack.com](http://www.amtrack.com) for schedules and pricing, or call 1-800-872-7245.

## **SPOUSE AND GUEST PROGRAMS**

Information on local attractions will be provided at the registration desk.

## **AUTHOR SUPPORT**

The CEIDP is able to provide limited support to authors. Inquiries should be sent to Isidor Sauers at [sauersi@ornl.gov](mailto:sauersi@ornl.gov), Conference Chair, by July 31, 2006.

## **STUDENT SUPPORT**

The CEIDP provides a limited number of stipends in the amount of US \$300 to full-time students to encourage their participation in the Conference. The stipend is contingent upon the following conditions: 1) the student must be an author or coauthor of a paper accepted for presentation at the Conference, and 2) the student must present or copresent the paper at the Conference. The CEIDP reserves the right to limit the number of student stipends allocated to a single research group or institution. To apply for a student stipend, the following information should be sent by e-mail message to Isidor Sauers, Conference Chair, by June 30, 2006.

## **IEEE/DEIS TECHNICAL MEETINGS**

DEIS committee chairs planning to hold meetings during the Conference should contact Isidor Sauers prior to the Conference. Limited meeting space is available and requests for space will be honored in the order that they are received.

## **2006 ANNUAL REPORT**

One copy of the 2006 Annual report is provided with the registration. While supplies last, additional copies may be obtained at the Conference at a cost of US \$ 80 each. Following the Conference, the Annual Report is available from:

IEEE Service Center  
Single Publication Sales Department  
445 Hoes Lane  
Piscataway, NJ 08854  
USA  
Tel: 800-675-4333  
Fax: 732-981-9667

**08:00-08:15 Welcome**

Isidor Sauers, Conference Chair  
Oak Ridge National Laboratory, USA

**08:15-09:30 The Whithead Lecture**

Chair: Isidor Sauers, Oak Ridge National Laboratory, USA  
Organizer: Isidor Sauers, Oak Ridge National Laboratory, USA

**Behavior of Charge Carriers in Organic Insulating Materials**

T. Mizutani<sup>1</sup>  
<sup>1</sup>Aichi Institute of Technology

**09:30-10:00 Break (Refreshments)**

**10:00-12:30 Session 1  
General I – (Oral)**

Chair: Bala Pinnangudi, Arizona State University, USA  
Organizer: Ravi Gorur, Arizona State University, USA

**1-1 Characterization of XLPE MV-Size DC Cables by Means of Space Charge Measurements**

Riccardo Bodega<sup>1</sup>, Peter H. F. Morshuis<sup>1</sup>, Edwin J. D. Straathof<sup>1</sup>, U. H. Nilsson<sup>2</sup>, Gabriele Perego<sup>3</sup>  
<sup>1</sup>Delft University of Technology, <sup>2</sup>Borealis AB, Wire & Cable BU, <sup>3</sup>Prysmian Cavi e Sistemi Energia S.r.l.

**1-2 Effect of Crystallinity on Electrical Conduction Characteristics of Poly-L-Lactic Acid**

Fukutaro Kato<sup>1</sup>, Shingo Omori<sup>1</sup>, Makoto Matsushita<sup>1</sup>  
Yoshimichi Ohki<sup>1</sup>,  
<sup>1</sup>Waseda University

**1-3 Dielectric Properties of Boron Nitride Filled Epoxy Composites**

Chao Zhang<sup>1</sup>, Gary Stevens<sup>1</sup>  
<sup>1</sup>University of Surrey

**1-4 Behavior Modeling of a CaCu<sub>3</sub>Ti<sub>4</sub>O<sub>12</sub> Ceramic for Capacitor Applications**

Axel Rumeau<sup>1</sup>, P. Bidan<sup>1</sup>, T. Lebey<sup>1</sup>, L. Marchin<sup>2</sup>, B. Barbier<sup>2</sup>, S. Guillement<sup>2</sup>  
<sup>1</sup>LGET, <sup>2</sup>Institut National Polytechnique de Toulouse

## **1-5 Optimized Charge Simulation Models of Horizontal Sphere Gaps**

N K Kishore<sup>1</sup>, Gururaj Punekar<sup>2</sup>, H S Y Shastry<sup>2</sup>

<sup>1</sup>IIT Kharagpur, <sup>2</sup>National Institute of Technology

## **1-6 Some Mechanistic Understanding of the Impulse Strength of Nanocomposites**

Yujie Hu<sup>1</sup>, Robert Smith<sup>1</sup>, J. Keith Nelson<sup>1</sup>, Linda Schadler<sup>1</sup>

<sup>1</sup>Rensselaer Polytechnic Institute

**12:30-14:00 Lunch Break**

**14:00-16:00 Session 2A**

**Measurement techniques – (Poster)**

Chair: Peter Morshuis, Delft University of Technology, Netherlands

Organizer: Prathap Basappa, Norfolk State University, USA

### **2A-1 Development of a Digital Algorithm Based on Instantaneous Power Transform for On-Line Monitoring of the Dielectric Loss Factor**

Wang Guan<sup>1</sup>, Qingmin LI<sup>1</sup>

<sup>1</sup>Shandong University

### **2A-2 On-Site Testing of Instrument Transformers**

Carlos G. Azcarraga<sup>1</sup>, V. Rodolfo Garcia-Colon<sup>1</sup>, Armando Nava G.<sup>1</sup>

<sup>1</sup>Instituto de Investigaciones Electricas

### **2A-3 Dielectric Response Measurements Utilizing Non-Sinusoidal Waveforms**

Björn Sonnerud<sup>1</sup>, Tord Bengtsson<sup>1</sup>, Jörgen Blennow<sup>1</sup>, Stanislaw M Gubanski<sup>1</sup>

<sup>1</sup>Chalmers University of Technology

### **2A-4 On-Line Time Domain Reflectometry Measurements of Temperature Variations of an XLPE Power Cable**

Valentinas Dubickas<sup>1</sup>, Hans Edin<sup>1</sup>

<sup>1</sup>Royal Institute of Technology

### **2A-5 Research on Propulsion Effect of Exploding Wire in Water**

Chunxi Zhang<sup>1</sup>, Jiaxiang Yang<sup>1</sup>

<sup>1</sup>Harbin University of Science and Technology

**2A-6 Change in Heat Resistive, Electrical Insulating and Mechanical Properties of Hybrid Made with PDMS and TEOS for the Mole Ratio of Them**

Tetsushi Okamoto<sup>1</sup>, T Shindou<sup>2</sup>, M Sugiura<sup>3</sup>, S Nakamura<sup>4</sup>  
<sup>1</sup>Toshiba Corporation, <sup>2</sup>Fuji Xerox, <sup>3</sup>Mei University

**2A-7 Multiphysics Simulation to Improve the Understanding of Pressure Wave Propagation Techniques Applied to Composite Polymers**

Olivier Gallot-lavallée<sup>1</sup>, Jean-Luc Reboud<sup>1</sup>, Pascal Rain<sup>1</sup>  
<sup>1</sup>Joseph Fourier University

**2A-8 Chemical and Physical Changes Observed in Poly(Oxy-1,4 Phenylsulfonyl-1,4 Phenylene) Following Electrical Stressing**

Mahesh Uttamlal<sup>1</sup>, Sebastien Falcoz<sup>1</sup>, A Sheila Holmes-Smith<sup>1</sup>, Donald M Hepburn<sup>1</sup>, Brian G Stewart<sup>1</sup>, R. A. Fouracre<sup>2</sup>  
<sup>1</sup>Glasgow Caledonian University, <sup>2</sup>University of Strathclyde

**2A-9 Space Charges in XLPE Near the Electrode Interfaces**

Robert Fleming<sup>1</sup>, SB Lang<sup>2</sup>, T Pawlowski<sup>1</sup>  
<sup>1</sup>Monash University, <sup>2</sup>Ben-Gurion University of the Negev

**2A-10 Oil Reclamation – Just a Question of Moisture?**

Peter M Mitchinson<sup>1</sup>, Paul L Lewin<sup>1</sup>, Ian L Hosier<sup>1</sup>, George Chen<sup>1</sup>, Paul Jarman<sup>2</sup>  
<sup>1</sup>University of Southampton, <sup>2</sup>National Grid

**2A-11 Optimal Wavelet Selection to Identify Faults During Impulse Tests**

S N Fernando<sup>1</sup>, M R Raghuvver<sup>2</sup>, W Ziomek<sup>3</sup>  
<sup>1</sup>Manitoba Hydro, <sup>2</sup>University of Manitoba, <sup>3</sup>Pauwels Canada Inc

**2A-12 Effects of Moisture on Power Factor of Oil/Paper Insulation**

Khaled Abdolall<sup>1</sup>, A. J. Vandermaar<sup>2</sup>  
<sup>1</sup>Powertech Labs Inc, <sup>2</sup>Powertech Labs Inc.

**2A-13 HF/Microwave Impedance of Carbon Nanotube Films**

Xianming Liu<sup>1</sup>, Amanda Ellis<sup>1</sup>, W. Mike Arnold<sup>1,2</sup>  
<sup>1</sup>IRL, <sup>2</sup>Victoria University of Wellington

**2A-14 Use of Wavelet and Neural Network (BPFN) for Transformer Fault Diagnosis**

Ch. Prasanth Babu<sup>1</sup>, M. Surya Kalavathi<sup>1</sup>, B.P. Singh<sup>2</sup>  
<sup>1</sup>JNTU, <sup>2</sup>BHEL corp RnD

**2A-15 High Temperature Dielectric Behavior of Al/Polyimide/Al Capacitor Structures**

Sombel Diahm<sup>1</sup>, M.L. Locatelli<sup>1</sup>, T. Lebey<sup>1</sup>

<sup>1</sup>Laboratoire de Génie Electrique de Toulouse

**2A-16 A Fully Self-Consistent Parametric 2D Model of the Filamentary Streamer Head as Applied to Spectral Diagnostics of Streamer Discharges**

Yu. V. Shcherbakov<sup>1</sup>

<sup>1</sup>High-Voltage Research Center

**2A-17 An Analysis of Highly Synchronized and Space-and-Time Resolved Nitrogen FNS and SPS Emission Temporal Waveforms Produced by the Repetitive DC Streamer Corona**

Yu. V. Shcherbakov<sup>1</sup>, Leonid I. Nekhamkin<sup>1</sup>

<sup>1</sup>High-Voltage Research Center

**2A-18 Understanding of Electrical Treeing in PMMA by Partial Discharges and Thermally Stimulated Discharges**

Prathap Basappa<sup>1</sup>, J. Kim<sup>2</sup>

<sup>1</sup>Norfolk State University, <sup>2</sup>Inha University

**2A-19 Assessment of Drying Quality for Power Transformers During Manufacturing Process Using Variation of Transfer Function**

Asghar Akbari<sup>1</sup>, H. Firoozi<sup>1</sup>, H. Borsi<sup>2</sup>, M. Kharezi<sup>3</sup>

<sup>1</sup>K.N. Toosi University of Technology, <sup>2</sup>Schering-Institute,

<sup>3</sup>IRAN TRANSFO Co.

**2A-20 Electrical Properties of a Commercial Resin**

Enis Tuncer<sup>1</sup>, Isidor Sauers<sup>1</sup>, D. Randy James<sup>1</sup>, Alvin R. Ellis<sup>1</sup>

<sup>1</sup>Oak Ridge National Laboratory

**2A-21 Lightning Impulse Behavior of Conducting Composite Electrodes**

Magne Runde<sup>1</sup>, O. Lillevek<sup>1</sup>, P. Roseen<sup>2</sup>, O. Granhaug<sup>3</sup>, R. Espeseth<sup>3</sup>, P. Skryten<sup>3</sup>

<sup>1</sup>SINTEF Energy Research, <sup>2</sup>ABB Corporate Research,

<sup>3</sup>ABB Power Technology Division

**14:00-16:00 Session 2B**

**Charge storage and transport – (Poster)**

Chair: Peter Morshuis, Delft University of Technology, Netherlands

Organizer: Elizabeth Da Silva, Simon Bolivar University, Venezuela

## **2B-1 Relation Between Space Charge and Pore Size of Nano Porous Electrode for Super Capacitor**

Daisuke Tashima<sup>1</sup>, Kenji Kurosawatsu<sup>1</sup>, Masahisa Otsubo<sup>1</sup>, Chikahisa Honda<sup>1</sup>

<sup>1</sup>University of Miyazaki

## **2B-2 Finite Element Analysis of Charge Injection and Transport in a Dielectric Liquid**

Se-Hee Lee<sup>1,2</sup>, Francis O'Sullivan<sup>2</sup>, Il-Han Park<sup>3,2</sup>, Markus Zahn<sup>2</sup>, Leif Pettersson<sup>4</sup>, Rongsheng Liu<sup>4</sup>, Olof Hjortstam<sup>4</sup>, Albert Jaksts<sup>4</sup>, Tommaso Auletta<sup>4</sup>, Uno Gäfvert<sup>4</sup>

<sup>1</sup>Korea Electrotechnology Research Institute,

<sup>2</sup>Massachusetts Institute of Technology, <sup>3</sup>Sungkyunkwan

<sup>4</sup>University, ABB Corporate Research

## **2B-3 Effect of Antioxidants on Space Charge Generation in Cross-Linked Polyethylene and EPR**

Yasuo Sekii<sup>1</sup>, Atsushi Taya<sup>1</sup>, Takashi Maeno<sup>2</sup>

<sup>1</sup>Chiba Institute of Technology, <sup>2</sup>National Institute of Information and Communications

## **2B-4 Observation of Charge Distribution in Electron Beam Irradiated Polymers Using Pulsed Electro-Acoustic Method**

Wei Dang<sup>1</sup>, Mai Tahara<sup>1</sup>, Junya Taima<sup>1</sup>, Yasuhiro Tanaka<sup>1</sup>, Rikio Watanabe<sup>1</sup>, Tatsuo Takada<sup>1</sup>

<sup>1</sup>Musashi Institute of Technology

## **2B-5 Electron Irradiation Effects on Polymeric Films Studied by the Pulsed Electro-Acoustic Method**

Virginie Griseri<sup>1</sup>, Charlotte Perrin<sup>2</sup>, Kaori Fukunaga<sup>3</sup>, Takashi Maeno<sup>3</sup>, Bernard Dirassen<sup>4</sup>, Denis Payan<sup>2</sup>, Christian Laurent<sup>1</sup>

<sup>1</sup>Université Paul Sabatier, <sup>2</sup>Centre National d'Etudes Spatiales, <sup>3</sup>National Institute of Information and Communications Technology, <sup>4</sup>Office National d'Etudes et de Recherches Aéropatiales

## **2B-6 Piezoelectricity of a Single Bubble Formed by Two Oppositely Charged Teflon® -FEP Films**

Heitor Cury Basso<sup>1</sup>, Cláudio Vara de Aquino<sup>1</sup>, Ruy Alberto Pisani-Altafim<sup>1</sup>, Ruy Alberto Corrêa Altafim<sup>1</sup>, Reimund Gerhard-Multhaupt<sup>2</sup>

<sup>1</sup>University of São Paulo, <sup>2</sup>University of Potsdam

## **2B-7 Change in Electroluminescence Activity in Polymers Prior to AC Dielectric Breakdown**

D Mary<sup>1</sup>, D Malec<sup>1</sup>

<sup>1</sup>Paul Sabatier University

**2B-8 Modeling and Measurements of Electric Fields in Composite Oil/Cellulose Insulation**

Uno Gäfvert<sup>1</sup>, Olof Hjortstam<sup>1</sup>, Yuriy Serdyuk<sup>2</sup>, Christer Törnkvist<sup>1</sup>, Lars Walfridsson<sup>1</sup>

<sup>1</sup>ABB Corporate Research, <sup>2</sup>Chalmers University of Technology

**2B-9 Thermal Wave Probing: Polynomial and Regularized Solutions with L-Curve**

Tadeusz Pawlowski<sup>1</sup>, Robert J. Fleming<sup>1</sup>

<sup>1</sup>Monash University

**2B-10 Study on the Characteristics of Jatropha and Ricinus Seed Oils as Liquid Insulating Materials**

Suwarno M. Ilyas<sup>1</sup>

<sup>1</sup>Bandung Institute of Technology

**14:00-16:00 Session 2C  
EHD and HF – (Poster)**

Chair: Peter Morshuis, Delft University of Technology, Netherlands

Organizer: Elizabeth Da Silva, Simon Bolivar University, Venezuela

**2C-1 Experimental Study of Electrohydrodynamic Pumping Feasibility in Microgravity Condition through Conduction Phenomenon**

Mehdi Ashjaee<sup>1</sup>, Seyed Reza Mahmoudi<sup>1</sup>

<sup>1</sup>University of Tehran

**2C-2 An Experimental Study on NO<sub>x</sub> Treatment in Diesel Engine Combustion Exhaust Gases by Ozone Injection and Absorption Processes**

Shinsuke Kikuchi<sup>1</sup>, Ryu-ichiro Ohyama<sup>1</sup>

<sup>1</sup>Tokai University

**2C-3 Optical Characterization of Ionic Wind Field by Means of Laser-Induced Phosphorescence**

Kentaro Aoyagi<sup>1</sup>, Yu Kitahara<sup>1</sup>, Ryu-ichiro Ohyama<sup>1</sup>

<sup>1</sup>Tokai University

**2C-4 An Experimental Evaluation on Ozone Generation by Local Discharge Type Gas Jets**

Tetsuya Shiotsuka<sup>1</sup>, Ryu-ichiro Ohyama<sup>1</sup>

<sup>1</sup>Tokai University

**2C-5 Polarity Effect and Flow Characteristics of Wire-Rod Type Electrohydrodynamic Gas Pump**

Behrooz Komeili<sup>1</sup>, Jen-Shih Chang<sup>1</sup>, Drazena Brocilo<sup>1</sup>, Glenn Harvel<sup>2</sup>, Chan Ching<sup>1</sup>

<sup>1</sup>McMaster University, <sup>2</sup>McMaster University/AECL

## **2C-6 Derivation of the Korteweg-Helmholtz Electric and Magnetic Force Densities Including Electrostriction and Magnetostriction from the Quasistatic Poynting's Theorem**

Markus Zahn<sup>1</sup>

<sup>1</sup>Massachusetts Institute of Technology

## **2C-7 Model for Comprehensive Simulation of Overhead High Voltage Power Transmission Line Galloping and Protections**

Jicai Hu<sup>1</sup>, Z. Song<sup>2</sup>, Jianguo Ma<sup>3</sup>, Shijing Wu<sup>1</sup>

<sup>1</sup>Wuhan University, <sup>2</sup>The University of Manitoba, <sup>3</sup>Hubei Power Company

## **2C-8 Linear Stability of an Interface Between a Non-Ohmic Liquid and Air Subjected to an Electric Field and Charge Injection**

Rafael Chicón<sup>1</sup>, Alberto Pérez<sup>2</sup>

<sup>1</sup>University of Murcia, <sup>2</sup>University of Seville

## **2C-9 Dielectric Properties of Insulating Materials for Printed Circuit Boards at mm-Waves**

Masaki Kouzai<sup>1</sup>, Tomohiro Ogiwara<sup>1</sup>, Atsuhiro Nishikata<sup>1</sup>, Kaori Fukunaga<sup>2</sup>

<sup>1</sup>Tokyo Institute of Technology, <sup>2</sup>National Institute of Information and Communications Technology

## **2C-10 Dynamic Characteristics of High Field Electro-Active Silicone and Acrylic Elastomer Actuator Devices**

Toshikatsu Tanaka<sup>1</sup>, Kenta Saeki<sup>1</sup>, Kenji Matsuki<sup>1</sup>

<sup>1</sup>Waseda University

## **2C-11 The Influence of Sag in the Electric Field Calculation Near the High Voltage Overhead Transmission Lines**

R. Amiri<sup>1</sup>, H. Hadi<sup>1</sup>, M. Marich<sup>1</sup>

<sup>1</sup>University of Sciences and Technology of Oran, Mohamed Boudiaf

## **2C-12 Film Thickness Dependence of Dissipation Current for LDPE Film under Trapezoid Waveform Application**

Shingo Tsuboi<sup>1</sup>, Kazuyuki Tohyama<sup>1</sup>, Masayuki Nagao<sup>2</sup>

<sup>1</sup>Numazu National College of Technology, <sup>2</sup>Toyohashi University of Technology

## **2C-13 Minimization of Local Field Enhancement Along Stress-Grading Systems of HV Large Rotating Machines**

Hassan El-Kishky<sup>1</sup>, Robert Hebner<sup>2</sup>, Mazen Abdel-Salam<sup>3</sup>, Fredericka Brown<sup>4</sup>

<sup>1</sup>The University of Texas at Tyler, <sup>2</sup>Center for Electromechanics, UT Austin, <sup>3</sup>Assiut University,

<sup>4</sup>University of Texas at Tyler

## **2C-14 Higher Frequency Performance of Stress-Grading Systems for HV Large Rotating Machines**

Robert Hebner<sup>1</sup>, Hassan El-Kishky<sup>2</sup>, Mazen Abdel-Salam<sup>3</sup>,  
Fredericka Brown<sup>4</sup>

<sup>1</sup>Center for Electromechanics, <sup>2</sup>The University of Texas at  
Tyler, <sup>3</sup>Assiut University, <sup>4</sup>University of Texas at Tyler

**16:00-19:00 Dinner Break**

**19:00-21:00 Session 3A  
Prebreakdown and breakdown in  
solids, liquids, gases, and vacuum –  
(Poster)**

Chair: Paul Lewin, University of Southampton, UK  
Organizer: Tony Fouracre, University of Strathclyde, UK

### **3A-1 Prediction of Breakdown Voltages in N<sub>2</sub> + SF<sub>6</sub> Gas Mixtures**

S. S. Tezcan<sup>1</sup>, M. S. Dincer<sup>1</sup>, H. R. Hiziroglu<sup>2</sup>

<sup>1</sup>Gazi University, <sup>2</sup>Kettering University

### **3A-2 Investigation on the High Frequency, High Voltage Insulation Properties of Mineral Transformer- Oil**

Mischa Nagel<sup>1</sup>, Thomas Leibfried<sup>1</sup>

<sup>1</sup>University of Karlsruhe

### **3A-3 Surge Voltage Stresses Across Power Transformer Winding Sections Provided with Metal Oxide Surge Absorber Blocks**

G.R. Gurumurthy<sup>1</sup>, Mohd. Z. A. Ansari<sup>1</sup>, J. Amarnath<sup>2</sup>,  
N.K Kishore<sup>3</sup>

<sup>1</sup>Ghousia College of Engineering, <sup>2</sup>Jntu College of  
Engineering, <sup>3</sup>Indian Institute of Technology

### **3A-4 Impulsive Strength of Power Cables with Different XLPE Compounds**

Massimo Marzinotto<sup>1</sup>, Carlo Mazzetti<sup>1</sup>, Massimo Pompili<sup>1</sup>,  
Prospero Schiaffino<sup>2</sup>

<sup>1</sup>University of Roma "La Sapienza", <sup>2</sup>Private Cable  
Consultant

### **3A-5 Effect of Moisture Diffusion and Heat Cycling on Low Voltage Oil-Impregnated-Paper Insulated Distribution Cables**

Simon M. Rowland<sup>1</sup>, Miao Wang<sup>1</sup>, Mattieu Michel<sup>2</sup>

<sup>1</sup>The University of Manchester, <sup>2</sup>EDF Energy

**3A-6 Effect of Endothermic Reaction Associated with Glass Transition on the Breakdown Strength of Biodegradable Polymer Films**

Fukutaro Kato<sup>1</sup>, Makoto Matsushita<sup>1</sup>, Shingo Omori<sup>1</sup>, Yoshimichi Ohki<sup>1</sup>

<sup>1</sup>Waseda University

**3A-7 Numerical Modeling of Negative Corona Discharge in Dry Air: The Role of Carbon Dioxide**

Agustín Fernández-Rueda<sup>1</sup>, Francisco Pontiga<sup>1</sup>, Antonio Castellanos<sup>1</sup>

<sup>1</sup>University of Seville

**3A-8 A Linear Model for the Differences of Breakdown Voltages in IEC 60052 Tables**

Vuttichai Chatpattananan<sup>1</sup>, N. Pattanadech<sup>1</sup>

<sup>1</sup>King Mongkut Institute of Technology - Ladkrabang

**3A-9 An Asymptotic Regression Predictive Model for Sphere Gap Voltage with Gap Diameter and Gap Spacing**

Vuttichai Chatpattananan<sup>1</sup>

<sup>1</sup>King Mongkut Institute of Technology - Ladkrabang

**3A-10 Characteristics of the Bipolar Pulsed Discharge in the Water-Air-Solid Particle Mixture**

Ruobing Zhang<sup>1</sup>, Chi Zhang<sup>1</sup>, Xingxin Cheng<sup>1</sup>, Liming Wang<sup>1</sup>, Zhicheng Guan<sup>1</sup>

<sup>1</sup>Graduate School at Shenzhen, Tsinghua University

**3A-11 Comparison of Electroluminescence Phenomenon in LDPE, PET and PEN under the Application of High Electrical Stress**

Azrul Mohd Ariffin<sup>1</sup>, P. L. Lewin<sup>1</sup>, S. J. Dodd<sup>1</sup>

<sup>1</sup>University of Southampton

**3A-12 Nitrogen Oxides Generation Induced by Negative Corona Discharge in N<sub>2</sub> + O<sub>2</sub> Mixtures**

Francisco Pontiga<sup>1</sup>, Antonio Castellanos<sup>1</sup>

<sup>1</sup>University of Seville

**3A-13 Correlation of Partial Discharge and Dissolved Gas Analysis Results from Discharge Activity in SRBP**

M. A. Brown<sup>1</sup>, S. J. Dodd<sup>1</sup>, Barry Ahern<sup>2</sup>, John Pettinger<sup>2</sup>, Francis Waite<sup>2</sup>

<sup>1</sup>University of Southampton, <sup>2</sup>National Grid Plc.

**3A-14 Polar/non-Polar Polymer Blends: On Structural Evolution and the Electrical Properties of Blends of Polyethylene and Ethylene - Vinyl Acetate**

Alun Vaughan<sup>1</sup>, Gabriele Gherbaz<sup>1</sup>, Steven Swingler<sup>1</sup>, Norainah Abd Rashid<sup>1</sup>

<sup>1</sup>University of Southampton

**3A-15 Determination of Particle Movement of Conducting Particles in SF6 /N2 Mixture GIL Using Monte Carlo Simulation**

Poonam Upadhyay<sup>1</sup>, J. Amarnath<sup>2</sup>, B. P. Singh<sup>3</sup>, Pravin Upadhyay<sup>4</sup>

<sup>1</sup>VNR Vignan Jyothi Institute of Engineering & Technology, <sup>2</sup>JNTUCE, <sup>3</sup>BHEL Corporate (R&D), <sup>4</sup>Satyam Computer Services Ltd.

**3A-16 Movement of Metallic Particles in Gas Insulated Line Using SF6 and N2 Gas Mixture Under the Influence of Power Frequency and Switching Transient Voltage**

Poonam Upadhyay<sup>1</sup>, Amarnath Jinka<sup>2</sup>, Pravin Upadhyay<sup>3</sup>

<sup>1</sup>VNR Vignan Jyothi Institute of Engineering & Technology, <sup>2</sup>JNTUCE, <sup>3</sup>Satyam Computer Services Ltd.

**3A-17 Analysis on Plasma Chemistry in Corona Discharge Process for NO Removal Using Numerical Simulations Method**

Limin Dong<sup>1</sup>, Peng Wang<sup>2</sup>

<sup>1</sup>Harbin University of Science and Technology, <sup>2</sup>Harbin Institute of Technology

**3A-18 Pre-Ionization Methods for Atmospheric Pressure Discharge Controlled by Dielectric Barrier**

Zhan Huamao<sup>1</sup>, Ding Lijian<sup>1</sup>, Li Chengrong<sup>1</sup>, Li Ming<sup>1</sup>

<sup>1</sup>North China Electric Power University

**3A-19 Numerical Characterization of Electrical Stresses on Dielectric Grease of Rolling Bearings in Induction Motors Fed by PWM Inverters**

Carlo Petrarca<sup>1</sup>, Giovanni Lupò<sup>1</sup>, Biagio De Vivo<sup>2</sup>, Luigi Egiziano<sup>2</sup>, Vincenzo Tucci<sup>2</sup>

<sup>1</sup>Università di Napoli Federico II, <sup>2</sup>Università di Salerno

**19:00-21:00 Session 3B  
Nanodielectrics – (Poster)**

Chair: Patricia Irwin, GE, USA

Organizer: Michele Frechette, IREQ, Canada

**3B-1 Electrical Tree Growth in EVA-Layered Silicate Nanocomposites**

Francesco Guastavino<sup>1</sup>, Andrea Dardano<sup>1</sup>, Giancarlo Montanari<sup>2</sup>, Fabio Deorsola<sup>3</sup>, Luigi Testa<sup>4</sup>

<sup>1</sup>University of Genova, <sup>2</sup>University of Bologna,

<sup>3</sup>Politecnico di Torino, <sup>4</sup>University of Palermo

### **3B-2 Interpretation of Several Key Phenomena Peculiar to Nano Dielectrics in Terms of a Multi-Core Model**

Toshikatsu Tanaka<sup>1</sup>  
<sup>1</sup>Waseda University

### **3B-3 Observation of Space Charge Formation in LDPE/MgO Nano-Composite Under DC Stress at High Temperature**

Junya Taima<sup>1</sup>, Kensuke Inaoka<sup>1</sup>, Takuya Maezawa<sup>1</sup>,  
Yasuhiro Tanaka<sup>1</sup>, Tatsuo Takada<sup>1</sup>, Yoshinao Murata<sup>2</sup>  
<sup>1</sup>Musashi Institute of Technology, <sup>2</sup>J-Power Systems

### **3B-4 Comparison of Insulation Breakdown Properties of Epoxy Nanocomposites under Homogeneous and Divergent Electric Fields**

Takahiro Imai<sup>1</sup>, Fumio Sawa<sup>1</sup>, Tamon Ozaki<sup>1</sup>, Yoshiyuki  
Inoue<sup>1</sup>, Toshio Shimizu<sup>1</sup>, Toshikatsu Tanaka<sup>2</sup>  
<sup>1</sup>Toshiba Corporation, <sup>2</sup>Waseda University

### **3B-5 Thermal Properties of LLDPE/Silica Nanocomposites**

Zhi-dong Han<sup>1</sup>, Changjun Diao<sup>1</sup>, Ying Li<sup>1</sup>, Hong Zhao<sup>1</sup>  
<sup>1</sup>Harbin University of Science and Technology

### **3B-6 Dielectric Properties of LDPE/MgO Nanocomposite Material Under AC High Field**

Kensuke Hinata<sup>1</sup>, Ayano Fujita<sup>1</sup>, Kazuyuki Tohyama<sup>1</sup>,  
Yoshinao Murata<sup>2</sup>  
<sup>1</sup>Numazu National College of Technology, <sup>2</sup>J-Power  
Systems Corp.

### **3B-7 Electrical Properties of Carbon Nanotubes – Syndiotactic Polypropylene Composites**

Paolo Ciambelli<sup>1</sup>, Biagio De Vivo<sup>1</sup>, Giuliana Gorrasi<sup>1</sup>,  
Diana Sannino<sup>1</sup>, Valentina Romeo<sup>1</sup>, Maria Sarno<sup>1</sup>,  
Vincenzo Tucci<sup>1</sup>, Vittoria Vittoria<sup>1</sup>  
<sup>1</sup>University of Salerno

### **3B-8 Influence of Absorbed Water on the Dielectric Properties and Glass-Transition Temperature of Silica-Filled Epoxy Nanocomposites**

C Zou<sup>1</sup>, M Fu<sup>1</sup>, J C Fothergill<sup>1</sup>, S W Rowe<sup>2</sup>  
<sup>1</sup>University of Leicester, <sup>2</sup>Schneider Electric Industries  
S.A.S.

### **3B-9 Dielectric Properties of Epoxy-Alumina Nanocomposites: The Effect of Absorbed Water**

Chao Zhang<sup>1</sup>, Gary Stevens<sup>1</sup>  
<sup>1</sup>University of Surrey

### **3B-10 AC Electrical Strength Measurements on LDPE Nanocomposites**

Francesco Guastavino<sup>1</sup>, Alessandro Ratto<sup>1</sup>, Eugenia Torello<sup>1</sup>, Mario Hoyos<sup>2</sup>, Nuria García<sup>2</sup>, Helmut Reinecke<sup>2</sup>, Esperanza Benito<sup>2</sup>, Pilar Tiemblo<sup>2</sup>

<sup>1</sup>University of Genova, <sup>2</sup>Instituto de Ciencia y Tecnología de Polímeros

### **3B-11 On Molecular Dielectrics in Their Role in Shaping and Controlling Nanodielectrics**

Michel F. Fréchet<sup>1</sup>, Clive W. Reed<sup>2</sup>

<sup>1</sup>IREQ, <sup>2</sup>Consultant

### **3B-12 Preliminary Characterization of a Nanodielectric Material**

Serge Péliou<sup>1</sup>, Besner Simon<sup>1</sup>, Michel Fréchet<sup>1</sup>, K.C. Cole<sup>2</sup>, Dominique Desgagnés<sup>2</sup>

<sup>1</sup>IREQ, <sup>2</sup>IMI

### **3B-13 On the Degree of Exfoliation Affecting the Corona Performance of a Nanodielectric Surface**

Michel Fréchet<sup>1</sup>, R.Y. Larocque<sup>1</sup>, M. Lessard<sup>1</sup>, M.L. Trudeau<sup>1</sup>, R. Veillette<sup>1</sup>, K.C. Cole<sup>2</sup>, M.-T. Ton That<sup>2</sup>

<sup>1</sup>IREQ, <sup>2</sup>IMI

### **3B-14 Electrical Properties Analysis of Nano-Filled Epoxy by Space Charge Characterization**

J. Castellon<sup>1</sup>, S. Agnel<sup>1</sup>, A. Toureille<sup>1</sup>, M. Fréchet<sup>2</sup>, K.C. Cole<sup>3</sup>, D. Desgagnés<sup>3</sup>

<sup>1</sup>LEM, <sup>2</sup>IREQ, <sup>3</sup>IMI

### **3B-15 Studies of TiO<sub>2</sub> Breakdown Under Pulsed Conditions**

Guogang Zhao<sup>1</sup>, Ravindra Joshi<sup>1</sup>, Vishnu K. Lakdawala<sup>1</sup>, E Schamiloglu<sup>2</sup>, H Hjalmarsen<sup>3</sup>

<sup>1</sup>Old Dominion University, <sup>2</sup>University of New Mexico, <sup>3</sup>Sandia National Laboratories

**19:00-21:00 Refreshments**

————— **Tuesday, October 17** —————

**08:00-10:00 Session 4  
General II - Oral**

Chair: Ravindra Joshi, Old Dominion University, USA  
Organizer: Vishnu Lakdawala, Old Dominion University, USA

#### **4-1 Electroporation - How Different Length and Shaped Electrical Pulses Affect the Permiability of Cells**

Keith Daly<sup>1</sup>, George Chen<sup>1</sup>

<sup>1</sup>University of Southampton

#### **4-2 Electrical Properties of Biological Tissues - An Impedance Spectroscopy Study**

David A. Dean<sup>1</sup>, David Machado-Aranda<sup>2</sup>, Ramanathan Thilliyar<sup>2</sup>, I. Molina<sup>3</sup>, Raji Sundararajan<sup>1,3</sup>

<sup>1</sup>Northwestern Medical School, <sup>2</sup>Northwestern University,

<sup>3</sup>Arizona State University East

#### **4-3 Calculation of Electrical Fields in a Sample with Electrical Tree Channels**

Prathap Basappa<sup>1</sup>, Jaehwan Kim<sup>2</sup>

<sup>1</sup>Norfolk State University, <sup>2</sup>Inha University

#### **4-4 Field Trials of 400 kV Silicone Rubber Composite Insulators in a Coastal Location**

Jeffry Robertson<sup>1</sup>, Simon Rowland<sup>1</sup>, Yu Xiong<sup>1</sup>, Sven Hoffmann<sup>2</sup>

<sup>1</sup>The University of Manchester, <sup>2</sup>National Grid

#### **4-5 A Theoretical Investigation for the Development of a Water Tree Dielectric Response Model**

Andrew J. Thomas<sup>1</sup>, Tapan K. Saha<sup>1</sup>

<sup>1</sup>University of Queensland

#### **4-6 Some Fundamentals on Treeing Breakdown in Inorganic-Filler/LDPE Nano-Composite Material**

Rudi Kurnianto<sup>1</sup>, Yoshinobu Murakami<sup>1</sup>, Naohiro Hozumi<sup>1</sup>, Masayuki Nagao<sup>1</sup>, Yoshinao Murata<sup>2</sup>

<sup>1</sup>Toyohashi University of Technology, <sup>2</sup>J-Power Systems Corporation

**10:00-10:30 Break (Refreshments)**

**10:30-12:30 Session 5A  
Outdoor insulation – (Poster)**

Chair: Simon Rowland, University of Manchester, UK

Organizer: Raji Sundararajan, Arizona State University East, USA

#### **5A-1 Mechanism Analysis on Hydrophobicity Decrease of Operating Silicone Rubber Insulators**

Xingquan Huang<sup>1</sup>, Linjie Zhao<sup>2</sup>, Chengrong Li<sup>2</sup>, Shuqi Zhang<sup>2</sup>, Yao Jisha<sup>2</sup>, Jun Xiong<sup>2</sup>, Wei Song<sup>3</sup>

<sup>1</sup>Henan Electric Power Research Institute, <sup>2</sup>North China Electric Power University, <sup>3</sup>Henan Electric Power Corporation

### **5A-2 An Outdoor Investigation on Hydrophobicity of Silicone Rubber Insulators in the Temperature Zone**

Linjie Zhao<sup>1</sup>, Chengrong Li<sup>1</sup>, Jisha Yao<sup>1</sup>, Shuqi Zhang<sup>1</sup>, Jun Xiong<sup>1</sup>, Guang Xu<sup>2</sup>, Weidong Zhang<sup>3</sup>

<sup>1</sup>North China Electric Power University, <sup>2</sup>Cooper Electrical (Shanghai) Co.,Ltd, <sup>3</sup>Henan Pingdingshan Power Supply Company

### **5A-3 A Novel Method for Prediction of Flashover of In-Service EPDM Insulators**

Sreeram Venkataraman<sup>1</sup>, Ravi S. Gorur<sup>1</sup>

<sup>1</sup>Arizona State University

### **5A-4 Chemical Analysis of Outdoor Silicone Materials After Electrical and Environmental Testing**

Andrej Krivda<sup>1</sup>, F. Greuter<sup>1</sup>, J. Rocks<sup>1</sup>, X. Kornmann<sup>1</sup>, P. Meier<sup>1</sup>

<sup>1</sup>ABB Switzerland, Corporate Research

### **5A-5 Properties of Corona Discharge Under Positive DC Voltage at Low Atmospheric Pressure**

Defen Yu<sup>1</sup>, Masoud Farzaneh<sup>1</sup>, J. Zhang<sup>1</sup>, L. Shu<sup>2</sup>, Wenxia Sima<sup>2</sup>, and Caixin Sun<sup>2</sup>

<sup>1</sup>UQAC, <sup>2</sup>Chongqing University

### **5A-6 Distribution of Leakage Current on Polluted Polymer Insulator Surface**

Yong Zhu<sup>1</sup>, Kenichi Haji<sup>1</sup>, Hirofumi Yamamoto<sup>1</sup>, Takuma Miyake<sup>1</sup>, Masahisa Otsubo<sup>1</sup>, Chikahisa Honda<sup>1</sup>

<sup>1</sup>University of Miyazaki

### **5A-7 Determination of Long-Term Performance of Polymeric Insulators for Distribution Lines by Salt Fog Method**

Hiroya Homma<sup>1</sup>, Takeshi Takahashi<sup>1</sup>, Toshiyuki Kuroyagi<sup>1</sup>, Yoshiharu Miyauchi<sup>2</sup>, Naoya Matsuno<sup>2</sup>, Takehiko Saito<sup>3</sup>, Kenjiro Mori<sup>4</sup>, Susumu Matsuura<sup>5</sup>, Kouji Fujii<sup>6</sup>, Akinori Ohno<sup>7</sup>, Naoya Ahagon<sup>8</sup>

<sup>1</sup>CRIEPI, <sup>2</sup>Hokkaido Elec. Power Co., <sup>3</sup>Tohoku Elec. Power Co., <sup>4</sup>Tokyo Elec.Power Co., <sup>5</sup>Hokuriku Elec. Power Co., <sup>6</sup>Cyugoku Elec.Power Co., <sup>7</sup>Kyushu Elec. Power Co., <sup>8</sup>Okinawa Elec. Power Co.

### **5A-8 Damage Threshold of Polymeric Housing Materials Used for Outdoor HV Insulators**

Balasubramanian Pinnangudi<sup>1</sup>, Ravi S. Gorur<sup>1</sup>, Christian D. Poweleit<sup>1</sup>,

<sup>1</sup>Arizona State University

### **5A-9 A Comparative Study of the Impact of Moisture on the Dielectric Capability of Esters for Large Power Transformers**

Daniel Martin<sup>1</sup>, Z. D. Wang<sup>1</sup>

<sup>1</sup>University of Manchester

**5A-10 Condition Assessment of Porcelain and Toughened Glass Insulators from Residual Strength Tests**

Ankit Mishra<sup>1</sup>, Ravi S. Gorur<sup>1</sup>, S. Venkataraman<sup>1</sup>, D. Kingsbury<sup>1</sup>

<sup>1</sup>Arizona State University

**5A-11 Characterisation of Field-Aged 400 kV Silicone Rubber Composite Insulators**

Yu Xiong<sup>1</sup>, Simon Rowland<sup>1</sup>, Jeffry Robertson<sup>1</sup>, Sven Hoffmann<sup>2</sup>

<sup>1</sup>The University of Manchester, <sup>2</sup>National Grid

**5A-12 Nonlinear Electrical Behavior of Treated ZnO-EPDM Nanocomposites**

X. Wang<sup>1</sup>, S. Herth<sup>2</sup>, T. Hugener<sup>1</sup>, R.W. Siegel<sup>1</sup>, J. Keith Nelson<sup>1</sup>, Linda S. Schadler<sup>1</sup>, H. Hillborg<sup>3</sup>, T. Auletta<sup>3</sup>

<sup>1</sup>Rensselaer Polytechnic Institute, <sup>2</sup>University of Bielefeld, <sup>3</sup>ABB Corporate Research

**5A-13 Lightning Current and Flashover Path Measurement on High Voltage Transmission Lines**

Yangchun Cheng<sup>1</sup>, Chengrong Li<sup>2</sup>, Zhang Fei<sup>1</sup>

<sup>1</sup>North China Electric Power University, <sup>2</sup>Beijing Key Laboratory of High Voltage and EMC

**5A-14 Dynamics Characteristic of V-String Composite Insulators for 330kV Overhead Transmission Line**

Lei Hou<sup>1</sup>, Liming Wang<sup>1</sup>, Zhicheng Guan<sup>1</sup>

<sup>1</sup>Graduate School at Shenzhen, Tsinghua University

**5A-15 Surface Static Properties of Plasma Treated FRP**

J. K. Park<sup>1</sup>, Claire Gu<sup>2</sup>, B. S. Lee<sup>3</sup>

<sup>1</sup>Yuhan College, <sup>2</sup>University of California Santa Cruz, <sup>3</sup>KIPO

**5A-16 Arc Characteristics of Polluted Insulators Covered with Ice**

Y. Sabri<sup>1</sup>, M. Farzaneh<sup>1</sup>, J. Zhang<sup>1</sup>

<sup>1</sup>UQAC

**5A-17 New Approach for the Modeling of the Polluted Insulators**

M. Marich<sup>1</sup>, H. Hadi<sup>1</sup>, R. Amiri<sup>1</sup>

<sup>1</sup>University of Sciences and Technology of Oran

**5A-18 Diagnosis of Degradation Condition of Polymer Material Using Hydrophobic Surface Analysis**

Tetsuro Tokoro<sup>1</sup>, Satoshi Yanagihara<sup>1</sup>, Masayuki Nagao<sup>2</sup>

<sup>1</sup>Gifu National College of Technology, <sup>2</sup>Toyohashi University of Technology

**5A-19 Influence of Angles of V-Strings on DC Flashover Characteristics of Polluted Insulators in High Altitude Areas**

Zhang Fuzeng<sup>1</sup>, Xin Wang<sup>1</sup>, Biao Long<sup>1</sup>, Liming Wang<sup>1</sup>, Zhicheng Guan<sup>1</sup>

<sup>1</sup>Graduate School at Shenzhen, Tsinghua University

**5A-20 Dielectric Spectroscopy in Silicone Rubber Incorporating Nanofiller**

N. Andrés Pérez<sup>1</sup>, Alain Sylvestre<sup>1</sup>, Jean-Louis Augé<sup>1</sup>, Minh Tuan Do<sup>1</sup>, S.W. Rowe<sup>2</sup>

<sup>1</sup>Laboratoire d'Electrostatique et de Matériaux Diélectriques-CNRS, <sup>2</sup>Schneider Electric Industries

**5A-21 Corona Ring Design of ±800kV DC Composite Insulator Based on Computer Analysis**

Wenxia Sima<sup>1</sup>, Kun Wu<sup>1</sup>, Qing Yang<sup>1</sup>, Caixin Sun<sup>1</sup>

<sup>1</sup>Chongqing University

**5A-22 Characterization of Aging and Degradation of 28kV Polymeric Insulators Using Electrical Impedance Spectroscopy**

Raji Sundararajan<sup>1</sup>, A. M. Kannan<sup>2</sup>, Edwin Romero<sup>2</sup>, Ignacio Molina<sup>2</sup>

<sup>1</sup>Arizona State University East, <sup>2</sup>Arizona State University

**10:30-12:30 Session 5B  
Aging – (Poster)**

Chair: Alun Vaughan, University of Southampton, UK

Organizer: N. Kishore, IIT Kharagpur, India

**5B-1 Evaluation of Medium Voltage Stator Bar Groundwall Insulation Under Inverter-Fed Pulses**

Saeed Ul-Haq<sup>1</sup>, Shesha Jayaram<sup>1</sup>, Edward Cherney<sup>1</sup>

<sup>1</sup>University of Waterloo

**5B-2 Statistical Analysis of in Service Failed Epoxy Resin Bushings in a 50 kV Switchgear Assembly**

Rogier Jongen<sup>1</sup>, Peter Morshuis<sup>1</sup>, Johan Smit<sup>1</sup>, Anton Janssen<sup>2</sup>, Edward Gulski<sup>1</sup>

<sup>1</sup>Delft University of Technology, <sup>2</sup>Nuon Asset management

**5B-3 Deterioration Diagnosis of Insulators for Breakers Using Chemical Evaluation and Mahalanobis-Taguchi (MT) Method**

Shinsuke Miki<sup>1</sup>, Hiroshi Okazawa<sup>1</sup>

<sup>1</sup>Mitsubishi Electric Corp.

**5B-4 Improved Condition Assessment of XLPE Insulated Cables Using the Isothermal Relaxation Current Technique**

Bolarin Oyegoke<sup>1</sup>

<sup>1</sup>Queensland University of Technology

**5B-5 Ageing of Biodegradable Oils for High Voltage Insulation Systems**

Ian Hosier<sup>1</sup>, Alun Vaughan<sup>1</sup>, Francis Montjen<sup>1</sup>

<sup>1</sup>University of Southampton

**5B-6 The Release of Volatiles During the Thermal Stress of Electric Insulating Materials**

Václav Mentlík<sup>1</sup>, Radek Polanský<sup>1</sup>, Pavel Prosr<sup>1</sup>

<sup>1</sup>University of West Bohemia

**5B-7 Effects of X-Ray Radiation on Solid Insulating Materials**

S. Sudalaimuthu<sup>1</sup>, M. Joy Thomas<sup>1</sup>, S. Senthil Kumar<sup>2</sup>, V. Vinod Kumar<sup>2</sup>

<sup>1</sup>Indian Institute of Science, <sup>2</sup>GE Health Care

**5B-8 A Comparative Study of the Chemical Stability of Esters for Use in Large Power Transformers**

Daniel Martin<sup>1</sup>, Z.D. Wang<sup>1</sup>, A.W. Darwin<sup>2</sup>, I. James<sup>2</sup>

<sup>1</sup>University of Manchester, <sup>2</sup>AREVAT T&D

**5B-9 Effect of Ageing on the Impulse Breakdown Strength of Oil-Impregnated Pressboard Used in Power Transformers**

Hongzhi Ding<sup>1</sup>, Z. D. Wang<sup>1</sup>, P. N. Jarman<sup>2</sup>

<sup>1</sup>The University of Manchester, <sup>2</sup>National Grid

**5B-10 Mechanical and Electrical Issues Concerning the Use of Composite Materials for the Supporting Core in Transmission Line Conductors**

Ravi S. Gorur<sup>1</sup>, N. Chawla<sup>1</sup>, James Hunt<sup>2</sup>, Mike Dyer<sup>2</sup>,

<sup>1</sup>Arizona State University, <sup>2</sup>SRP

**5B-11 Kinetic Analysis and Modeling of Ageing Process of Kraft Paper Aged in Natural Ester Dielectric Fluid**

Hongzhi Ding<sup>1</sup>, Zhongdong Wang<sup>1</sup>

<sup>1</sup>The University of Manchester

**5B-12 A Method to Detect the Deterioration of HTV Silicone Rubber Under Corona Discharge**

Ying Liang<sup>1</sup>, Lijian Ding<sup>1</sup>, C. R. Li<sup>1</sup>, Kun Yang<sup>1</sup>, Youping Tu

<sup>1</sup>North China Electric Power University

**5B-13 Towards Water-Resistant High Voltage Insulation Systems: An Ageing Study of a Technological Water-Blocking Polymer**

Laurent Barre<sup>1</sup>, Alun Vaughan<sup>1</sup>, Simon Sutton<sup>2</sup>  
<sup>1</sup>University of Southampton, <sup>2</sup>National Grid

**5B-14 Failure Analysis of in Service Failed Resin Cable Joints by Means of a Statistical Approach**

Rogier Jongen<sup>1</sup>, Peter Morshuis<sup>1</sup>, Johan Smit<sup>1</sup>, Anton Janssen<sup>2</sup>, Edward Gulski<sup>1</sup>  
<sup>1</sup>Delft University of Technology, <sup>2</sup>Nuon Asset management

**5B-15 Diagnosis of Electrical and Mechanical Faults of Induction Motor**

Hisahide Nakamura<sup>1</sup>, Yousuke Yamamoto<sup>2</sup>, Yukio Mizuno<sup>2</sup>  
<sup>1</sup>TOENEC Corporation, <sup>2</sup>Nagoya Institute of Technology

**5B-16 Characteristics of Current Flowing on Plug Under Contaminated and Wetted Condition**

Masahiro Yagi<sup>1</sup>, Ken-ichi Okabe<sup>1</sup>, Yukio Mizuno<sup>1</sup>, Toshiyuki Nakagawa<sup>2</sup>  
<sup>1</sup>Nagoya Institute of Technology, <sup>2</sup>Kawamura Electric Inc.

**5B-17 Dissipation Current Waveform of Water Tree Deteriorated Low Density Polyethylene Sheet**

Takamasa Furuhashi<sup>1</sup>, Kazuyuki Tohyama<sup>1</sup>, Tomoaki Imai<sup>2</sup>, Yoshinao Murata<sup>2</sup>  
<sup>1</sup>Numazu National College of Technology, <sup>2</sup>J-Power Systems Corp.

**5B-18 State Estimation of Accelerated Aged Mineral Filled Epoxy Insulating Materials**

Michael Budde<sup>1</sup>, Frank Gerdinand<sup>1</sup>, Michael Kurrat<sup>1</sup>  
<sup>1</sup>Technical University of Braunschweig

**5B-19 Space Charge Evolution in XLPE with Long-Term Aging Under DC Voltage - The Effect of Temperature and Polarity Reversals**

Mahmoud Abou-Dakka<sup>1</sup>, A. T. Bulinski<sup>1</sup>, Soli Bamji<sup>1</sup>  
<sup>1</sup>NRC

**5B-20 Dielectric Losses and Breakdown Silicone Gel**

Minh Tuan Do<sup>1</sup>, Jean-Louis Augé<sup>1</sup>, Olivier Lesaint<sup>1</sup>  
<sup>1</sup>Laboratoire d'Electrostatique et de Matériaux Diélectriques-CNRS and University of Grenoble

**5B-21 Analyzing Dynamic of Moisture Equilibrium in Oil-Paper Insulation in Power Transformers for Efficient Drying**

Asghar Akbari<sup>1</sup>, S. DehPahlevan<sup>1</sup>, H. Borsi<sup>2</sup>  
<sup>1</sup>K.N. Toosi University of Technology, <sup>2</sup>Schering-Institute

**5B-22 Dielectric Response of Rotating Machine Stator Insulation System**

Laurent Lamarre<sup>1</sup>, Eric David<sup>2</sup>  
<sup>1</sup>IREQ, <sup>2</sup>ETS

**5B-23 Accelerated Acid-Water Aging of RTV Silicone Rubber Coatings**

Ali Naderian Jahromi<sup>1</sup>, Edward Cherney<sup>1</sup>, Shesha Jayaram<sup>1</sup>,  
Leonardo Simon<sup>1</sup>  
<sup>1</sup>University of Waterloo

**12:30-14:00 Lunch Break**

**18:00-19:00 Social Hour (Cash bar)**

**19:00-21:00 Banquet**

————— **Wednesday, October 18** —————

**08:00-10:00 Session 6**  
**General III – (Oral)**

Chair: Lynn Hatfield, Texas Tech University, USA  
Organizer: Vijendra Agrawal, University of Wisconsin,  
USA

**6-1 Polymer Composite/Nanocomposite Processing and Its Effect on the Electrical Properties**

Santanu Singha<sup>1</sup>, M. Joy Thomas<sup>1</sup>  
<sup>1</sup>Indian Institute of Science

**6-2 Breakdown Statistics of Polyimide at Low Temperatures**

Enis Tuncer<sup>1</sup>, Isidor Sauers<sup>1</sup>, D. Randy James<sup>1</sup>, Alvin R.  
Ellis<sup>1</sup>, Marshall O. Pace<sup>2</sup>  
<sup>1</sup>Oak Ridge National Laboratory, <sup>2</sup>University of Tennessee

**6-3 Partial Discharge Propagation and Degradation Characteristics of Magnet Wire for Inverter-Fed Motor under Surge Voltage Application**

Naoki Hayakawa<sup>1</sup>, Hiroshi Inano<sup>1</sup>, Kenta Inuzuka<sup>1</sup>, Masato  
Morikawa<sup>1</sup>, Hitoshi Okubo<sup>1</sup>  
<sup>1</sup>Nagoya University

**6-4 Ultrafast Gas Breakdown at Pressures Below One Atmosphere**

Hermann Krompholz<sup>1</sup>, Lynn Hatfield<sup>1</sup>, Andreas Neuber<sup>1</sup>,  
Jordan Chaparro<sup>1</sup>, Han-Yong Ryu<sup>1</sup>, William Justis<sup>1</sup>,  
<sup>1</sup>Texas Tech University

## **6-5 A Classification of Partial Discharge on High Voltage Equipment with Multinomial Logistic Regression**

Vuttichai Chatpattananan<sup>1</sup>, N. Pattanadech<sup>1</sup>

<sup>1</sup>King Mongkut Institute of Technology - Ladkrabang

## **6-6 Forecasting Transformer Reliability**

Arjan van Schijndel<sup>1</sup>, Joseph Wetzer<sup>1,2</sup>, Peter Wouters<sup>1</sup>

<sup>1</sup>Eindhoven University of Technology, <sup>2</sup>KEMA

**10:00-10:30 Break (Refreshments)**

**10:30-12:30 Session 7A**

**Partial Discharge Measurements –  
(Poster)**

Chair: N. Hayakawa, Nagoya University, Japan

Organizers: Gorur G. Raju, University of Windsor, Canada  
and Nori Shimizu, Meijo University, Japan

### **7A-1 A Study of SO<sub>2</sub> Removal by Positive Pin-Plate Discharge System**

Limin Dong<sup>1</sup>, Zhidong Han<sup>1</sup>, Ze Wu<sup>1</sup>, Jiaxiang Yang<sup>1</sup>

<sup>1</sup>Harbin University of Science and Technology

### **7A-2 Partial Discharge Potential Free Test Methods**

Vaclav Mentlik<sup>1</sup>, Josef Pihera<sup>1</sup>, Pavel Trnka<sup>1</sup>, Petr Martinek<sup>1</sup>

<sup>1</sup>University of West Bohemia

### **7A-3 Partial Discharges in Silicone Gel in the Temperature Range 20-150 C**

Minh Tuan Do<sup>1</sup>, Jean-Louis Augé<sup>1</sup>, Olivier Lesaint<sup>1</sup>

<sup>1</sup>Laboratoire d'Electrostatique et de Matériaux Diélectriques-CNRS and University of Grenoble

### **7A-4 Partial Discharge Characteristics of Nanocomposite Enameled Wire for Inverter-Fed Motor**

Kenta Inuzuka<sup>1</sup>, Hiroshi Inano<sup>1</sup>, Naoki Hayakawa<sup>1</sup>, Tatsuya Hirose<sup>2</sup>, Masahiro Hamaguchi<sup>2</sup>, Hitoshi Okubo<sup>1</sup>

<sup>1</sup>Nagoya University, <sup>2</sup>Toshiba Corporation

### **7A-5 Continuous and Pulsed X-Ray Induced Partial Discharges: Similarities and Differences**

Guilherme Cunha da Silva<sup>1</sup>, Vitoldo Swinka Filho<sup>1</sup>, Rene Robert<sup>2</sup>

<sup>1</sup>LACTEC, <sup>2</sup>UFPR, PR, Brasil

### **7A-6 Effect of Cabling and Grounding Configuration on Surge Voltages in Inverter-Fed Motors**

Kotaro Wada<sup>1</sup>, Kosei Tsuji<sup>1</sup>, Hirotaka Muto<sup>1</sup>, Osamu Yashiro<sup>1</sup>

<sup>1</sup>Mitsubishi Electric Corporation

**7A-7 Simulation and Analysis of Acoustic Wave Propagation Due to Partial Discharge Activity**

Prasanta Kundu<sup>1</sup>, KrishnaKishore Nudurupati<sup>1</sup>, Avinash Kumar Sinha<sup>1</sup>

<sup>1</sup>Indian Institute of Technology

**7A-8 Low Pressure Partial Discharge Investigation with FEM Modeling for a Twisted Pair of Insulated Conductors**

Xin Liu<sup>1</sup>

<sup>1</sup>The Ohio State University

**7A-9 Relationship Between PD-Induced Electromagnetic Wave Measured with UHF Method and Charge Quantity Obtained by PD Current Waveform in Model GIS**

Shinya Ohtsuka<sup>1</sup>, Takashi Teshima<sup>1</sup>, Satoshi Matsumoto<sup>1</sup>, Masayuki Hikita<sup>1</sup>

<sup>1</sup>Kyushu Institute of Technology

**7A-10 3-D Simulation and Modelling of Acoustic Signals from Partial Discharge Activity**

Syed Aqeel Ashraf<sup>1</sup>, Brain Stewart<sup>2</sup>, Chengke Zhou<sup>2</sup>, J.Mohd Jahabar<sup>1</sup>

<sup>1</sup>Salalah College of Technology, <sup>2</sup>Glasgow Caledonian University, UK

**7A-11 Extraction of PD Signals from an Electro-Optic Modulator Based PD Measurement System**

Liwei Hao<sup>1</sup>, Paul Lewin<sup>1</sup>, Stephen Dodd<sup>1</sup>

<sup>1</sup>University of Southampton

**7A-12 Linear Discriminant Analysis for Partial Discharge Classification on High Voltage Equipment**  
Vuttichai Chatpattananan<sup>1</sup>

<sup>1</sup>King Mongkut Institute of Technology - Ladkrabang

**7A-13 Partial Discharges Measured at Semi-Square Voltages**

Elisabeth Lindell<sup>1</sup>, Tord Bengtsson<sup>2</sup>, Jörgen Blennow<sup>1</sup>, Stanislaw M Gubanski<sup>1</sup>

<sup>1</sup>Chalmers University of Technology, <sup>2</sup>ABB Corporate Research

**7A-14 Partial Discharge Measurements for a Twisted Pair of Insulated Conductors at Low Pressures - Pulse Waveform Analysis for Argon and Helium**

Xin Liu<sup>1</sup>, Donald Kasten<sup>1</sup>, Stephen Sebo<sup>1</sup>, Dennis Grosjean<sup>2</sup>, Daniel Schweickart<sup>3</sup>

<sup>1</sup>The Ohio State University, <sup>2</sup>Innovative Scientific Solutions, Inc., <sup>3</sup>Air Force Research Laboratory

**7A-15 Frequency Distribution of RF Energy from PD Sources and Its Application in Combined RF and IEC60270 Measurements**

Alistair Reid<sup>1</sup>, Martin Judd<sup>1</sup>, Brian Stewart<sup>2</sup>, Richard Fouracre<sup>1</sup>

<sup>1</sup>University of Strathclyde, <sup>2</sup>Glasgow Caledonian University

**7A-16 Wavelet Packet Denoising of Partial Discharge Data**

Carlo Petrarca<sup>1</sup>, Giovanni Lupò<sup>1</sup>

<sup>1</sup>Università di Napoli Federico II

**7A-17 Analysis of Conditions of Partial Discharges Inception and Development at Non-Sinusoidal Testing Voltages**

Barbara Florkowska<sup>1</sup>, Pawel Zydron<sup>1</sup>

<sup>1</sup>AGH - University of Science and Technology

**7A-18 New Approaches in Arrival Time-Based PD Location in Transformers**

Sacha Markalous<sup>1</sup>, Thomas Strehl<sup>1</sup>

<sup>1</sup>Lemke Diagnostics

**7A-19 Extraction of Partial Discharges from Noises by Use of Wavelet and Pulse-Shaped Analysis**

Jian Li<sup>1</sup>, Stanislaw Grzybowski<sup>2</sup>, Lin Du<sup>1</sup>, Y. Wang<sup>1</sup>

<sup>1</sup>Chongqing University, <sup>2</sup>Mississippi State University

**7A-20 The Use of the Pulse Sequence Analysis to Monitor the Condition of Oil**

Rainer Patsch<sup>1</sup>, Johannes Menzel<sup>1</sup>, Djamel Benzerouk<sup>1</sup>

<sup>1</sup>University of Siegen

**7A-21 Partial Discharge Measurements in a High Temperature Superconducting Triaxial 5-m Model Cable at Liquid Nitrogen Temperature**

Isidor Sauers<sup>1</sup>, Randy James<sup>1</sup>, Enis Tuncer<sup>1</sup>, Alvin Ellis<sup>1</sup>, M. O. Pace<sup>1</sup>

<sup>1</sup>Oak Ridge National Laboratory

**10:30-12:30 Session 7B  
Bio, Surface – (Poster)**

Chair: Raji Sundararajan, Arizona State University East  
Organizer: Mike Arnold, Industrial Research Ltd, New Zealand

**7B-1 Dielectric Properties of Biodegradable Polymers**

Yoshimichi Ohki<sup>1</sup>, Naoshi Hirai<sup>1</sup>

<sup>1</sup>Waseda University

## **7B-2 Prediction of Physical Properties of Yeast Cell Suspensions Using Dielectric Spectroscopy**

David Currie<sup>1</sup>, Mark Lee<sup>1</sup>, R. W. Todd<sup>2</sup>

<sup>1</sup>University of Wales, Aberystwyth, <sup>2</sup>Aber Instruments Ltd

## **7B-3 Forces Acting on Biological Cells in External Electrical Fields**

Igor Timoshkin<sup>1</sup>, Scott Macgregor<sup>1</sup>, Richard Fouracre<sup>1</sup>, M. J. Given<sup>1</sup>, John Anderson<sup>2</sup>

<sup>1</sup>University of Strathclyde, <sup>2</sup>ROLEST

## **7B-4 Electric Properties of Vegetable-Oil-Based Dielectric Liquid and Lifetime Estimation of the Oil-Paper Insulation**

Caixin Sun<sup>1</sup>, Jian Li<sup>1</sup>, Xiaohu Li<sup>1</sup>, Stanislaw Grzybowski<sup>2</sup>

<sup>1</sup>Chongqing University, <sup>2</sup>Mississippi State University

## **7B-5 Water Processing by High Intensity Pulsed Electric Fields**

Fermin Espino<sup>1</sup>, Ayman El-Hag<sup>2</sup>, Othano Adedayo<sup>1</sup>, Shesha Jayaram<sup>1</sup>, W. Anderson<sup>1</sup>

<sup>1</sup>University of Waterloo, <sup>2</sup>American University of Sharjah

## **7B-6 Modified Finite Element Method to Consider the Singularity of the Electric Field Using a Singularity Function**

Yeon-Ho Oh<sup>1</sup>, Ki-Dong Song<sup>1</sup>, Hong-Kyu Kim<sup>1</sup>, Sung-Kwan Park<sup>2</sup>

<sup>1</sup>Korea Electrotechnology Research Institute, <sup>2</sup>Yonsei University

## **7B-7 Frequency Characters of Leakage Current on the Surface of Outdoor Insulators in Different Relative Humidity**

Mao Yingke<sup>1,2,3</sup>, Guan Zhicheng<sup>1,3</sup>, Wang Liming<sup>1,3</sup>, Wang Xin<sup>1</sup>, Yue Bo<sup>1</sup>

<sup>1</sup>Tsinghua University, Shenzhen, <sup>2</sup>Tsinghua University, <sup>3</sup>Beijing, State Key Laboratory of Power System

## **7B-8 Electrical Surface Resistivity of Organic Coating Resin in Arc-Decomposed SF<sub>6</sub> Gas**

Tadao Minagawa<sup>1</sup>, Haruhiko Kohyama<sup>1</sup>, Yuji Yoshitomo<sup>1</sup>, Makoto Miyashita<sup>1</sup>, Eiichi Nagao<sup>1</sup>,

<sup>1</sup>Mitsubishi Electric Corporation

## **7B-9 Non-Uniform Field Breakdown and Surface Flashover in Liquid Nitrogen Gaps for HTS Applications**

Randy James<sup>1</sup>, Isidor Sauers<sup>1</sup>, Enis Tuncer<sup>1</sup>, A. Ellis<sup>1</sup>, Kasegn Tekletsadik<sup>2</sup>, D. W. Hazelton<sup>3</sup>

<sup>1</sup>Oak Ridge National Laboratory, <sup>2</sup>Consultant, <sup>3</sup>SuperPower

**10:30-12:30 Session 7C**  
**Treeing, polarization – (Poster)**

Chair: Eric David, Ecole de Technologie  
Superieure, Canada

Organizer: Sreeram Venkataraman, Arizona State  
University, USA

**7C-1 Water Migration in Degraded XLPE Cables**

Bolarin Oyegoke<sup>1</sup>, David Bitrwhistle<sup>1</sup>, Jim Lyall<sup>1</sup>, Tapan  
Saha<sup>2</sup>

<sup>1</sup>Queensland University of Technology, <sup>2</sup>University of  
Queensland

**7C-2 Dielectric Relaxation Study in Tantalum  
Pentoxide Capacitors**

Jean-Philippe Manceau<sup>1</sup>, Sylvie Bruyere<sup>1</sup>, Simon Jeannot<sup>1</sup>,  
Alain Sylvestre<sup>2</sup>, Patrice Gonon<sup>3</sup>

<sup>1</sup>ST Microelectronics, <sup>2</sup>LEMD (CNRS & UJF), <sup>3</sup>LTM  
(CNRS & UJF)

**7C-3 Influence of Vacuum Evacuation on Electrical  
Tree Initiation in Silicone Rubber**

Yoshihisa Kamiya<sup>1</sup>, Yuji Muramoto<sup>1</sup>, Noriyuki Shimizu<sup>1</sup>

<sup>1</sup>Meijo University

**7C-4 Electroluminescence Properties under Long Time  
Voltage Application in XLPE**

Takamori Mito<sup>1</sup>, Motoo Watanabe<sup>1</sup>, Yuji Muramoto<sup>1</sup>,  
Noriyuki Shimizu<sup>1</sup>

<sup>1</sup>Meijo University

**7C-5 Influence of Water-Tree Degradation on  
Electroluminescence Spectrum in XLPE**

Motoo Watanabe<sup>1</sup>, Takamori Mito<sup>1</sup>, Yuji Muramoto<sup>1</sup>,  
Noriyuki Shimizu<sup>1</sup>

<sup>1</sup>Meijo University

**7C-6 Life Prediction of XLPE Subjected to Distorted  
Voltages in Presence of Bush-Like Electrical Treeing**

Francesco Guastavino<sup>1</sup>, Gianfranco Coletti<sup>1</sup>, Andrea  
Dardano<sup>1</sup>, Alessandro Ratto<sup>1</sup>, Eugenia Torello<sup>1</sup>

<sup>1</sup>University of Genova

**7C-7 Impact of the Polymerization Process on the  
Electrical Behavior of Different Impregnation  
Varnishes**

Fabrice Aymonino<sup>1</sup>, T. Lebey<sup>1</sup>, D. Malec<sup>1</sup>, C. Petit<sup>2</sup>, J.  
Saint Michel<sup>2</sup>, A. Anton<sup>2</sup>

<sup>1</sup>Paul Sabatier University, <sup>2</sup>Moteur Leroy Somer

**7C-8 The Use of Cable System Models for the Assessment of Space Charge Behaviour in Full-Size DC Cable Systems**

Riccardo Bodega<sup>1</sup>, Peter H. F. Morshuis<sup>1</sup>, Gian Carlo Montanari<sup>2</sup>, Davide Fabiani<sup>2</sup>, Johan J. Smit<sup>1</sup>

<sup>1</sup>Delft University of Technology, <sup>2</sup>University of Bologna

**7C-9 Dielectric Response of SRBP as a Function of Oil and Oil/Moisture Absorption**

Matthew Brown<sup>1</sup>, Steve Dodd<sup>1</sup>, Barry Ahern<sup>2</sup>, John Pettinger<sup>2</sup>, Francis Waite<sup>2</sup>

<sup>1</sup>University of Southampton, <sup>2</sup>National Grid Plc.

**7C-10 Dielectric Measurements of Rotating Machines Insulation at High Temperature (200-400 C)**

Fabrice Aymonino<sup>1</sup>, T. Lebey<sup>1</sup>, D. Malec<sup>1</sup>, C. Petit<sup>2</sup>, J. Saint Michel<sup>2</sup>, A. Anton<sup>2</sup>

<sup>1</sup>Paul Sabatier University, <sup>2</sup>Moteur Leroy Somer

**7C-11 Complex Permittivity Characterization of Double Oxides of the Perovskite Crystal Structure**

John Mergos<sup>1</sup>, John Daskalakis<sup>2</sup>, Constantine Dervos<sup>1</sup>

<sup>1</sup>National Technical University of Athens, <sup>2</sup>Hellenic Transmission System Operator

**12:30-14:00 Lunch Break**

**14:00-16:00 Session 8  
General IV – (Oral)**

Gérard Touchard, University of Poitiers, France

Organizer: Mahmoud Abou-Dhaka, National Research Council, Canada

**8-1 Packet-Like Charge in Polyethylene Probed with a 2D-Spatial Resolution**

Masumi Fukuma<sup>1</sup>, Kaori Fukunaga<sup>2</sup>, Christian Laurent<sup>3</sup>

<sup>1</sup>Matsue National College of Technology, <sup>2</sup>National Institute of Information and Communications Technology,

<sup>3</sup>LGET, Université Paul Sabatier

**8-2 Elastic Properties and Electromechanical Coupling Factor of Inflated Polypropylene Ferroelectrets**

Michael Wagner<sup>1</sup>, Enis Tuncer<sup>1</sup>, Reimund Gerhard-Multhaupt<sup>1</sup>, S. Bauer<sup>2</sup>

<sup>1</sup>University Potsdam, <sup>2</sup>Johannes Kepler University

**8-3 Modeling the Effect of Ionic Dissociation on Charge Transport in Transformer Oil**

Francis O'Sullivan<sup>1</sup>, Se-Hee Lee<sup>1</sup>, Markus Zahn<sup>1</sup>, Leif Pettersson<sup>2</sup>, Rongsheng Liu<sup>2</sup>, Olof Hjortstam<sup>2</sup>, Tommaso Auletta<sup>2</sup>, Uno Gäfvert<sup>2</sup>

<sup>1</sup>Massachusetts Institute of Technology, ABB Corporate Research

#### **8-4 Comparison of Breakdown Performances of Extruded Cables Via the Enlargement Law**

Massimo Marzinotto<sup>1</sup>, Giovanni Mazzanti<sup>2</sup>, Carlo Mazzetti<sup>1</sup>  
<sup>1</sup>University of Roma "La Sapienza", <sup>2</sup>University of Bologna

#### **8-5 Corona Characteristics in Conductor-to-Plane Gaps as Influenced by Nearby Floating Metallic Grids**

A. Hashem<sup>1</sup>, M. Abdel-Salam<sup>1</sup>, A. Turkey<sup>1</sup>, A. Abdel-Aziz<sup>1</sup>  
<sup>1</sup>Assuit University

#### **8-6 Optimum Timing of Stator Winding Maintenance Based on a Combination of On-Line Partial Discharge Measurements and Visual Inspections**

Bernhard Fruth<sup>1</sup>, Stefan Lanz<sup>2</sup>,  
<sup>1</sup>PD Tech Power Engineering AG,  
<sup>2</sup>TeCo Lanz GmbH

#### **8-7 Examination of the Influence of Streamer Growth Criteria on Morphology**

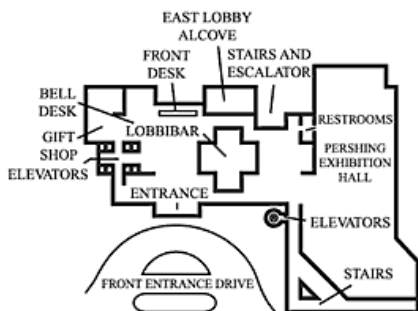
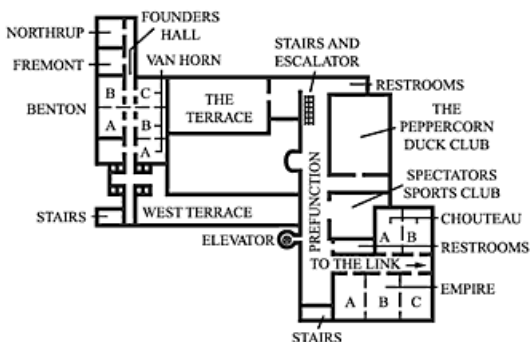
Minkyu Kim<sup>1</sup>, Robert Hebner<sup>1</sup>, Gary Hallock<sup>1</sup>  
<sup>1</sup>The University of Texas At Austin

**16:00-16:15 Closing**

<b>CEIDP – 2006 PROGRAM</b>			
<b>Sunday, October 15, 2006</b>	<b>Monday, October 16, 2006</b>	<b>Tuesday, October 17, 2006</b>	<b>Wednesday, October 18, 2006</b>
<b>Registration</b> (16:00-21:00) East Lobby Alcove          <b>Reception</b> (18:00-21:00) Lobby	<b>Welcome</b> (08:00-08:15) Atlanta Room	<b>Session 4</b> General II (Oral) (08:00-10:00) Atlanta Room	<b>Session 6</b> General III (Oral) (08:00-10:00) Atlanta Room
	<b>The Whitehead Lecture</b> (08:15-09:30) Atlanta Room	Break (10:00-10:30)	Break (10:00-10:30)
	Break (09:30-10:00)	<b>Session 5 (Poster)</b> 5A Outdoor insulation 5B Aging (10:30-12:30) Empire Room	<b>Session 7 (Poster)</b> 7A PD 7B Bio, Surface 7C Treeing, Polarization (10:30-12:30) Empire Room
	<b>Session 1</b> General I (Oral) (10:00-12:30) Atlanta Room	<b>Lunch Break</b> (12:30-14:00)	<b>Lunch Break</b> (12:30-14:00)
	<b>Lunch</b> (12:30-14:00)	<b>Social Hour</b> (Cash bar) (18:00-19:00) The Terrace	<b>Session 8</b> General IV (Oral) (14:00-16:00) Atlanta Room
	<b>Session 2 (Poster)</b> 2A Measurement Techniques 2B Charge Storage and Transport 2C EHD and HF (14:00-16:00) Empire Room		
	<b>Dinner Break</b> (16:00-19:00)		
	<b>Session 3 (Poster)</b> 3A Prebreakdown 3B Nanodielectrics (19:00-21:00) Empire Room		
		<b>Banquet</b> (19:00-21:00) Atlanta Room	<b>Closing</b> (16:00-16:15)

# HOTEL LAYOUT

## MEZZANINE LEVEL



## LOBBY LEVEL

## BALLROOM LEVEL

