

Conference Agenda

2019 IEEE 37th Electrical Insulation Conference (EIC)

Date: Sunday, 16/June/2019

<p>9:00am - 12:30pm</p>	<p>SC1: Insulation Testing of Turbo Generators Location: Neilson 1 Chair: Douglas Conley Turbo Generators are designed for operation over a long period of time. High quality stator winding insulation is an important factor to achieve the expected reliability and forced outage rates. This course will provide basic description of stator insulation components and systems. It will include an overview of technical principles, applications and testing requirements outlined in IEEE 56, IEEE Guide for Insulation Maintenance of Electric Machines, along with some points from IEEE 4, 43, 95, and 286.</p>	<p>SC2: Generators: Engineering Approach to Modernization and Rehabilitation of Hydropower Location: Neilson 2 Chair: Inna Kremza Voith experts, present project case studies to demonstrate the engineering approach and proven solutions for modernization and rehabilitation of hydro generators. A recommended framework for rehabilitation schedules and modernization solutions will be reviewed in relation to the lifecycle of various hydro systems and equipment. The course goal is to present solutions, based on real projects, which can be used to inform and optimize the project outcomes for power plant operators including engineering, maintenance and operations.</p>	
<p>9:15am - 9:30am</p>	<p>SC-CB-M1: SC Coffee Break - M1 Location: SC Coffee Break</p>		
<p>12:30pm - 1:30pm</p>	<p>LSC: Lunch - SC - Lunch is on your own Location: Short Course - Lunch Lunch is on your own</p>		
<p>1:30pm - 5:00pm</p>	<p>SC3: Transformer Insulation Diagnostics – Field perspective Location: Neilson 1 Chair: Diego Robalino This course describes the most important methodologies used for transformer insulation diagnostics in the field. The topics include time and frequency domain methodologies described in the international literature including insulation resistance, Power Factor, newly developed features for improved Power Factor diagnostics and advanced diagnostics with Dielectric Frequency Response.</p>	<p>SC4: Why should the DEIS care about the Smart Grid? Location: Neilson 2 An afternoon workshop exploring the world of the Smart Grid from a DEIS perspective, in conjunction with the IEEE DEIS Technical Committee on the Smart Grid.</p>	
<p>2:15pm - 2:30pm</p>	<p>SC-CB-A1: SC Coffee Break - A1 Location: SC Coffee Break</p>		
<p>6:00pm - 8:30pm</p>	<p>P1: ROTATING MACHINES Location: Stephen Room A&B Chair: Hugh Zhu Analysis of the Degradation Kinetics of Kapton Film in an Aerospace Environment H. Haghighi, I. Cotton University of Manchester, United Kingdom Improving dielectric properties and suppression of partial discharges in fiber/thermoset-matrix composites by polymeric nanofibers</p>	<p>P2: PARTIAL DISCHARGE Location: Stephen Room A&B Chair: Mona Ghassemi Investigation of Partial Discharge in Aircraft Conformally-Coated Printed Circuit Boards E. Zeynali, R. Bridges, B. Kordi University of Manitoba, Winnipeg, Manitoba, Canada Finite Element Modeling of Partial Discharge Activity within a Spherical Cavity in a Solid Dielectric Material under Fast, Repetitive Voltage Pulses</p>	<p>P3: NEW MATERIALS Location: Stephen Room A&B Chair: FERNANDO PEREIRA Dielectric and Insulation Properties of Polyimide-based Boehmite Nanocomposite Material T. Matsuzoe¹, N. Kita¹, Y. Nishigaki¹, T. Abe¹, T. Kubo¹, Y. Nakano¹, M. Kozako¹, M. Hikita¹, N. Fujimoto², N. Hayashisaka², S. Fujimoto², T. Kato² 1: kyusyu institute of technology/Japan, Japan; 2: Sumitomo Seika Chemicals Co., Ltd, Japan</p>

R. Polansky¹, P. Prosr¹, J. Pihera¹, J. Chvojka², T. Kyselak³

1: University of West Bohemia, Czech Republic; 2: Technical University of Liberec, Czech Republic; 3: Elmarco Company, Czech Republic

A Novel Nonlinearly Equivalent Circuit Model for Calculating Electric Fields Along the Stator End-winding of HV Rotating Machine

P. Liu¹, X. Liu¹, Y. Zhang², Z. Liang², B. Hu²

1: xi'an jiaotong university, People's Republic of China; 2: Dongfang Electric Machinery Company

Characteristic Research on the Sensor for Inter-turn Partial Discharge Measurement of Inverter-fed Motor Winding

P. Yuan, X. Liu, T. Zhang, P. Liu

xi'an jiaotong university, China, People's Republic of

Temperature Dependence of RPDIV of Motorette Sample with Varnish Treatment

Y. Nishigaki¹, T. Kubo¹, T. Matsuzoe¹, N. Kita¹, Y. Nakano¹, M. Kozako¹, M. Hikita¹, T. Nakamura², J. Sun², A. Izumi², T. Sakurai², K. Karasawa², K. Nojima², T. Hirose³, S. Hiroshima⁴

1: Kyushu Institute of Technology, Japan; 2: Toshiba Mitsubishi-Electric Industrial Systems Corporation, Yokohama, Japan; 3: Toshiba Infrastructure Systems & Solutions Corporation, Fuchu, Japan; 4: Toshiba Energy Systems & Solutions Corporation, Yokohama, Japan

A New Approach to Make the Electric Field Uniform Along the Stress Grading System of A Form-Wound Coil under Square Waves

A. Naeini, E. Cherney, S. Jayaram
University of Waterloo, Canada

The Effects of Steep Voltage Slopes on Insulation Systems of Coil Windings caused by Next Generation Power Semiconductor Devices

V. Grau, R. W. De Doncker

Institute for Power Electronics and Electrical Drives RWTH Aachen University, Germany

S. M. Razavi Borghei, M. Ghassemi

Virginia Polytechnic Institute and State University, United States of America

Influence of Metal Particles on Discharge Characteristics of Insulating Oil under Lightning Impulse

C. Wei², X. Yang¹, J. Li², Y. Lu², L. Sun², T. Wang², B. Li³, H. Li³, Y. Wang³

1: State Grid Jiangsu Electric Power Co.,Ltd, Nanjing, China; 2: Jiangsu Electric Power Company Research Institute, Nanjing, China; 3: Chongqing University, China, People's Republic of

The Implications on the PD Characteristics of Unipolar versus Bipolar PWM waveforms

T. J. Hammarstroem

Chalmers university of Technology, Sweden

Computation of the Corona Onset Voltage for DC at Two Different Altitudes

R. Vazquez Cortes¹, F. P Espino Cortes¹, S. Ilhan², A. Ozdemir², R. Linares-y Miranda¹

1: ESIME Instituto Politecnico Nacional, Mexico; 2: Istanbul Technical University Department of Electrical Engineering, Turkey

Effect of Vibration on Surface Discharge of Epoxy Resin

S. Wang¹, M. Ren¹, C. Xia¹, T. Zhuang¹, X. Dou², S. Yang¹

1: Xi'an Jiaotong University, China, People's Republic of China; 2: State Grid Shanxi Electric Company

IoT-based On-line Monitoring System for Partial Discharge Diagnosis Of Cable

X. Gao, T. Zhuang, M. Ren, B. Song, W. Huang, M. Dong

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

Enhancing the Accuracy of Partial Discharge Localization in Power Transformers Using the UHF Measurement Technique

M. Akbari Azirani¹, M. Ariannik¹, P. Werle¹, A. Akbari²

1: Leibniz Universität Hannover, Institute of Electric Power Systems, Division of High Voltage Engineering and Asset Management, Schering-Institute, Hannover, Germany; 2: K. N. Toosi

Acoustic noise emitted from overhead line conductors with superhydrophobic coating

X. Zhang, C. Lian, C. Emersic, I. Cotton

The University of Manchester, United Kingdom

Design of the Polymer Insulator between HVDC Converter Valve Modules

J.-H. Koo¹, H.-Y. Lee², R. Hwang², J.-M. Joo³, J.-W. Park³, B.-W. Lee²

1: Department of Electronic Systems Engineering, Hanyang University, Ansan-si, South Korea; 2: The Division of Electrical Engineering, Hanyang University, Ansan-si, South Korea; 3: Research & Development Dept., Pyungil, Ansan-si, South Korea

Development of High Thermal Conductivity Epoxy Composite for Large Current Switchgear

G. Komiya, T. Imai, Y. Miyauchi

Toshiba Infrastructure Systems & Solutions Corporation

Insulation Characteristics of C5F100 Gas Mixtures under Quasi-Uniform Electric Field

Y. ZHANG, X. Zhang

wuhan university, China, People's Republic of

Examination of clearances during high voltage live-line working

D. Szabó, G. Göcsei, B. Németh, R. Cselkó, L. Rácz

Budapest University of Technology and Economics, Hungary

The production of cellulose fibers

Y. Bekzhanov¹, A. Useinov¹, K. Kamalbay², R Aidarkhanov³

1: Eurasian National University; 2: AO "KTZ"; 3: KPK

University of Technology, Department of
Electrical Engineering, Tehran, Iran

**Nonlinear Field Dependent
Conductivity Materials for Electric
Field Control within Next-
Generation Wide Bandgap Power
Electronics Modules**

M. Mesgarpour Tousi, M. Ghassemi
Virginia Polytechnic Institute and State
University, United States of America

**Searching for Optimal Connection
Schemes for Partial Discharge
Testing of Inverter-Fed Rotating
Machines**

**A. Cavallini¹, L. Lusuardi¹, A. Rumi¹, A.
Contin², K. Kimura³**
1: University of Bologna, Italy; 2:
University of Trieste, Italy; 3: Consultant

**Estimation of the Partial Discharge
Inception Voltage of Low Voltage
Cables**

R. Cselko, I. Kiss
Budapest University of Technology and
Economics, Hungary

**Partial Discharge Detection
Strategies under Fast Rise Time
Voltages Generated by Wide-
bandgap Semiconductor Devices**

Z. Wei, H. You, B. Hu, R. Na, J. Wang
The Ohio State University, United States
of America

**Can Low Voltage Inverter-Fed
Induction Motors Be Designed
Allowing Partial Discharge
Activity?**

**A. Cavallini¹, L. Lusuardi¹, A. Rumi¹, P.
Wang², T. Han³**
1: University of Bologna, Italy; 2: Sichuan
University; 3: Tianjin University

Date: Monday, 17/Jun/2019

7:00am -	ABM: Author Breakfast Location: Neilson 1 Chair: David McKinnon	GBM: General Breakfast Location: Imperial Ballrooms 1, 2, 3
8:00am -	PL: Plenary Location: Imperial Ballrooms 4, 6, 8	
9:00am -	EXM1: Exhibition Location: Imperial Ballrooms 5, 7, 9	CBPL: Coffee Break - PL Location: Grand Foyer 3 & 4
9:30am -	TR1: TR - Fault Analysis Location: Imperial Ballroom 4 Chair: Diego Robalino	RM1: RM - Diagnosis, Dissection, and Repair Location: Imperial Ballroom 6 Chair: Reza Soltani
10:45am	<p>9:30am - 9:55am</p> <p>Detection of Forced Cooling Faults in Power Transformers based on Winding Temperature Indicator and Load Data A. Doolgindachbaporn¹, N. H. Nik Ali¹, G. Callender¹, J. Pilgrim¹, P. Lewin¹, G. Wilson² 1: The Tony Davies High Voltage Laboratory, University of Southampton, United Kingdom; 2: National Grid, United Kingdom</p> <p>9:55am - 10:20am</p> <p>Evaluation of Natural Ester Retrofilled Transformers After One Year of Continuous Overload R. Breazeal¹, A. Sbravati², D. Robalino³ 1: Southern California Edison, United States of America; 2: Cargill, United States of America; 3: Megger, United States of America</p> <p>10:20am - 10:45am</p> <p>Laboratory Model for Evaluation of Incipient Transformer Thermal Fault Involving Insulating H. M. WILHELM¹, P. FERNANDES¹, G. C. SANTOS¹, T. K. P. PEREIRA¹, D. A. FILHO², M. RIBEIRO², A. MAR² 1: VEGOOR, Brazil; 2: Geradora de Energia do Maranhão, Brazil</p>	<p>9:30am - 9:55am</p> <p>Corona in High Voltage Rotating Machines Stator. Causes, Repair and Prognosis. A. Gegegenava, A. Khazanov, F. Dawson National Electric Coil, United States of America</p> <p>9:55am - 10:20am</p> <p>Calculation of the Electric Field Inside Cavities Found Through Stator Bar Dissection E. Cloutier-Rioux¹, H. Provencher², A. Turgeon², C. Hudon² 1: Hydro-Québec, Canada; 2: Institut de Recherche d'Hydro-Québec, Canada</p> <p>10:20am - 10:45am</p> <p>Observations from the Dissection of Several Aged Stator Coils from Different Hydrogenerators G. Stone¹, H. Sedding¹, R. Wheeler¹, A. Wilson² 1: Iris Power, Canada; 2: CEATI</p>
10:00am -	GSOC: Guest Social Location: Bannerman/Walker	
11:00am	EXM2: Exhibition Location: Imperial Ballrooms 5, 7, 9	CBM1: Coffee Break - M1 Location: Grand Foyer 3 & 4
10:45am -	TR2: TR - Insulation Location: Imperial Ballroom 4 Chair: Alan Sbravati	TT1: Partial Discharge Location: Imperial Ballroom 8 Chair: Greg Stone
11:10am -	RM2: RM – PD and Aging Studies Location: Imperial Ballroom 6 Chair: Claude Hudon	11:10am - 11:35am Partial Discharge Inception Voltage in DC insulation systems: a comparison with AC voltage supply
11:10am -	11:10am - 11:35am Estimating the Thermal Stability of Cellulose Insulation using MSD and Tg parameters by	11:10am - 11:35am Unidirectional accelerated lifetime investigations of mechanically dominated aged
12:25pm		

	<p>Molecular Dynamics Simulation W. HOU, L. YANG Chongqing University, China, People's Republic of</p>	<p>electrical insulation system used in generator winding bars A. Cimino¹, F. Jenau¹, A. Mashkin² 1: TU Dortmund University, Germany; 2: Siemens AG, Muelheim, Germany</p>	<p>G. C. Montanari^{1,2}, P. Seri², L. Cirioni², H. Naderiallaf², R. Hebner¹, A. Gattozzi¹, X. Feng¹ 1: CEM, Texas University at Austin, USA; 2: DEI, University of Bologna, Italy</p>
	<p>11:35am - 12:00pm Modeling Transformer Core With Appropriate Boundary Conditions for Partial Discharge Studies S. Janaki Raman^{1,2}, P. Mukherjee^{1,2}, S. K. Panda^{1,2} 1: National University of Singapore, Singapore; 2: Sembcorp-NUS Corporate Laboratory</p>	<p>11:35am - 12:00pm Partial Discharge Characterisation of Stator Windings Taken From a 50-year-old Norwegian Hydrogenerator G. Berg, E. Eberg, S. Hvidsten SINTEF Energy Research, Norway</p>	<p>11:35am - 12:00pm The RPDIV and the limits of its definition according to IEC 60034-18-41: the effect of voltage conditioning A. Caprara¹, A. Cavallini², G. Ciotti¹, A. Rumi² 1: Techimp - Altanova group Srl, Italy; 2: University of Bologna, Italy</p>
	<p>12:00pm - 12:25pm Transformer Insulation Degree of Polymerization Estimation through Adaptive Neuro Fuzzy Inference System Approach E. T. Mharakurwa¹, G. N Nyakoe², A. O. Akumu³ 1: Pan African University Institute for Basic Sciences, Technology and Innovation (PAUSTI), Kenya; 2: Jomo Kenyatta University of Agriculture and Technology (JKUAT), Kenya; 3: Tshwane University of Technology (TUT), South Africa</p>	<p>12:00pm - 12:25pm Investigation of Partial Discharge Activity and Insulation Life of a Large Hydro Generator R. Soltani¹, I. Chichkin², P. Gaillardetz², B. Ledger³ 1: Powertech Labs, Canada; 2: BC Hydro; 3: Wref's Consulting Inc.</p>	<p>12:00pm - 12:25pm Opto Electronic Technique for Detection of Corona Discharges in Air and Oil N. R. BURJUPATI CENTRAL POWER RESEARCH INSTITUTE, India</p>
12:25pm - 2:00pm	<p>EXM3: Exhibition Location: Imperial Ballrooms 5, 7, 9</p>		<p>LM: Lunch - Monday Location: Grand Foyer 4 Chair: Kevin Alewine</p>
2:00pm - 3:15pm	<p>NM1: New Materials Location: Imperial Ballroom 4 Chair: Santosh Janaki Raman</p>	<p>RM3: RM – Temperature and Humidity Effects on PD Location: Imperial Ballroom 6 Chair: Ahmed Gad</p>	<p>CA1: Cables - PD Location: Imperial Ballroom 8 Chair: Stan Gubanski</p>
	<p>2:00pm - 2:25pm A New Representation of Paschen's Law Suitable for Variable Temperature Power Applications</p>	<p>2:00pm - 2:25pm Influence of Ambient Humidity on PDIV and Endurance of Inverter-fed Motor Insulation</p>	<p>2:00pm - 2:25pm Influence of Cavity Geometry on Partial Discharge Measurement at Very Low Frequency S. Morsalin¹, B. Phung¹, M. G. Danikas²</p>

A. Al-Taie^{1,2,3}, C. Park⁴, P. Cheetham^{1,2}, C. Kim², L. Graber⁴, S. Pamidi^{1,2}

1: FAMU-FSU College of Engineering, Department of Electrical & Computer Engineering, Tallahassee, FL, 32310, USA; 2: Center for Advanced Power Systems, Florida State University, Tallahassee, FL, 32310, USA; 3: University of Technology, Electrical Engineering Department, Baghdad, 10066, Iraq; 4: Georgia Institute of Technology College of Engineering, Department of Electrical & Computer Engineering, Atlanta, GA, 30332, USA

2:25pm - 2:50pm

Polymer-Impregnated Concrete Insulators/Insulating Structures

M. Gunasekaran

Sekar Enterprises, United States of America

2:50pm - 3:15pm

Investigation of Persea Americana Oil as an Alternative Transformer Insulation Oil

B. M. Makaa, G. K. Irungu, D. K. Murage

Jomo Kenyatta University of Agriculture and Technology, Kenya

P. Wang¹, P. Li¹, Y. Li¹, A. Cavallini², Q. Zhang³, J. Zhang⁴

1: Sichuan University, China; 2: University of Bologna, Italy; 3: St. John's University, USA; 4: Northeast Electric Power University

2:25pm - 2:50pm

Material Temperature Dependence on Behavior of Partial Discharge in Epoxy Resin

T. Sakoda¹, M. Kawakone¹, N. Hayashi¹, M. Setoguchi²

1: University of Miyazaki, Japan; 2: Research Laboratory, Kyushu Electric Power Co., Inc.

2:50pm - 3:15pm

Temperature and electric field profiles along the stress grading system of a form-wound coil as a function of conductive nonlinearity under pulse voltage

A. Naeini, E. A. Cherney, S. H. Jayaram

University of Waterloo, Canada

1: The University of New South Wales, Australia; 2: Democritus University of Thrace, Greece

2:25pm - 2:50pm

Water Tree Detection in Medium Voltage XLPE Cables

W. McDermid, T. Black, M. Partyka
Manitoba Hydro, Canada

2:50pm - 3:15pm

Partial Discharges in XLPE Insulated Cable under Superimposed Transient Voltages

J. Wu

Delft University of Technology, Netherlands, The

3:15pm

-

3:30pm

3:30pm

-

3:45pm

3:30pm

-

6:00pm

3:45pm

-

6:00pm

COM-M1: Omicron Lab

Location: **Imperial Ballroom 4**

COM-M2: PMDT

Location: **Imperial Ballroom 6**

COM-M3: Nippon Rika

Location: **Imperial Ballroom 8**

CBM2: Coffee Break - M2

Location: **Grand Foyer 3 & 4**

EXM4: Exhibition

Location: **Imperial Ballrooms 5, 7, 9**

P4: CABLES

Location: **Grand Foyer 3 & 4**

Chair: **Jiayang Wu**

P5: TRANSFORMERS

Location: **Grand Foyer 3 & 4**

Chair: **Diego Robalino**

P6: SWITCHGEAR

Location: **Grand Foyer 3 & 4**

Chair: **suat ilhan**

P7: NANODIELECTRICS

Location: **Grand Foyer 3 & 4**

Chair: **Pugazhendhi Sugumaran Chelladurai**

P8: TESTING TECHNOLOGIES

Location: **Grand Foyer 3 & 4**

Chair: **suat ilhan**

The Effect of AC Ripple Voltage on Space Charge Accumulation in Double Layer Polymer Samples

A. A. Mulla, S. J. Dodd, N. M. Chalashkanov, L. A. Dissado
University of Leicester

Evaluation of Nano-Composite XLPE Compound on Accelerated Aging Cable Performance

S. J. Han¹, S. Wasserman²
1: The Dow Chemical Company, United States of America; 2: The Dow Chemical Company, United States of America

Effects of Acetophenone on Charge Dynamics in Low Density Polyethylene

M. Chen¹, Y. Yin¹, H. Zhang¹, Z. Gao², Z. Ma³, J. Wu¹
1: Shanghai JiaoTong University, China; 2: Zhoushan Power Supply Company, State Grid Zhejiang Electric Power Co., Ltd, China; 3: Wuxi Jiangnan Cable Co., Ltd, China

Long-term Durability of Stearic Acid Silicon Dioxide Nanoparticle Superhydrophobic Coating on Aluminium Alloy Overhead Line Conductors

C. Lian, X. Zhang, C. Emersic, R. Lowndes, I. Cotton
The University of Manchester, the United Kingdom

Investigation of the Thickness Effect on DC Breakdown Strength for HVDC

Simulation of nanofluid as a two-phase flow in a distribution transformer

L. Raeisian¹, P. Werle¹, H. Niazmand²
1: Leibniz University of Hanover, Germany; 2: Ferdowsi University of Mashhad, Iran

Prediction Method for Power Transformer State Based on Chaos Theory

J. Yang¹, P. Zhang¹, Z. Wen¹, Q. Wang², B. Qi¹, C. Li¹
1: North China Electric Power University, China, People's Republic of; 2: Maintenance and Test Center of Extra High Voltage Company of China Southern Grid

The Method of Identifying and Repairing Abnormal DGA Data for Transformer Fault Diagnose Based on a Semi-supervised Multi-dimensional Grey Model

Y. Wang¹, R. Zhang¹, Z. Wen¹, J. Cheng², B. Qi¹, P. Zhang¹, C. Li¹
1: North China Electric Power University, China, People's Republic of; 2: State Grid Fujian Electric Power Company, China, People's Republic of

Method for Interpolating Monitoring Data of Dissolved Gas in Oil for Power Transformer State Assessment

R. Zhang¹, P. Zhang¹, Q. Wang², B. Qi¹, C. Li¹
1: North China Electric Power University, China, People's Republic of; 2: Maintenance and Test Center of Extra High

Classification of Insulating Liquids Thermal Treatment Using Infrared Spectroscopy and Multivariate Statistical Method

P. Prosr, R. Polansky, J. Pihera, P. Hahn
University of West Bohemia, Czech Republic

Geometrically Optimized Phase Configurations and Sub-conductors in the Bundle for Power Transmission Efficiency

S. M. Razavi Borghei, M. Ghassemi
Virginia Polytechnic Institute and State University, United States of America

Insulating Liquids, an Alternative to Silicone Gel for Power Electronic Devices

O. AGRI^{1,2,4}, J. L. AUGÉ^{1,3,4}, E. VAGNON^{1,2,4}, F. BURET^{1,2,4}
1: Université de Lyon; 2: Ecole Centrale de Lyon; 3: Université Claude Bernard Lyon 1; 4: Laboratoire Ampère, France

A Study of Relationship Between V-t and Tanδ Characteristic on Epoxy Resin

J. YOON, J. KWON, J. RYU, C. BAE, J. CHOI, Y. KIM, K. LIM
LSIS, Korea, Republic of (South Korea)

Effect of Gas-phase Fluorination on Trap Level of Nano-Alumina / Epoxy Resin Nanocomposites

F. Wang, M. Z. Khan, L. He, Z. Huang, M. Yang
Chongqing University Chongqing China, China, People's Republic of

Space Charge Analysis of Epoxy-Boron Nano-Composites and the Importance of Dispersion Techniques

D. Saha¹, R. Kochetov², P. H. Morshuis³
1: Technische Universiteit Eindhoven; 2: ABB Switzerland; 3: Solid Dielectric Solutions

Diagnostic Technique for Electrical Tree by Current Integration Method

S. Iwata¹, R. Kitani¹, T. Takada²
1: Osaka Research Institute of Industrial Science and Technology, Japan; 2: Tokyo City University, Japan

**Flexible Cable
Insulation
Associated with
Space Charge**

**P. Su¹, Y. Yin¹, X.
Zheng², Y. Xuan², J.
Wu¹**

1: Shanghai Jiao Tong
University, Shanghai
200240, China; 2:
Zhoushan Power Supply
Company, State Grid
Zhejiang Electric Power
Co., Ltd, Zhoushan
316000, China

**Measurement of
Space Charge
Distribution
Characteristics in
the Actual HVDC
Cable**

**Y. Zhou, W. Wang, T.
Guo, J. Qi**

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

**Analysis of AC
500kV XLPE
Submarine Cable
Insulation
Laboratory Aging
Condition Based on
Frequency Domain
Dielectric
Spectroscopy**

**Z. Liu¹, Z. Gao², J.
Hao¹, C. Liu¹, H. Li², X.
Dai¹**

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

**Capacitive Transfer
Cable and Its
Performance in
Comparison with
Conventional Solid
Insulated Cable**

**Y. Yang¹, M. Darwish¹,
M. Moghadam², D.
Quennell², A. Hajiloo²**

Voltage Company of
China Southern Grid

**Influence of
pressboard
orientation in the
electric field on
lightning impulse
discharge
characteristics of
oil-pressboard
insulation**

**J. Li¹, C. Wei¹, Y. Wu¹,
S. Wang¹, Y. Lin¹, L.
Huang², H. Li², Y.
Wang²**

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

**Research on
Correlation Degree
of Oil
Chromatographic
Data for
Transformer Fault
Prediction**

**Y. Wang¹, Z. Wen¹, R.
Zhang¹, J. Chen², B.
Qi¹, P. Zhang¹, C. Li¹**

1: North China Electric
Power University, China,
People's Republic of; 2:
State Grid Fujian
Electric Power
Company, China,
People's Republic of

**Research on
Transformer
Condition-based
Maintenance
Optimization Based
on Live Detection**

**J. Deng¹, C. Wei², J.
Li², H. Li³, G. Wang³, Y.
Wang³**

1: State Grid Jiangsu
Electric Power Co., Ltd.;
2: State Grid Jiangsu
Electric Power Co., Ltd.
Electric Power Research
Institute; 3: ChongQing
university, China,
People's Republic of

**Study on the Ageing
Characteristics of
Persea Americana**

1: Brunel University
London, United
Kingdom; 2:
Enertechnos, United
Kingdom

**Oil as an Alternative
Transformer
Insulation oil**

**B. M. Mkaa, G. K.
Irungu, D. K. Murage**

Jomo Kenyatta
University of Agriculture
and Technology, Kenya

Date: Tuesday, 18/Jun/2019

7:00am -	ABT: Author Breakfast Location: Neilson 1 Chair: David McKinnon	GBT: General Breakfast Location: Imperial Ballrooms 1, 2, 3	
8:00am -	TR3: TR - Asset Health and Management Location: Imperial Ballroom 4 Chair: Christoph Krause	PD1: PD - Modeling and Simulation Location: Imperial Ballroom 6 Chair: Eric David	RM4: RM - Motors/Generators Testing Location: Imperial Ballroom 8 Chair: Keith Grzegorzcyk
9:40am	8:00am - 8:25am Transformer Remnant Life Estimation and Asset Management model based on Insulation Stress Assessment E. T. Mharakurwa¹, G. N Nyakoe², A. O. Akumu³ 1: Pan African University Institute for Basic Sciences, Technology and Innovation (PAUSTI), Kenya; 2: Jomo Kenyatta University of Agriculture and Technology (JKUAT), Kenya; 3: Tshwane University of Technology (TUT), South Africa	8:00am - 8:25am Plasma Dynamic Simulations of Partial Discharges within Electrical Tree Structures G. M. Callender, P. L. Lewin University of Southampton, United Kingdom	8:00am - 8:25am A Novel Breakdown Protection Circuit for Endurance Tests under Repetitive Impulsive Voltages P. Wang¹, Y. Gu¹, Q. Wu¹, A. Cavallini², Q. Zhang³, J. Zhang⁴ 1: Sichuan University; 2: University of Bologna; 3: St. John's University, USA; 4: Northeast Electric Power University
	8:25am - 8:50am Improving the Assessment of Remaining Life of Service Aged Power Transformers A. Naderian Jahromi, P. Pattabi, L. Lamarre METSCO Energy Solutions Inc., Canada	8:25am - 8:50am Multivariate Time Series Modeling for Long Term Partial Discharge Measurements in Medium Voltage XLPE Cables Z. Ahmed, M. Rostaghi Chalaki, K. Yousefpour, J. V. Klüss Mississippi State University, United States of America	8:25am - 8:50am Fault Diagnosis in Rotor Windings in DFIG using Magnetic Flux Measurement Coil Antenna A. U. Rehman¹, Y. Chen¹, Y. Zhao¹, Y. Cheng¹, Y. Zhao², T. Tanaka³, P. Wang⁴ 1: Xi'an Jiaotong University, School of Electrical Engineering, People's Republic of China; 2: Xi'an Thermal Power Research Institute Co. Ltd, Xi'an, Shaanxi, People's Republic of China; 3: Waseda University, IPS Research Center, Kitakyushu, Fukuoka, Japan; 4: Sichuan University, China
	8:50am - 9:15am Technical and economic analysis of copper utilization on new windings of repaired distribution transformers originally designed for aluminum J. P. Villibor, E. T. Wanderley Neto, G. P. Lopes, G. H. Faria, M. P. Pereira, T. A. Nogueira, P. V. P. d. O. Tavares UNIFEI Federal University of Itajuba, Brazil	8:50am - 9:15am Research on Stages of AC corona discharge Based on Visible Digital Images Gray-level Co-occurrence Matrix Z. Guo, Q. Ye, Y. Wang State Key Laboratory of Advanced Electromagnetic Engineering and Technology, School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, China, People's Republic of	8:50am - 9:15am Evaluation of Offline Partial Discharge in Vacuum Environments H. W Penrose¹, M. B Dreisilker² 1: MotorDoc LLC, United States of America; 2: Dreisilker Electric Motors, Inc., United States of America
		9:15am - 9:40am Research on arc non-thermal equilibrium characteristics using chromaticity information from a visible digital image Y. Wang, Q. Ye, Z. Guo Huazhong University of Science & Technology, China, People's Republic of	8:50am - 9:15am Evaluation of Offline Partial Discharge in Vacuum Environments H. W Penrose¹, M. B Dreisilker² 1: MotorDoc LLC, United States of America; 2: Dreisilker Electric Motors, Inc., United States of America
			9:15am - 9:40am Detection of Partial Discharges Occurring in Propulsion Coils of Superconducting Maglev Systems Using a Radio Interferometer System with a Vector-Antenna Mounted on a Test Bogie M. Kawada¹, R. Ikeda², M. Aiba², K. Watanabe², M. Suzuki³ 1: Tokushima University, Japan; 2: Railway Technical Research Institute; 3: TESS Co., Ltd.
9:40am -	COM-T1: Megger Location: Imperial Ballroom 4	COM-T2: Dynamic Ratings Location: Imperial Ballroom 6	COM-T3: ELANTAS PDG, Inc. Location: Imperial Ballroom 8
9:55am -	EXT1: Exhibition Location: Imperial Ballrooms 5, 7, 9	CBT1: Coffee Break - T1 Location: Grand Foyer 3 & 4	
10:20am			

10:20am - 12:00pm	<p>TR4: TR - Thermal Characteristics and Analysis - Oil Filled Location: Imperial Ballroom 4 Chair: Paul Lewin</p> <p>10:20am - 10:45am Effect of Nanofibrillated Cellulose Doping on Properties of Oil Immersed Insulating Paper during Thermal Aging Y. Mo, R. Liao, L. Yang, Y. Yuan ChongQing University, China, People's Republic of</p>	<p>NA1: Nanodielectrics Location: Imperial Ballroom 6 Chair: Roman Kochetov</p> <p>10:20am - 10:45am Estimation of Interphase Permittivity and Interphase Thickness in Epoxy based Nanocomposites using Electrostatic Force Microscopy A. Sharma, S. Basu, N. Gupta IIT Kanpur, India</p>	<p>RM5: Rotating Machine Insulation Testing Location: Imperial Ballroom 8 Chair: Alfredo Contin</p> <p>10:20am - 10:45am Impulse Voltage-based Test Method for Identifying the Stator Insulation Component with PD Activity for Low Voltage AC Motors S. B. Lee¹, A. Naeini², S. Jayaram², G. Stone³, M. Sasic³ 1: Korea University, Korea, Republic of (South Korea); 2: University of Waterloo; 3: Iris Power - Qulaitrol</p>
	<p>10:45am - 11:10am Rapid analytical method for elemental sulphur detection in power transformer insulation S. B. Garcia¹, R. C. D. Brown¹, G. J. Langley¹, P. Birkin¹, J. Pilgrim², P. Lewin², G. Wilson³ 1: School of Chemistry, University of Southampton, United Kingdom; 2: Tony Davies High Voltage Laboratory, University of Southampton; 3: National Grid House, Warwick Technology Park</p>	<p>10:45am - 11:10am Influence of Metal oxide and Metalloid Nano Particles on the Dielectric Response of HVDC Cable Nano Dielectric N. R. BURJUPATI CENTRAL POWER RESEARCH INSTITUTE, India</p>	<p>10:45am - 11:10am Dielectric response analysis as tool to assess the mechanical deterioration of VPI insulation C. Staubach¹, S. Meissner¹, A. Cimino² 1: University of Applied Sciene Hannover, Germany; 2: TU Dortmund, Germany</p>
	<p>11:10am - 11:35am Influence of Oil Duct Variation on Thermal Characteristics of Converter Transformer Winding C. Liu¹, J. Hao¹, R. Zou¹, Z. Li² 1: State Key Laboratory of Power Transmission Equipment & System Security and New Technology, Chongqing University, China; 2: Baoding Tianwei Baobian Electric CO.LTD, Baoding, China</p>		<p>11:10am - 11:35am Compatibility of Mica Binder Resins with Medium and High Voltage Impregnation Resins T. T. Nguyen ELANTAS PDG, Inc., United States of America</p>
12:00pm - 2:00pm	<p>EXT2: Exhibition Location: Imperial Ballrooms 5, 7, 9</p>	<p>LT: Lunch - Tues Location: Grand Foyer 4 Chair: Kevin Alewine</p>	<p>11:35am - 12:00pm Synthesis of Experiences using Resistive Temperature Detectors (RTD) as PD Sensors for Detecting and Locating Electrical Defects inside Generator Stator Windings R. Kuppuswamy¹, S. Rainey² 1: Dynamic Ratings; 2: North California Power Agency (NCPA)</p>
2:00pm - 3:40pm	<p>CA2: Cables - Materials Location: Imperial Ballroom 4 Chair: Ali Naderian Jahromi</p> <p>2:00pm - 2:25pm Additive effect on dielectric spectrum of crosslinked polyethylene used in nuclear power plant cables S. V. Suraci, D. Fabiani, C. Li DEI - University of Bologna, Italy</p> <p>2:25pm - 2:50pm</p>	<p>OI2: OI - Transmission Lines, Insulators, and Protection Location: Imperial Ballroom 6 Chair: Richard Cselko</p> <p>2:00pm - 2:25pm Statistical Significance of Wavelet Extracted Features in the Condition Monitoring of Ceramic Outdoor Insulators A. S. Haiba^{1,2}, A. Gad¹, S. M. Eldebeiky¹, M. Halawa² 1: Ain Shams University, Cairo, Egypt; 2: National Institute of Standards, Giza, Egypt</p>	<p>RM6: Rotating Machine Partial Discharge Optical Location: Imperial Ballroom 8 Chair: Stan Gubanski</p> <p>2:00pm - 2:25pm Improvements in the Identification of Defects on the Semiconducting Slot Coating of Stator Bars Using Partial Discharges F. PEREIRA¹, H. TATIZAWA², M. ZANOTTI² 1: VOITH HYDRO LTDA, Brazil; 2: Instituto de Energia e Ambiente da Universidade de São Paulo</p>

	<p>High Resolution Chemical Analysis of Electrical Trees through AFM-IR Spectroscopy <u>H. McDonald</u>, S. Morsch, S. Rowland The University of Manchester, United Kingdom</p>	<p>2:25pm - 2:50pm Electrical Performance of HTV Silicone Rubber under Different Fillers and Filler Loadings <u>S. ILHAN</u>, D. TUZUN, A. OZDEMIR Istanbul Technical University, Turkey</p>	<p>2:25pm - 2:50pm Thermal Imaging for Rapid Noninvasive On-site Insulation Diagnostics <u>S. L. Morrison</u>, J. Kluss, L. Cagle, J. Ball, S. Bryan Mississippi State University, United States of America</p>
	<p>2:50pm - 3:15pm Off-line and Simulated On-line PD Tests on Thermally Aged MV Cable Joints <u>A. Contin</u>¹, J. Borghetto², G. Pirovano³, C. Tornelli⁴ 1: University of Trieste, Italy; 2: R.S.E. Milano, Italy; 3: R.S.E. Milano, Italy; 4: R.S.E. Milano, Italy</p>	<p>2:50pm - 3:15pm CFD Simulation of a High Voltage Circuit Breaker Coupled with a Mechanical Operating Mechanism <u>M. T. Dhotre</u>, F. Agostini, S. Kotilainen ABB Switzerland Ltd, Switzerland</p>	<p>2:50pm - 3:15pm UHF Measurement of Partial Discharge on Stator Bars Using Patch Antennas <u>M. Partyka</u>^{1,2}, G. E. Bridges¹, W. McDerimid², T. Black², B. Kordi¹ 1: University of Manitoba, Winnipeg, Manitoba, Canada; 2: Manitoba Hydro, Winnipeg, Manitoba, Canada</p>
	<p>3:15pm - 3:40pm A Modified Measuring Technique Based on the Isothermal Relaxation Current Measurement Used for Power Cable <u>X. Zhu</u>¹, J. Wu¹, X. Zheng², Q. Bao³, C. Zhang³, Y. Yin¹ 1: Department of Electrical Engineering, School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, China; 2: Zhoushan Power Supply Company, Zhejiang Electric Power Corporation of State Grid, China; 3: Wuxi Jiangnan Cable Co., Ltd, China</p>		<p>3:15pm - 3:40pm Scanning Individual Stator Bars and Coils with an Antenna to Detect Localized Partial Discharges <u>C. Hudon</u>, É. Cloutier-Rioux, H. Provencher Hydro-Quebec IREQ, Canada</p>
3:40pm - 3:55pm	<p>COM-T4: Omicron Location: Imperial Ballroom 4</p>	<p>COM-T5: Astro Chemical Company Location: Imperial Ballroom 6</p>	<p>COM-T6: Phenix Technologies, Inc. Location: Imperial Ballroom 8</p>
3:55pm - 4:15pm	<p>CBT2: Coffee Break - T2 Location: Grand Foyer 3 & 4</p>		
4:15pm - 5:05pm	<p>CP1: Capacitors - Analysis of Degradation Location: Imperial Ballroom 4 Chair: William (Bill) McDermid</p> <p>4:15pm - 4:40pm A High Voltage Capacitor Element Model <u>C. Mackinnon</u>, B. Stewart University of Strathclyde, Glasgow, Scotland</p>	<p>CA4: Cables - Partial Discharge Testing Location: Imperial Ballroom 6 Chair: Gian Carlo Montanari</p> <p>4:15pm - 4:40pm Diagnostic Testing of Power Cable Insulation For Reliable Smart Grid Operation <u>S. Morsalin</u>, A. Sahoo, B. Phung The University of New South Wales, Australia</p> <p>4:40pm - 5:05pm Study on Location Accuracy of Partial Discharge Locator <u>K. Yamashita</u>¹, T. Miyake¹, T. Sakoda¹, W. Kawano² 1: University of Miyazaki, Japan; 2: Nishi Nippon Electric Wire & Cable Co., Ltd</p>	<p>RM7: Rotating Machine Detection and Testing Location: Imperial Ballroom 8 Chair: Anna Gegenava</p> <p>4:15pm - 4:40pm Characteristics of the Partial Discharge-induced Current along Epoxy resin film under Superimposed AC-DC Voltage <u>T. Zhuang</u>¹, X. Gao¹, M. Ren¹, S. Wang¹, J. Huang² 1: Xi'an Jiaotong University, China, People's Republic of; 2: Electric Science Research Institute of Guizhou Power Grid Co.,Ltd</p> <p>4:40pm - 5:05pm Automated identification of insulation faults using Electro Magnetic Interference methods <u>J. Slater</u>¹, I. Mitiche¹, A. Nesbitt¹, G. Morison¹, P. Boreham²</p>

1: Glasgow Caledonian University, United Kingdom; 2: Doble Engineering, United Kingdom

6:00pm
-
7:00pm

Reception: Reception
Location: **Grand Foyer 2**
Chair: **Kevin Alewine**

7:00pm
-
9:00pm

Banquet: Banquet
Location: **Imperial Ballrooms 1, 2, 3**
Chair: **Kevin Alewine**

Date: Wednesday, 19/Jun/2019

7:00am -	ABW: Author Breakfast Location: Neilson 1 Chair: David McKinnon	GBW: General Breakfast Location: Imperial Ballrooms 1, 2, 3
8:00am -	CA3: Cables - Partial Discharge Location: Imperial Ballroom 4 Chair: Sayidul Morsalin	PD2: PD - Inverters Location: Imperial Ballroom 6 Chair: Andrea Cavallini
8:00am -	8:00am - 8:25am Adding nanofillers in polymeric insulating materials: so far so good? The case of polypropylene for DC cables G. C. Montanari^{1,2}, P. Seri¹, H. Naderiallaf¹, A. Blume³, W. Dierkes³, G. Perego⁴, C. Mazel⁴, M. Paajanen⁵, M. Karttunen⁵ 1: DEI, University of Bologna, Italy; 2: CEM, University of Texas, Austin, Texas; 3: Department of Mechanics of Solids, Surfaces & Systems, University of Twente, The Netherlands; 4: Nexans Research Center, France; 5: VTT Technical Research Centre of Finland Ltd, Finland	8:00am - 8:25am Partial Discharge Behaviors in Power Module under Very High Dv/dt Repetitive Square Voltages H. You, Z. Wei, M. Aldawsari, B. Hu, R. Na, J. Wang The Ohio State University, United States of America
9:15am -	8:25am - 8:50am Towards a Hybrid Power Cable Health Index for Medium Voltage Power Cable Condition Monitoring J. I. Aizpurua¹, B. G. Stewart¹, S. D. J. McArthur¹, N. Jajware², M. Kearns³ 1: University of Strathclyde, Glasgow, United Kingdom; 2: Bruce Power, Kincardine, Canada; 3: EDF Energy, Glasgow, UK	8:25am - 8:50am Partial Discharge Behavior on Twisted Pair under Ultra-short Rise Time Square-wave Excitations Z. Wei, H. You, B. Hu, J. Wang The Ohio State University, United States of America
9:15am -	8:50am - 9:15am Gas-Insulated High Temperature Superconducting Coaxial Dipole for MVDC Power Systems P. Cheetham^{1,2}, C. Park³, S. Satyanarayana¹, C. Kim¹, L. Graber³, S. Pamidi^{1,2} 1: Florida State University's Center for Advanced Power Systems, United States of America; 2: FAMU-FSU College of Engineering, United States of America; 3: Georgia Institute of Technology, United States of America	8:50am - 9:15am Study of partial discharge detection in motors fed by SiC-MOSFET and Si-IGBT inverters R. Acheen^{1,2,3}, C. Abadie¹, T. Lebey², S. Duchesne³ 1: IRT Saint-Exupéry, Toulouse, France; 2: LAPLACE, Université de Toulouse, CNRS, Toulouse, France; 3: Laboratoire Systèmes Électrotechniques et Environnement, Université d'Artois, Béthune, France
9:40am -	SS-MTG: Student Stipend Meeting Location: Grand Foyer 1 Chair: Nancy Frost Students Please Note! Students who have been granted a stipend will need to meet with staff representative (Dr. Nancy Frost) personally on Wednesday morning (6/19/19) at 9:15am at the registration desk (Grand Foyer 1) in order to complete the paperwork for the stipend. Please bring your id! Students who do not show up, will not receive a stipend!	CBW1: Coffee Break - W1 Location: Grand Foyer 3 & 4
9:40am -	TT2: TT - Partial Discharge Location: Imperial Ballroom 4 Chair: Ashfak Shaikh	
10:30am -	PD3: PD - Inverters Location: Imperial Ballroom 6 Chair: Zeeshan Ahmed	
9:40am -	9:40am - 10:05am About the relevance of using Paschen's criterion for partial discharges inception voltage (PDIV) estimation when designing the electrical insulation system of inverter fed motors P. COLLIN, D. MALEC, Y. LEFEVRE LAPLACE, France	
10:55am	10:05am - 10:30am The Ohio State University Partial Discharge Detection Platform for Electric Machine Windings Driven by PWM Voltage Excitation H. Xiong, R. Liu, B. Hu, H. You, Z. Wei, J. Zhang, J. Wang	

The Ohio State University, United States of America

10:30am - 10:55am

Noise Rejection and Partial Discharge Identification in PDIV Tests of Insulated Wires Under Repetitive Impulse Supply Voltage

G. C. Montanari^{1,2}, P. Seri¹, R. Ghosh¹

1: DEI, University of Bologna, Italy; 2: CEM, University of Texas, Austin, Texas

10:55am **EOC: End of Conference**

Location: **Grand Foyer 4**

12:00pm **NOTE: Anyone interested in attending the IEEE Working Group Meetings after the conference can attend the meetings without paying a fee! The full schedule of Working Group Meetings is shown below.**

12:00pm **WG-P97: "Diagnostic Test Methods for AC Electric Machinery using Direct Voltage"**

Location: **Bannerman/Walker**

12:45pm Chair: **Laurent Lamarre**

Laurent Lamarre, Doug Conley, Tyler Gaerke

12:30pm **EICBOG: EIC Board of Governors Meeting**

Location: **BOG Meetings - Stephen A&B**

4:00pm

12:45pm **WG-286: "Measurement of Power Factor Tip-Up of Electric Machinery Stator Coil Insulation"**

Location: **Bannerman/Walker**

1:30pm Chair: **Douglas Conley**

Doug Conley, Jim Lau

1:30pm **WG-1434: "Measurement of Partial Discharges in AC Electric Machinery"**

Location: **Bannerman/Walker**

2:30pm Chair: **William (Bill) McDermid**

Bill McDermid

2:30pm **WG-P2465: "Pulse-type Partial Discharge Measurements on Individual Stator Coils and Bars"**

Location: **Bannerman/Walker**

3:30pm Chair: **William (Bill) McDermid**

Bill McDermid

3:30pm **WG-Break: WG - Coffee Break**

Location: **Bannerman/Walker**

3:45pm

3:45pm **WG-P522: "Testing Turn Insulation of Form-Wound Stator Coils for AC Electric Machines"**

Location: **Bannerman/Walker**

5:45pm Chair: **Paul Gaberson**

Paul Gaberson, Kevin Alewine

5:45pm **WG-P1719: "Evaluating Stator Cores of AC Electric Machines Rated 1 MVA and Higher"**

Location: **Bannerman/Walker**

6:30pm Glenn Mottershead, Stefano Bomben, Aleksandra Jeremic

Date: Thursday, 20/Jun/2019

- 8:00am** **WG-1799: “Quality Control Testing of External Discharges on Stator Coils, Bars and Windings”**
- Location: **Bannerman/Walker**
9:00am Chair: **Claude Hudon**
Claude Hudon
- 9:00am** **WG-1043: “Voltage Endurance Testing of Form-Wound Bars and Coils”**
- Location: **Bannerman/Walker**
10:00am Chair: **Reza Soltani**
Reza Soltani
- 10:00am** **WG-1776: “Thermal Evaluation of Unsealed or Sealed Insulation Systems for AC Electric Machinery Employing Form-Wound Pre-Insulated Stator Coils for Machines Rated 15 kV and Below”**
- Location: **Bannerman/Walker**
11:00am Chair: **William Chen**
William Chen, Kevin Alewine
- 11:00am** **WG-P433: “Insulation Testing of Large AC Rotating Machinery with High Voltage at Very Low Frequency”**
- Location: **Bannerman/Walker**
12:00pm Chair: **Ashfak Shaikh**
Ashfak Shaikh, Aleksandra Jeremic
- 12:00pm** **WG2-Lunch: WG2-Lunch**
- Location: **Bannerman/Walker**
- 12:30pm** **WG-DGTF: Dissection Guide Task Force Nancy Frost, Charles Millet, Andy Brown**
- Location: **Bannerman/Walker**
1:30pm Chair: **Nancy Frost**
- 1:30pm** **WG-P1553: “Standard for Voltage Endurance Testing of Found-Wound Coils and Bars for Hydrogenerators”**
- Location: **Bannerman/Walker**
3:30pm Chair: **Hugh Zhu**
Hugh Zhu, Aleksandra Jeremic
- 3:30pm** **WG2-Break: WG2 - Coffee Break**
- Location: **Bannerman/Walker**
- 3:45pm** **WG-62.2: “Diagnostic Field Testing of Electric Power Apparatus – Electrical Machinery”**
- Location: **Bannerman/Walker**
4:45pm Jim Lau, Doug Conley
- 4:45pm** **WG-MSC: Material Subcommittee Meeting (MSC)**
- Location: **Bannerman/Walker**
5:30pm Chair: **Tyler Gaerke**