

uhvnet

Fifth UHVnet Colloquium

January 18th – 19th 2012

Leicester, UK

uhvnet

Welcome to the fifth UHVnet colloquium hosted by the University of Leicester on the 18th and 19th January 2012. Previous UHVnet events have been hosted by University of Southampton, Cardiff University, Glasgow Caledonian University and the University of Manchester. This meeting will take place at Engineering Building and consists of a registration, training workshops and a poster session on the Wednesday. The second day of the event will consist of oral presentations and the poster session covering the following four topic areas; High Voltage Plant, Condition Monitoring, Materials and Theories, Methods and Models. Each oral session will have 5 oral presentations by early career researchers and postgraduates.

UHVnet is an informal grouping of universities and was set up in 2005 to further interests of high voltage research within the United Kingdom. The university members are Cardiff University, Glasgow Caledonian University, University of Liverpool, University of Leicester, University of Manchester, University of Southampton, University of Strathclyde and the University of Surrey. These universities are supported by a steering group which includes industrial representation from the Areva T&D Technology Centre, PPA Energy, National Grid and Narec.

Specific objectives of the group include raising awareness of the researcher capabilities of group members to UK high-voltage related industry, particularly manufacturers and electricity supply companies and lobbying research funding organisations for ear-marked high-voltage related programs.

We would be delighted to receive any feedback about this event as we are keen to further improve our communication with both UK and overseas stakeholders. Future events will be listed on our website and we hope to see you again.

UHVnet Colloquium 2012

Programme of Events: Wednesday 18th January 2012

Training Workshops for PhD Students, Room LT2, Engineering Building:

- 12:00 – 14:00** Registration. (Lunch available at various places on campus)
- 14:00** Partial discharge measurements and interpretation (Dr. Stephen Dodd)
- 14:30** Space Charge Measurements and Interpretation (Prof. John Fothergill)
- 15:00** Dielectric properties of materials and interpretation (Prof. Len Dissado)
- 15:30** Laboratory Tour
- 16:00** Poster Session – end 17:00 (Engineering Building Mezzanine)
- 17:00** UHVNet Steering Group Meeting, Head of Department's Office, Room 603, Engineering Building

Technical Programme: Thursday 19th January 2012, Room LT2, Engineering Building.

- 9:30** Coffee and Registration
- 10:00** Introduction to UHVNet
- 10:10** Industrial invited talk – Damien Culley, National Grid, Future of HVDC
- 11:00** Oral session 1
- 12:30** Lunch (Various eating places on campus and nearby) + Poster session (continued) remove posters 13:45.
- 14:00** Academic invited talk – Prof. Alun Vaughan, University of Southampton, Nano-materials
- 14:40** Oral session 2
- 16:10** Finish (tea and coffee available)

Venue: Engineering Building
University of Leicester
University Road
Leicester
LE1 7RH

INDUSTRIAL INVITED TALK

The Future of HVDC in the UK, *D. Culley and P. Coventry*, National Grid

ORAL SESSION 1

- 1.1. FPGA Based Remote Monitoring of 11kV Networks, *S. Robson, M. Haddad and H. Griffiths*, Cardiff University
- 1.2. Towards Phase-Resolved Partial Discharge Diagnostics in Wireless Sensor Networks, *P. C. Baker, M. D. Judd, I. Kerr and C. Johnstone*, University of Strathclyde
- 1.3. Implementing HFCTs in FDTD Modelling of Partial Discharge Detection in Power Distribution Cables, *X. Hu, M. D. Judd, W. H. Siew*, University of Strathclyde
- 1.4. Temperature Measurement of Low-Current Discharges Based on N₂ (2+) Molecular Emission Spectra, *A. Xiao, S. M. Rowland and X. Tu*, University of Manchester
- 1.5. Compact Air Insulated Substations under Surge Conditions, *M. Albano, A.Haddad, H.Griffiths and P. Coventry*, Cardiff University

ACADEMIC INVITED TALK

Nanodielectrics: Opportunities and challenges, *A. S Vaughan*, University of Southampton

ORAL SESSION 2

- 2.1. Polyethylene Nanocomposites - A Solution Blending Approach, *K. Y. Lau, A. S. Vaughan, G. Chen and I. L. Hosier*, University of Southampton
- 2.2. Comparative Study of PD Characteristics and Degradation of PET Insulation with Self-Contained Void and Void with a Vented Channel, *D. Adhikari, D. M. Hepburn and B. G. Stewart*, Glasgow Caledonian University
- 2.3. Experimental Investigation on Bridge Formation in Contaminated Transformer Oil, *S. Mahmud, G. Chen, I. Golosnoy, G. Wilson and P. Jarman*, University of Southampton
- 2.4. Transformer Oil Passivation and Impact of Corrosive Sulphur, *P. S. Amaro, J. A. Pilgrim, P. L. Lewin, R. C. D. Brown and G. Wilson*, University of Southampton
- 2.5. Dielectric Characterisation of Palm Kernel Oil-based Alkyl Ester Dielectric Fluid, *A. A. Abdelmalik, J. C. Fothergill and S. J. Dodd*, University of Leicester

POSTERS

A. HV Insulation Systems: Conventional, Composite and Novel Systems

- A1. Energy Harvesting in Substations for Autonomous Sensing, *M. D. Judd, P. Baker, N. M. Roscoe and M. Zhu*, University of Strathclyde
- A2. Lightning Protection of Wind Turbine Blades - An Alternative Approach, *A. S. Ayub, W. H. Siew and S. J. MacGregor*, University of Strathclyde
- A3. Effective Size of Grounding Grid under Lightning Impulse, *F. Hanaffi, W. H. Siew and I.V. Timoshkin*, University of Strathclyde
- A4. Applications of Liquid Crystals in Intelligent Insulation, *A. F. Holt, R. C. D. Brown, P. L. Lewin, A. S. Vaughan and P. Lang*, University of Southampton
- A5. Future Gas Insulation Lines for Transmission Networks, *K. H. Elnaddab, A. Haddad and H. Griffiths*, Cardiff University
- A6. Material Tests for Textured Silicone Rubber Samples, *P.Charalampidis, R.T.Waters, A.Haddad, H.Griffiths, N.Harid and P.Sarkar*, Cardiff University
- A7. CF₃I as an Alternative to SF₆ in Gas Insulated Switchgear, *P. Widger, A. Haddad and H. Griffiths*, Cardiff University

B. Dielectric Materials: Measurements and Interpretation

- B1. Applicability of Kramers-Kronig Transform in the Case of Low Frequency Dispersion, *S. J. Dodd, N. M. Chalashkanov and J. C. Fothergill*, University of Leicester
- B2. Electrode Effect in New Mineral Oil Studied by Dielectric Spectroscopy, *Y. Zhou, M. Hao, G. Chen, G. Wilson and P. Jarman*, University of Southampton

C. High Voltage Plant: Condition Monitoring, Assessment and Diagnostics

- C1. Versatile HVDC Cable Ageing Evaluation Facility, *C. D. Green, S. J. Dodd, J. C. Fothergill, M. Fu, F. Perrot, R. Critchley*, University of Leicester
- C2. Error Sources in Partial Discharge Location in Cables using Time Domain Reflectometry, *F. P. Mohamed, W. H. Siew, J. J. Soraghan S.S. Strachan and J. McWilliam*, University of Strathclyde
- C3. Measurement of Leakage Current at the Oil-Pressboard Interface during Surface Discharge, *H. Zainuddin, P. L. Lewin and P. M. Mitchinson*, University of Southampton
- C4. Measurements of PRPD, RFI and Current Pulse Signals for Negative Corona Discharge in Air, *D. J. Smith, S. G. McMeekin, B. G. Stewart, P. A. Wallace and A. Nesbitt*, Glasgow Caledonian University
- C5. Partial Discharge Pattern Classification of Artificially Created Voids in Polyethylene-Terephthalate, *A. Abubakar Mas'ud, B. G. Stewart, S.G.McMeekin and A. Nesbitt*, Glasgow Caledonian University

- C6. Switching Transients in AC Networks used to Connect Offshore Wind Farms, *F. Moore, A. Haddad, H. Griffiths and M. Osborne*, Cardiff University
- C7. Earth Surface Potential in the Vicinity of Transmission Tower under Low Frequency and Transient Analysis, *M. Ahmeda, N. Harid, H. Griffiths and A. Haddad*, Cardiff University
- C8. Testing of High Voltage Radio Frequency Systems, *M. G. Walden, P. Berkhout, P. Cork, and S. H. W. Simpson*, Roke Manor Research Ltd.

D. Theory and Models: Partial Discharge, Insulation Ageing and Degradation

- D1. DC Breakdown Mechanisms of Polymeric Insulation for HVDC Cable, *H. Zheng, S. J. Dodd, J. C. Fothergill*, University of Leicester
- D2. Simulated and Measured Frequency Responses of Disk-Type UHF Partial Discharge Sensors, *A. M. Ishak, M. D. Judd and W. H. Siew*, University of Strathclyde
- D3. An Investigation of Thermal Ratings for High Voltage Cable Crossings Through the Use of 3D Finite Element Analysis, *Z. Y. Huang, J. A. Pilgrim and P. L. Lewin*, University of Southampton
- D4. Modelling the Streamer Process in Liquid Dielectrics, *C. Jiang, P. Lewin and W. Sima*, University of Southampton
- D5. Degradation Processes of Voids in Silicone Rubber under Applied AC Fields, *T. Bai and P.L. Lewin*, University of Southampton
- D6. Mathematical Modelling on Bridge Formation in Contaminated Transformer Oil, *S. Mahmud, I. Golosnoy, G. Chen, G. Wilson and P. Jarman*, University of Southampton
- D7. Partial Discharge Simulation for a High Voltage Transformer Winding using a Model Based on Geometrical Dimensions, *M.S. Abd Rahman, L. Hao, P. Rapisard and P.L. Lewin*, University of Southampton
- D8. Two Dimensional Numerical Model to Predict the Thermal-Chemical Degradation to a Piece of Carbon Fibre Composite (CFC) Due to Laser Ablation, *R. D. Chippendale, I. O. Golosnoy and P. L. Lewin*, University of Southampton
- D9. Partial Discharge Degradation of Mica, *J. Paterson, A. J. Shields and D. M. Hepburn*, Glasgow Caledonian University