

2019

List of Publications



Dr Martin Judd

High Frequency Diagnostics
& Engineering Ltd

April 2019

Dr Martin Judd – Journal Papers & Book Chapters

2019

- X Hu, W H Siew, M D Judd, A J Reid and B Sheng, “Modeling of High Frequency Current Transformer Based Partial Discharge Detection in High Voltage Cables”, accepted paper, IEEE Trans. Power Delivery, 2019
- X Peng, F Yang, G Wang, Y Wu, L Li, Z Li, A A Bhatti, C Zhou, D M Hepburn, A J Reid, M D Judd and W H Siew, “A Convolutional Neural Network Based Deep Learning Methodology for Recognition of Partial Discharge Patterns from High Voltage Cables”, early access paper, IEEE Trans. Power Delivery, March 2019

2018

- E Corr, A Reid, X Hu, W H Siew, M Zhu, M Judd, M Seltzer-Grant and R Giussani, “Partial Discharge Testing of Defects in Dielectric Insulation under DC and Voltage Ripple Conditions”, CIGRE Science & Engineering Journal, No. 11, pp. 117-125, June 2018
- D Upton, B Saeed, P Mather, M Sibley, P Lazaridis, K Mistry, I Glover, F T Filho, C Tachtatzis, R C Atkinson and M D Judd, “Low Power Radiometric Partial Discharge Sensor using Composite Transistor-Reset Integrator”, IEEE Trans. Dielectrics and Electrical Insulation, Vol. 25, No. 3, pp. 984-992, June 2018
- D W Upton, B I Saeed, P J Mather, P I Lazaridis, M F Q Vieira, R C Atkinson, C Tachtatzis, M S Garcia, M D Judd and I A Glover, “Wireless Sensor Network for Radiometric Detection and Assessment of Partial Discharge in High-Voltage Equipment”, Radio Science, Vol. 53, pp. 357-364, March 2018

2017

- A A Jaber, P I Lazaridis, M Moradzadeh, I A Glover, Z D Zaharis, M F Q Vieira, M D Judd, R C Atkinson, “Calibration of free-space radiometric partial discharge measurements”, IEEE Trans. Dielectrics and Electrical Insulation, Vol. 24, No. 5, pp. 3004-3014, October 2017
- X Hu, W H Siew, M D Judd and X Peng, “Transfer Function Characterization for HFCTs used in Partial Discharge Detection”, IEEE Trans. Dielectrics and Electrical Insulation, Vol. 24, No. 2, pp. 1088-1096, April 2017
- J B Gillespie, M Maclean, M J Given, M P Wilson, M D Judd, I V Timoshkin and S J MacGregor, “Efficacy of pulsed 405-nm LEDs for antimicrobial photodynamic inactivation: effects of intensity, frequency and duty cycle”, Photomedicine and Laser Surgery, Vol. 35, No. 3, pp. 150-156, March 2017
- X Peng, J Wen, Z Li, G Yang, C Zhou, A Reid, D M Hepburn, M D Judd and W H Siew, “Rough set theory applied to pattern recognition of partial discharge in noise affected cable data”, IEEE Trans. Dielectrics and Electrical Insulation, Vol. 24, No. 1, pp. 147-156, February 2017
- X Peng, J Wen, Z Li, G Yang, C Zhou, A Reid, D M Hepburn, M D Judd and W H Siew, “SDMF based interference rejection and PD interpretation for simulated defects in HV cable diagnostics”, IEEE Trans. Dielectrics and Electrical Insulation, Vol. 24, No. 1, pp. 83-91, February 2017
- A M Ishak, M T Ishak, M T Jusoh, S F Syed Dardin and M D Judd, “Design and optimization of UHF partial discharge sensors using FDTD modeling”, IEEE Sensors Journal, Vol. 17, No. 1, pp. 127-133, January 2017

2016

- S G Koutoula, I V Timoshkin, M D Judd, S J MacGregor, M P Wilson, M J Given, T Wang and E I Harrison, “A Study of Energy Partition During Arc Initiation”, IEEE Trans. Plasma Science, Vol. 44, No. 10, pp. 2137-2144, October 2016
- Y Jiang, S G McMeekin, A J Reid, A Nekahi, M D Judd and A Wilson, “Monitoring contamination level on insulator materials under dry condition with a microwave reflectometer”, IEEE Trans. Dielectrics and Electrical Insulation, Vol. 23, No. 3, pp. 1427-1434, June 2016
- Y Jiang, S G McMeekin, A J Reid, A Nekahi, M D Judd and A Wilson, “Feasibility study on application of microwave radiometry to monitor contamination level on insulator materials”, IEEE Trans. Dielectrics and Electrical Insulation, Vol. 23, No. 2, pp. 1012-1020, April 2016

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- P Michalis, A Tarantino, C Tachtatzis and M D Judd, “Wireless monitoring of scour and re-deposited sediment evolution at foundation elements based on soil electromagnetic properties”, *Smart Materials and Structures (IoP)*, Vol. 24, No. 12, December 2015
- Y Zhang, D Upton, A Jaber, H Ahmed, B Saeed, P Mather, P Lazaridis, A Mopty, C Tachtatzis, R Atkinson, M Judd, M Queiroz Vieira and I Glover, “Radiometric Wireless Sensor Network Monitoring of Partial Discharge Sources in Electrical Substations”, *International Journal of Distributed Sensor Networks*, Vol. 11, No. 9, pp. 1-9, September 2015
- R M Harris, M D Judd, P J Moore and J Livie, “Radiometric Detection and Analysis of Arcing Faults”, *IEEE Trans. Dielectrics and Electrical Insulation*, Vol. 22, No. 3, pp. 1547-1558, June 2015

2014

- L Truong, P Lewin and M Judd, “Characterization of streamers in liquid nitrogen under AC voltages using UHF techniques”, *IEEE Trans. Dielectrics and Electrical Insulation*, Vol. 21, No. 3, pp. 1109-1118, June 2014

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- M D Judd, “Partial discharge detection and location in transformers using UHF techniques”, Chapter 13 in *Electromagnetic transients in transformer and rotating machine windings*, C Q Su (ed.), IGI Global, pp. 487-520, 2013
- N M Roscoe and M D Judd, “Optimization of Voltage Doublers for Energy Harvesting Applications”, *IEEE Sensors Journal*, Vol. 13, No. 12, pp. 4904-4911, December 2013
- P Michalis, M Saafi and M D Judd, “Capacitive Sensors for Offshore Scour Monitoring”, *Proc. Inst. Civil Engineers (ICE) – Energy*, Vol. 166, No. 4, pp. 189-197, November 2013
- A M Ishak, P Baker, W H Siew and M D Judd, “Characterizing the Sensitivity of UHF Partial Discharge Sensors using FDTD Modelling”, *IEEE Sensors Journal*, Vol. 13, No. 8, pp. 3025-3031, August 2013
- B Stephen, P Baker and M D Judd, “Compositional Modelling of Partial Discharge Pulse Spectral Characteristics”, *IEEE Trans. Instrumentation and Measurement*, Vol. 62, No. 7, pp. 1909-1916, July 2013
- X Peng, C Zhou, D M Hepburn, M D Judd and W H Siew, “Application of K-Means method to pattern recognition in on-line cable partial discharge monitoring”, *IEEE Trans. Dielectrics and Electrical Insulation*, Vol. 20, No. 3, pp. 754-761, June 2013
- N M Roscoe and M D Judd, “Harvesting Energy from Magnetic Fields to Power Condition Monitoring Sensors”, *IEEE Sensors Journal*, Vol. 13, No. 6, pp. 2263-2270, June 2013
- A J Reid, M D Judd, W H Siew, C Zhou, D Hepburn and P Withers, “Fault Location and Diagnosis in a Medium Voltage EPR Power Cable”, *IEEE Trans. Dielectrics and Electrical Insulation*, Vol. 20, No. 1, pp. 10-18, February 2013

2012

- G Fusiek, P Niewczas and M D Judd, “Towards the Development of a Downhole Optical Voltage Sensor for Monitoring Electrical Submersible Pumps”, *Sensors & Actuators A: Physical*, No. 184, pp. 173-181, September 2012
- A J Reid and M D Judd, “Ultra Wide Bandwidth Measurement of Partial Discharge Current Pulses in SF₆”, *Journal of Physics D: Applied Physics*, Vol. 45, No. 16, 2012
- B Musa, W Siew, M Judd, T Wang and Q Li, “Time and Frequency Characterisation of Transients because of Switching in 400 kV Air-Insulated Substations: Bus Bar Currents”, *IET Generation, Transmission & Distribution*, Vol. 6, No. 5, pp. 417-423, May 2012

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- A J Reid, M D Judd, R A Fouracre, B G Stewart and D M Hepburn, “Identification of Simultaneously Active Partial Discharge Sources using Combined RF and IEC60270 Measurement”, *IET Science, Measurement and Technology*, Vol. 5, No. 3, pp. 102-108, May 2011

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- A Reid, M Judd, T Fouracre, B Stewart and D Hepburn, "Simultaneous Measurement of Partial Discharges using IEC60270 and Radio-Frequency Techniques", IEEE Trans. Dielectrics and Electrical Insulation, Vol. 18, No. 2, pp. 444-455, April 2011

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- T Pinpart and M D Judd, "Differentiating between partial discharge sources using envelope comparison of UHF signals", IET Science, Measurement and Technology, Vol. 4, No. 5, pp. 256-267, September 2010
- B U Musa, M D Judd and W H Siew, "Computation of Transient Electromagnetic Fields due to Switching in High Voltage Substations", IEEE Trans. Power Delivery, Vol. 25, No. 2, pp. 1154-1161, February 2010
- S Rudd, S D J McArthur and M D Judd, "A Generic Knowledge-Based Approach to the Analysis of Partial Discharge Data", IEEE Trans. Dielectrics and Electrical Insulation, Vol. 17, No. 1, pp. 149-156, February 2010
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2000 - 2009

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- V M Catterson, S D J McArthur, M D Judd and A Zaher, "Managing Remote On-line Partial Discharge Data", IEEE Trans. Power Delivery, Vol. 23, No. 4, pp. 1754-1762, October 2008
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- G P Cleary and M D Judd, "UHF and current pulse measurements of partial discharge activity in mineral oil", IEE Proc. Science, Measurement and Technology, Vol. 153, No. 2, pp. 47-54, March 2006
- M Dong, Z Yan, L Yang and M D Judd, "Evidential reasoning approach to transformer fault diagnosis", Proc. Chinese Society of Electrical Engineering (Zhongguo Dianji Gongcheng Xuebao), Vol. 26, No. 1, pp. 106-114, January 2006
- M Dong, Z Yan, L Yang and M D Judd, "Fault diagnosis model for power transformers based on information fusion", Measurement Science and Technology, Vol. 16, No. 7, pp. 1517-1524, July 2005
- M D Judd, L Yang and I B B Hunter, "Partial discharge monitoring for power transformers using UHF sensors Part 2: Field Experience", IEEE Insulation Magazine, Vol. 21, No. 3, pp. 5-13, May/June 2005
- M D Judd, L Yang and I B B Hunter, "Partial discharge monitoring for power transformers using UHF sensors Part 1: Sensors and signal interpretation", IEEE Insulation Magazine, Vol. 21, No. 2, pp. 5-14, March/April 2005
- M D Judd, O Farish, B F Hampton and J S Pearson, "SF6 insulation systems and their monitoring", Chapter 2 in *Advances in High Voltage Engineering*, A Haddad and D Warne (eds.), The Institution of Electrical Engineers, London, pp. 37-76, 2004

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- L Yang and M D Judd, "Recognising multiple partial discharge sources in power transformers by wavelet analysis of UHF signals", IEE Proc. Science, Measurement and Technology, Vol. 150, No. 3, pp. 119-127, May 2003 (Kelvin Premium)
- M D Judd, S D J McArthur, J R McDonald and O Farish, "Intelligent condition monitoring and asset management: Partial discharge monitoring for power transformers", IEE Power Engineering Journal, Vol. 16, No. 6, pp. 297-304, December 2002
- M D Judd, G P Cleary, C J Bennoch, "Applying UHF partial discharge detection to power transformers", Power Engineering Letters (IEEE Power Engineering Review), Vol. 22, Issue 8, pp. 57-59, August 2002
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- M D Judd, "Contact discharges as a source of sub-nanosecond high voltage pulses", Journal of Physics D: Applied Physics, Vol. 34, No. 18, pp. 2883-2893, September 2001

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- W Boeck, B F Hampton, M D Judd, et. al., "Partial discharge detection system for GIS: Sensitivity verification for the UHF method and the acoustic method", Electra (CIGRE), No. 183, pp. 74-87, April 1999
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- J S Pearson, O Farish, B F Hampton, M D Judd, D Templeton, B M Pryor and I M Welch, "Partial discharge diagnostics for gas insulated substations", IEEE Trans. Dielectrics and Electrical Insulation, Vol. 2, No. 5, pp. 893-905, October 1995
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Dr Martin Judd – Conference Papers and Presentations

2018

- M Siegel, S Coenen and M Judd, “UHF PD Sensor Characterisation using GTEM Cells”, Proc. VDE High Voltage Technology 2018, ETG-Symposium (VDE-Fachtagung Hochspannungstechnik) (Berlin), November 2018
- M D Judd, “Measurement challenges in partial discharge diagnostics of high voltage insulation systems”, Keynote Presentation, 53rd International Universities Power Engineering Conference (UPEC), (Glasgow), September 2018
- D W Upton, R P Haigh, B I Saeed, U Khan, H Mohamed, K Mistry, P J Mather, P I Lazaridis, F T Filho, C Tachtatzis, R Atkinson, M Judd and I A Glover, “Low Power High-Speed Folding ADC based Partial Discharge Sensor for Wireless Fault Detection in Substations”, Proc. 2nd URSI Atlantic Radio Science Meeting (AT-RASC) (Gran Canaria), May 2018
- B I Saeed, D W Upton, M F Q Vieira, F Torres, H Mohamed, K Mistry, P J Mather, P Lazaridis, U Khan, C Tachtatzis, R Atkinson, M Judd and I A Glover, “A Supervisory System for Partial Discharge Monitoring”, Proc. 2nd URSI Atlantic Radio Science Meeting (AT-RASC) (Gran Canaria), May 2018

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- M D Judd and I B B Hunter, “Condition Assessment Facilities for Transformers”, Proc. Euro TechCon (Glasgow, UK), November 2017

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- A Jaber, P Lazaridis, Y Zhang, B Saeed, U Khan, D Upton, H Ahmed, P Mather, M F Q Vieira, R Atkinson, M Judd, R Seviour and I Glover, “Validation of Partial Discharge Emulators Simulation using Free-Space Radiometric Measurements”, Int. Conf. for Students on Applied Engineering (Newcastle, UK), October 2016
- A Jaber, P Lazaridis, B Saeed, Y Zhang, U Khan, D Upton, H Ahmed, P Mather, R Atkinson, M Judd, M F Q Vieira and I Glover, “Assessment of effective radiated power of the partial discharge emulator source”, WiSats - 8th EAI Int. Conf. on Wireless and Satellite Systems (Cardiff, UK), September 2016
- A Jaber, P Lazaridis, B Saeed, Y Zhang, U Khan, D Upton, H Ahmed, P Mather, M F Q Vieira, R Atkinson, M Judd and I A Glover, “Comparative study of Partial Discharge emulators for the calibration of Free-Space radiometric measurements”, 22nd Int. Conf. on Automation and Computing (Colchester, UK), pp. 313-316, September 2016
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- Y Jiang, S G McMeekin, A J Reid, A Nekahi, M D Judd and A Wilson, “High voltage insulator contamination level online monitoring with conventional and novel methods”, IEEE Electrical Insulation Conference (Montreal, Canada), pp. 206-209, June 2016
- S G Koutoula, I V Timoshkin, M D Judd, S J MacGregor, M P Wilson, M J Given, T Wang and E I Harrison, “Transient arcing process: Energy components and associated risks”, UHVnet Colloquium (Cardiff, UK), January 2016

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- M Judd, W H Siew, X Hu, E Corr, M Zhu, A Reid, O El Mountassir, M Urizarbarrena Cristobal, R Giusani and M Seltzer-Grant, “Partial Discharges under HVDC Conditions”, Proc. Euro TechCon (Stratford-upon-Avon, UK), December 2015
- A Jaber, P Lazaridis, Y Zhang, D Upton, H Ahmed, U Khan, B Saeed, P Mather, R Atkinson, M Judd, M F Q Vieira and I A Glover, “Comparison of Contact Measurement and Free-Space Radiation

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Measurement of Partial Discharge Signals”, Proc. 21st International Conference on Automation and Computing, (Glasgow, UK), September 2015

- A J Reid, W H Siew, E Corr, M Zhu, X Hu, M Seltzer-Grant, R Giussani, M D Judd and O El-Mountassir, “Investigating the Effects of VSC Harmonic Content on PD Characteristics in HVDC Insulation Systems”, EPRI HVDC & FACTS Conference, August 2015
- Y Jiang, S G McMeekin, A J Reid, A Nekahi, M D Judd and A Wilson, “Monitoring Insulator Contamination Level under Dry Condition with a Microwave Reflectometer”, Proc. IEEE 11th International Conference on the Properties and Applications of Dielectric Materials (ICPADM), (Sydney, Australia), July 2015
- Y Jiang, S G McMeekin, A J Reid, A Nekahi, M D Judd and A Wilson, “Design of a Microwave Radiometer for Monitoring High Voltage Insulator Contamination Level”, Proc. IEEE Electrical Insulation Conference, (Seattle, USA), pp. 189-192, June 2015
- Y Jiang, A Reid, A Nekahi, S G McMeekin, M Judd and A Wilson, “High Voltage Insulator Contamination Level Monitoring With X-Band Microwave Radiometer”, Proc. 23rd International Conference on Electricity Distribution (CIRED), (Lyon, France), Paper 1010, June 2015
- M Seltzer-Grant, R Giussani, W H Siew, E Corr, X Hu, M Zhu, M Judd, A Reid, A Neumann and J Awodola, “Laboratory and Field Partial Discharge Measurement in HVDC Power”, Proc. 9th International Conference on Insulated Power Cables (Jicable'15, Versailles), June 2015
- S G Koutoula, M D Judd, I V Timoshkin and E I Harrison, “Investigating ways to Prevent Electrical Arc Flash”, Proc. 12th Petroleum and Chemical Industry Conference (PCIC) Europe, (London, UK), pp. 90-97, June 2015
- S G Koutoula, I V Timoshkin, Nina M Roscoe, M D Judd and E I Harrison, “An Investigation into the Spark Resistance”, UHVnet Colloquium, (Stafford, UK), January 2015

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- M Judd, “Developments in UHF PD Monitoring Technology for Power Transformers”, Proc. Euro TechCon (Stratford-upon-Avon, UK), December 2014
- N H Aziz, V M Catterson, M D Judd, S M Rowland and S Bahadoorsingh, “Prognostic Modeling for Electrical Treeing in Solid Insulation using Pulse Sequence Analysis”, Proc. 2014 IEEE Conference on Electrical Insulation and Dielectric Phenomena (CEIDP), (Des Moines, USA), pp. 373-376, Oct 2014
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- P Michalis, M D Judd and A Tarantino, “Real-time Monitoring of Scour and Sedimentation Evolution with a New Developed Prototype Sensor”, Proc. 12th International Conference on Protection and Restoration of the Environment, (Skiathos Island, Greece), June 2014
- J M R de Souza Neto, J S Da Rocha Neto, E C T de Macedo, I A Glover and M D Judd, “An Envelope Detector as a Trading Cost Technique for Radiometric Partial Discharge Detection”, Proc. IEEE International Instrumentation and Measurement Technology Conference (I2MTC), (Montevideo, Uruguay), pp. 1584-1589, May 2014
- P Michalis, A Tarantino and M D Judd, “Electromagnetic Sensors for Monitoring of Scour and Deposition Processes at Bridges and Offshore Wind Turbines”, European Geosciences Union, General Assembly 2014, (Vienna, Italy), Geophysical Research Abstracts, Vol. 16, April 2014
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- J M R de Souza Neto, E C T de Macedo, J S Da Rocha Neto, M F Queiroz Vieira, I A Glover, M D Judd, R Atkinson and J Soraghan, “Plausibility of Incoherent Detection for Radiometric Monitoring of Insulation

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Integrity in HV Substations”, Proc. Antennas and Propagation Conference (LAPC), (Loughborough, UK), pp. 494-499, November 2013

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- A M Ishak, M D Judd and W H Siew, “Validating the Response of UHF Partial Discharge Sensor using FDTD Method”, Proc. 33rd Conference on Progress In Electromagnetics Research Symposium (PIERS), (Taipei, Taiwan), March 2013
- N H Aziz, M D Judd and V M Catterson, “Generating PD Data from Electrical Treeing in Silicone Rubber for Insulation Lifetime Modelling”, UHVnet Colloquium, (Glasgow, UK), January 2013

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- I A Glover, J M R de Souza Neto, S A Bhatti, J S Da Rocha Neto, M F Vieira, R Atkinson, M Judd and J J Soraghan, “Radio Science and Wireless Communications for the Smart Grid”, Invited paper, Proc. 5th International Conference on Computers and Devices for Communication (CODEC), (Kolkata, India), December 2012
- M Judd, M Zhu and N Roscoe, “Powering Sensors through Energy Harvesting”, Euro TechCon (Glasgow, UK), November 2012
- L H Truong, P L Lewin and M D Judd, “Partial Discharge Measurements of Streamers in Liquid Nitrogen Under AC Voltages Using UHF Sensor”, Proc. 2012 IEEE Conference on Electrical Insulation and Dielectric Phenomena (CEIDP), (Montreal, Canada), pp. 68-71, October 2012
- M Zhu, N M Roscoe and M D Judd, “Energy Harvesting in Substations for Autonomous Sensing”, EuroDoble Colloquium (Manchester, UK), October 2012
- P Michalis, M Saafi and Judd M D, “Integrated Wireless Sensing Technology for Surveillance and Monitoring of Bridge Scour”, Proc. 6th International Conference on Scour and Erosion, (Paris, France), pp. 395-402, August 2012
- P Michalis, M Saafi and Judd M D, “Wireless Sensor Networks for Surveillance and Monitoring of Bridge Scour”, Proc. 11th International Conference of Protection and Restoration of the Environment, (Thessaloniki, Greece), pp. 1345-1354, June 2012
- X Hu, A J Reid, W H Siew, and M D Judd, “FDTD Modeling of Fast Transient Currents in High Voltage Cables”, Proc. IEEE International Power Modulator and High Voltage Conference, (IPMHVC), (San Diego, USA), pp. 256 – 259, June 2012
- R M Harris, X Hu, M D Judd, and P Moore, "Detection and Location of Arcing Faults in Distribution Networks Using a Non-Contact Approach", Proc. IEEE International Power Modulator and High Voltage Conference, (IPMHVC), (San Diego, USA), pp. 583-586, June 2012
- A M Ishak, M D Judd, W H Siew and P C Baker, "Evaluation of FDTD Modelling as a Tool for Predicting the Response of UHF Partial Discharge Sensors", Proc. IEEE International Symposium on Electrical Insulation (ISEI), (San Juan, Puerto Rico), pp. 502-506, June 2012
- A J Reid, M D Judd and G Duncan, "Simultaneous Measurement of Partial Discharge Using TEV, IEC60270 and UHF Techniques", Proc. IEEE International Symposium on Electrical Insulation (ISEI), (San Juan, Puerto Rico), pp. 439-442, June 2012
- A Reid, X Hu, M D Judd and W H Siew, "Defect Investigation in Medium-Voltage EPR Cable", Proc. IEEE International Symposium on Electrical Insulation (ISEI), (San Juan, Puerto Rico), pp. 323-326, June 2012
- P C Baker, M D Judd, I Kerr and C Johnstone, “Towards Phase-Resolved Partial Discharge Diagnostics in Wireless Sensor Networks Proc. 5th Universities High Voltage Network (UHVnet) Colloquium (Leicester, UK), January 2012
- A M Ishak, W H Siew and M D Judd, “Simulated and Measured Frequency Responses of Disk-Type UHF Partial Discharge Sensors”, Proc. 5th Universities High Voltage Network (UHVnet) Colloquium (Leicester, UK), January 2012
- X Hu, W H Siew and M D Judd, “Implementing HFCTs in FDTD Modelling of Partial Discharge Detection in Power Distribution Cables”, Proc. 5th Universities High Voltage Network (UHVnet) Colloquium (Leicester, UK), January 2012

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- P C Baker, N M Roscoe, M Zhu and M D Judd, "Energy Harvesting in Substations for Autonomous Sensing", Proc. 5th Universities High Voltage Network (UHVnet) Colloquium (Leicester, UK), January 2012

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