

IEEE TRANSACTIONS on DIELECTRICS and Electrical Insulation

June 2019

Volume 26

Number 3

ITDEIS

(ISSN 1070-9878)

POLYMERIC MATERIALS FOR HVDC INSULATION

EDITORIAL

Polymeric Materials for HVDC Insulation	B. X. Du and G. Refat	673
---	-----------------------	-----

Comparisons of Different Polypropylene Copolymers as Potential Recyclable HVDC Cable Insulation Materials	P. Meng, Y. Zhou, C. Yuan, Q. Li, J. Liu, H. Wang, J. Hu and J. He	674–680
Study on Nonlinear Conductivity of Copper-Titanate-Calcium/Liquid Silicone Rubber Composites	Q.-G. Chi, Z. Li, T.-D. Zhang and C.-H. Zhang	681–688
Relationship Between the Interfacial Ramped DC Breakdown Voltage and the Morphology of the XLPE/SiR Interface	B. Zhu, Z. Jia, H. Hu, X. Ouyang and X. Wang	689–697
Classified Effects of Nanofillers on DC Breakdown and Partial Discharge Resistance of Polypropylene/Alumina Nanocomposites	D. Xie, D. Min, Y. Huang, S. Li, M. T. Nazir and B. T. Phung	698–705
Surface Coating Affecting Charge Distribution and Flashover Voltage of Cone-type Insulator under DC Stress	B. X. Du, H. C. Liang and J. Li	706–713
Effect of β -Crystals on the Mechanical and Electrical Properties of β -Nucleated Isotactic Polypropylene.....	W. Zhang, M. Xu, K. Huang, Q. Mu and G. Chen	714–721
High-Performance Insulation Materials from Poly(ether imide)/Boron Nitride Nanosheets with Enhanced DC Breakdown Strength and Thermal Stability	H. Li, Z. Xie, L. Liu, Z. Peng, Q. Ding, L. Ren, D. Ai, W. Reainthippayasakul, Y. Huang and Q. Wang	722–729
DC Breakdown and Flashover Characteristic of Direct Fluorinated Epoxy/ Al_2O_3 Nanocomposites	F. Wang, T. Zhang, J. Li, K. M. Zeeshan, L. He, Z. Huang and Y. He	730–737
Relationship Between Space Charge Behavior and Trap Energy Density Distribution: A Simultaneous Measurement.....	Y. Wang, J. Wu and Y. Yin	738–745
Method of Selecting Step Stress Test Parameters for XLPE Insulation DC Voltage Endurance Coefficient	H.-R. Bian, L.-J. Yang, R.-Y. Yao, Z.-P. Ma, Z.-X. Li, X.-E. Wang and Y. Yuan	746–753
Temperature Dependence of Crystalline Structure and DC Performance in LLDPE/HDPE Blending Material	K. Zhang, L. Zhong, J. Gao, L. Li, L. Cao and G. Chen	754–759
Trap Characteristics of Zeolite/LDPE Nanocomposites Investigated by Difference Method	B. Han, X. Gao, J. Wang, X. Lv and X. Wang	760–767
Surface Charge Decay for Epoxy Resin Treated by AP-DBD Deposition and Direct Fluorination	C. Zhang, Y. Ma, F. Kong, R. Wang, C. Ren and T. Shao	768–775
Nonlinear Conductivity and Charge Transport Characteristics of Silicone Rubber/SiC Composites under Impulse Superimposed on DC Voltage	B. X. Du, Z. R. Yang, Z. L. Li and J. Li	776–783
Electrothermal Aging Characteristics of Epoxy Resin under Bipolar Exponential Decay Pulse Voltage and Its Insulation Life Evaluation Based on Cole-Cole Model.....	Y. Mi, L. Liu, S. Deng and L. Gui	784–791
Effect of Thermal Ageing on Space Charge of Ethylene Propylene Rubber at DC Voltage	R. Men, Z. Lei, J. Song, Y. Li, L. Lin, M. Tian, D. Fabiani and X. Xu	792–800
Interfacial E-Field Self-Regulating Insulator Considered for DC GIL Application.....	B. X. Du, H. C. Liang and J. Li	801–809
Temperature-Dependent Charge Property of Silicone Rubber/SiC Composites under Lightning Impulse Superimposed DC Voltage	B. X. Du, Z. R. Yang, Z. L. Li and J. Li	810–817
Novel Insulator with Interfacial σ -FGM for DC Compact Gaseous Insulated Pipeline	B. X. Du, Z. Y. Ran, J. Li and H. C. Liang	818–825
Numerical Analysis on Space Charge and AC-DC Combined Breakdown Strength in Polyethylene.....	S. Zhang, Z. Peng, C. Zhou and G. Chen	826–834
Multiphysics Coupled Modelling in HVDC GILs: Critical Re-Examination on Ion Mobility Selection	Z. Zhang, B. Deng, C. Li, Q. Li, Z. Zhang and W. Yan	835–842
Space Charge Behavior in Silicone Rubber from In-Service Aged HVDC Composite Insulators	C. Yuan, C. Xie, L. Li, X. Xu, S. M. Gubanski, Y. Zhou, Q. Li and J. He	843–850
Polyethylene Blends with/without Graphene for Potential Recyclable HVDC Cable Insulation	X. Chen, C. Jiang, Y. Hou, C. Dai, L. Yu, Z. Wei, H. Zhou and Y. Tanaka	851–858
Magnetic Field Induced Variation in Surface Charge Accumulation Behavior on Epoxy/ Al_2O_3 Nanocomposites under DC Stress	Y. Gao, Z. Li, M. Wang and B. Du	859–867
Effect of Multi-Dimensional Zinc Oxide on Electrical Properties of Polypropylene Nanocomposites for HVDC Cables	J.-W. Zha, Q.-Q. Qin and Z.-M. Dang	868–875
Temperature Dependent Space Charge and Breakdown Strength of PP/ULDPE/Graphene Nanocomposites for HVDC Extruded Cable Insulation.....	B. X. Du, Z. H. Hou, Z. L. Li and J. Li	876–884
REGULAR PAPERS		
High Electrical Reliability Glass-Polymer Laminates	M. Yuan, R. Rajagopalan, M. Lanagan and S. Zhang	885–889
The Dielectric Effect of Xylene on an Organoclay-Containing Composite	A. V. Shaw, A. S. Vaughan and T. Andritsch	890–897
Correspondence between Phase Resolved Partial Discharge Patterns and Corona Discharge Modes.....	Z. Wu, Q. Zhang, Z. Pei and H. Ni	898–903
Characterization of the Frequency Dependence of the Electrical Properties of Sandy Soil with Variable Grain Size and Water Content.....	Z. G. Datsios and P. N. Mikropoulos	904–912

IEEE TRANSACTIONS on DIELECTRICS and Electrical Insulation

June 2019

Volume 26

Number 3

ITDEIS

(ISSN 1070-9878)

(CONTINUED)

Cavities in Mass-Impregnated HVDC Subsea Cables Studied by AC Partial Discharge Measurements	<i>M. Runde, O. Kvien, H. Förster and N. Magnusson</i>	913–921
Influence of Conductor Surface Roughness on Insulation Performance of C ₄ F ₇ N/CO ₂ Mixed Gas	<i>Y. Zheng, W. Zhou, H. Li, X. Yan, Z. Li, W. Chen and K. Bian</i>	922–929
Optimization of a Superconducting Gas-Insulated Transmission Line.....	<i>P. Cheetham, C. H. Kim, S. Pamidi and L. Gruber</i>	930–938
State-of-the-Art Review on the Performance of Cellulosic Dielectric Materials in Power Transformers: Mechanical Response and Ageing	<i>C. Oria, A. Ortiz, D. Ferreño, I. Carrascal and I. Fernández</i>	939–954
Slow Current Induced by Partial Discharge in Kapton, Epoxy and PET.....	<i>T. Zhuang, M. Ren, J. Xie, C. Zhang, R. Duan and M. Dong</i>	955–963
The Insulation of HVDC Extruded Cable System Joints. Part 1: Review of Materials, Design and Testing Procedures	<i>G. Mazzanti, J. Castellon, G. Chen, J. C. Fothergill, M. Fu, N. Hozumi, J. H. Lee, J. Li, M. Marzinotto, F. Mauseth, P. Morshuis, C. Reed, I. Troia, A. Tzimas and K. Wu</i>	964–972
The Insulation of HVDC Extruded Cable System Joints. Part 2: Proposal of a New AC Voltage PD Measurement Protocol for Quality Control during Routine Tests	<i>G. Mazzanti, J. Castellon, G. Chen, J. C. Fothergill, M. Fu, N. Hozumi, J. H. Lee, J. Li, M. Marzinotto, F. Mauseth, P. Morshuis, C. Reed, I. Troia, A. Tzimas and K. Wu</i>	973–980
Numerical Modeling of Partial Discharges in a Solid Dielectric-Bounded Cavity: A Review.....	<i>C. Pan, G. Chen, J. Tang and K. Wu</i>	981–1000
Experimental Study of Oil-Paper Insulation under Combined Thermal Stress and Corona Discharge.....	<i>S. Lan, M. Huang, Y. Zhang and Y. Yuan</i>	1001–1008
The Role of the Filler Surface Chemistry on the Dielectric and Thermal Properties of Polypropylene Aluminium Nitride Nanocomposites	<i>X. Wang, T. Andritsch, G. Chen and S. Virtanen</i>	1009–1017
Modeling of Dielectric Dissipation Factor Measurement for XLPE Cable Based on Davidson-Cole Model	<i>S. Morsalin and B. T. Phung</i>	1018–1026
Degradation Behavior and Aging Mechanism of Decay-like Fractured GRP Rod in Composite Insulator.....	<i>Z. Yuan, Y. Tu, Y. Zhao, H. Jiang and C. Wang</i>	1027–1034