

# IEEE TRANSACTIONS on DIELECTRICS and Electrical Insulation

February 2020

Volume 27

Number 1

ITDEIS

(ISSN 1070-9878)

Flashover Characteristics on Polypropylene Films in SF <sub>6</sub> Using Nanosecond Pulses .....	Z. Chen, W. Jia, F. Guo, S. Ji, L. Xie and W. Wu	1–9
Simulation and Design of 500 kV DC Cable Terminal Accessory Based on ZnO Varistor Microsphere Composites .....	X. Zhao, P. Meng, J. Hu, Q. Li and J. He	10–16
Electrical Conduction in Dielectric Elastomer Transducers .....	S. Hammami, A. Sylvestre, F. Jomni and C. Jean-Mistral	17–25
Effect of AC-Voltage Harmonics on Oil Impregnated Paper in Transformer Bushings .....	S. Li, L. Yang, S. Li, Y. Zhu, H. Cui, W. Yan, Z. Ge and A. Abu-Siada	26–32
Electric Field Calculation and Optimization for Stress Cone of DC Cable Joint based on the Coaxial Double-Layer Insulation Model .....	J. Yu, X. Chen and H. Zhou	33–41
Research on the Electrical Aging Characteristics of Oil-Impregnated Pressboard under Partial Discharges .....	Y. Li, K. Zhou, Z. R. Li and Q. G. Zhang	42–48
Determination of the Spatial Impulse Response of Compensating Electrostatic Voltmeters .....	J.-M. Löwe, J. Engelhardt, M. Secklehner and V. Hinrichsen	49–57
Dielectric Response Study of Service-Aged XLPE Cable Based on Polarisation and Depolarisation Current Method .....	S. Morsalin and B. T. Phung	58–66
Space Charge Dynamics of Acetophenone and Cumyl Alcohol and Their Synergistic Effect in LDPE .....	M. Chen, H. Zhang, Y. Wang, J. Wu and Y. Yin	67–75
Streamer Characteristics of PEEK Surface in Nitrogen Driven by Positive Repetitive Pulse Voltage .....	P. Fu, Z. Zhao, X. Tang, X. Li, X. Cui, S. Mo, T. Wen and Z. Yang	76–84
Comparative Study on Direct Fluorination and Surface Properties of Alumina-Filled and Unfilled Epoxy Insulators .....	Z. An, W. Chen, K. Chen, W. Gao, Z. Shen, Y. Yang, F. Liu, X. Liu, Z. Zhang, W. Yang and Z. Xing	85–93
Electrical Tree Reconstruction Method for Oil-Impregnated Pressboards Based on the Inverse Problem for the Electrostatic Field .....	Y. Cheng, B. Duan and F. Li	94–102
Breakdown and Streamer Behavior in Double-Layer Oil-Paper Insulation under Impulses of Varying Front Time .....	H. Ni, Q. Zhang, C. Guo and T. Wen	103–111
Temperature and Electric Field Distributions Along a Form Wound Coil of an Inverter-Fed Rotating Machine with Micro-Varistor Stress Grading System .....	A. Naeini, E. A. Cherney and S. H. Jayaram	112–120
Electric Field Distribution Based on Radial Nonuniform Conductivity in HVDC XLPE Cable Insulation .....	H. Ren, L. Zhong, X. Yang, W. Li, J. Gao, Q. Yu, X. Chen and Z. Li	121–127
Space Charge Characteristics of XLPE and Semiconductive Layer Coated with Graphene .....	Z. Lei, D. Fabiani, F. Palmieri, C. Li, T. Han, G. Selleri, F. Grolli, M. Speranza and S. V. Suraci	128–131
Improved Physical Model of Electrical Lifetime Estimation for Crosslinked Polyethylene AC Cable .....	H. Bian, L. Yang, Z. Ma, B. Deng, H. Zhang and Z. Wu	132–139
Partial Discharge Behavior of Protrusion on High Voltage Conductor in GIS/GIL under High Voltage Direct Current: Comparison of SF <sub>6</sub> and SF <sub>6</sub> Alternative Gases .....	C. Toigo, T. Vu-Cong, F. Jacquier and A. Girodet	140–147
Characterization of Partial Discharges from a Protrusion in HVDC Coaxial Geometry .....	E. Ouss, A. Beroual, A. Girodet, G. Ortiz, L. Zavattoni and T. Vu-Cong	148–155
Phase-Space Joint Resolved PD Characteristics of Defects on Insulator Surface in GIS .....	Z. Wu, B. Lyu, Q. Zhang, L. Liu and J. Zhao	156–163
Influence of Material Volume Conductivity on Electric Field and Surface Charge of RIP Valve-Side Bushing Core under DC Electro-Thermal Coupling Stress .....	M. Chen, X. Liu, Y. Sun, Z. Wu and H. Tang	164–171
X-Ray Testing of High-Voltage Oil-Filled Electrical Equipment: Physical Background and Technical Requirements .....	L. A. Darian, P. V. Golubev, R. M. Obratsov, E. P. Grabchak, R. R. Gimaev, O. V. Ozerov, R. V. Kovalev-Serebryakov and V. I. Zverev	172–180
Insulation Properties of C <sub>4</sub> F <sub>7</sub> N/CO <sub>2</sub> Mixtures under Lightning Impulse .....	T. Zhang, W. Zhou, J. Yu and Z. Yu	181–188
The Effect of Multilayer Dielectrics on Electrical Characteristics of Thin Film Capacitors for High Energy Density Application .....	S. Akbari and M. Freeman	189–196
Epoxy Insulator with Surface Graded-Permittivity by Magnetron Sputtering for Gas-Insulated Line .....	B. X. Du, Z. H. Wang, J. Li, H. C. Liang and Z. Li	197–205
Corona Characteristics of Aerial Conductors under Switching Impulse Voltages .....	Y. Sun, A. Montenegro and T. Tobin	206–213
Partial Discharge Inception Voltage of Voids Enclosed in Epoxy/Mica versus Voltage Frequency and Temperature .....	T. G. Aakre, E. Ildstad and S. Hvidsten	214–221
Optimal Ratio Limits of Rogers' Four-Ratios and IEC 60599 Code Methods Using Particle Swarm Optimization Fuzzy-Logic Approach .....	J. B. M. Taha, A. Hoballah and S. S. M. Ghoneim	222–230
Novel Spacer Coated with Functionally Graded ZnO Film for HVDC Gas Insulated Line .....	B. X. Du, H. C. Liang and J. Li	231–239
Partial Discharge Characteristics of Oil-Paper Insulation for On-Board Traction Transformers Under Superposed Inter-Harmonic AC Voltages .....	X. Li, G. Wu, Y. Yang, Z. Wang, P. Xu, Y. Li and B. Gao	240–248
Effect of Hydrated Fillers in Silicone Rubber Composites during the AC and DC Dry-Band Arcing .....	R. A. Ghunem, D. Koné, L. Cissé, Y. Hadjadj, H. Parks and D. Ambroise	249–256
Surface Charge Pattern Analysis Based on the Field-Dependent Charging Theory: A Review .....	Q. Li, H. Naderiallaf, Z. Lei, Y. Wang, P. Liu, L. Zhang, Z. Wang and Z. Zhang	257–269
Temperature Gradient Dependence on Electrical Tree in Epoxy Resin with Harmonic Superimposed DC Voltage .....	B. X. Du, M. Tian, J. G. Su and T. Han	270–278
Condition Prediction for Oil-Immersed Cellulose Insulation in Field Transformer Using Fitting Fingerprint Database .....	J. Liu, X. Fan, Y. Zhang, H. Zheng and C. Zhang	279–287
On the Influence of Chemical Defects and Structural Factors on Charge Transport and Failure in Polyethylene .....	S. Tantipattarakul, A. S. Vaughan and T. Andritsch	288–295

# IEEE TRANSACTIONS on DIELECTRICS and Electrical Insulation

February 2020

Volume 27

Number 1

ITDEIS

(ISSN 1070-9878)

**(CONTINUED)**

Influence of Vulcanization Factors on UV-A Resistance of Silicone Rubber for Outdoor Insulators.....	<i>Y. Lin, F. Yin, Y. Liu, L. Wang and K. Wu</i>	296–304
Combined Geometrical Techniques and Applying Nonlinear Field Dependent Conductivity Layers to Address the High Electric Field Stress Issue in High Voltage High-Density Wide Bandgap Power Modules.....	<i>M. M. Tousi and M. Ghassemi</i>	305–313
Low Frequency Dielectric Properties Related to Structure of Cotton Fabrics .....	<i>Y. Mukai, E. C. Dickey and M. Suh</i>	314–321
Positive Synergy of SF <sub>6</sub> and HFO1234(E) .....	<i>A. Hösl, J. Pachin, E. Egüz, A. Chachereau and C. M. Franck</i>	322–324
Experimental and Numerical Analysis of Cellulosic Insulation Failures of Continuously Transposed Conductors under Short Circuits and Thermal Ageing in Power Transformers ....	<i>C. Oriá, I. Carrascal, A. Ortiz, I. Fernández, D. Ferreño, R. Afshar and K. Gamstedt</i>	325–333