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THE CONTROL MECHANISM OF NANO SIO2/EPOXY COMPOSITE COATING ON SURFACE CHARGE IN EPOXY RESIN

Youping Tu, Sichen Qin, Fuwen Zhou, Xin Ai and Cong Wang
NCEPU, China

Charge accumulation on the surface of epoxy resin affects its insulation performance under DC voltage. In order to investigate the effect of surface coating on surface charge accumulation, epoxy resin was coated by nano SiO2/epoxy composite, and the charge accumulation on the surface was studied by an electrostatic probe. The surface trap parameters were analysed by isothermal surface potential decay, and combining with the carrier mobility, the transport characteristics of surface charge and the control mechanism of coating were studied. The results suggest that the surface charge mainly accumulates near the electrodes, the main source of charge was injected from the electrodes. The surface charges near the anode were mainly caused by charge trapping, and the surface charges near the cathode were mainly caused by the adsorption due to the normal electric field. Surface charge accumulation could be suppressed by increasing the shallow trap density and carrier mobility on the surface of material, which could be achieved by coating with nano SiO2/ epoxy composite. It was found that, surface charge of epoxy resin could be suppressed effectively by coating of nano SiO2 particles with content of 3 wt %

Biography

Youping Tu has received her BSc and MSc degrees from the Department of Electrical Engineering, Chongqing University in Chongqing, China, respectively in 1988, and in 1991. Currently, she is a Professor in the Department of Electrical Engineering at North China Electric Power University in Beijing, China. From 1991 to 1994, she worked in the Computer Application field in Hangzhou Heat Power Plant, Zhejiang Province, China. During 1994, she was a Research Assistant in the Department of Precision Instrument and Mechanics, Tsinghua University in Beijing, China. From 1994 to 1995, she worked in Ludao Company in Beijing, China. She was a Lecturer from 1995 to 2003, and an Associate Professor from 2004 to 2010 in the Department of Electrical Engineering at North China Electric Power University in Beijing, China. Her research interest includes insulation technology, overvoltage and protection for power system. She is the author of more than 100 technical papers

typ@ncepu.edu.cn