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Analysis of Corona-Aging Silicone rubber Material with LIBS

HTV insulators are widely used in electric power system for their excellent anti-pollution flashover performance. HTV material will gradually age due to ultravilot radiation, oxidation, corrosion of acid and alkali, corona, and so on. In this paper we use laser induced breakdown spectroscopy (LIBS) to study the difference between aging HTV used in transmission lines and artificial corona aging HTV material. The result of scanning electron microscopy (SEM) shows obvious aging phenomenon in artificial aging samples in accord with samples cut from used insulators. We studied the thickness of samples'aging layer with both SEM and LIBS which indicated the aging velocity of corona influence. And the characteristics of the laser ablation plasma was also measured in this study. The result shows that LIBS can be used to quantitatively analysis the aging degree of aged HTV material.

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