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Study of the Silicone Rubber Used at the External Insulation of High Voltage with Laser-induced Breakdown spectroscopy (LIBS)

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RTV coatings and composite insulators had been widely used in electric insulations to prevent pollution flashover. Many methods of materials analysis were used to get more information about the content, the elements components, and the structures such as IR spectrum, XPS, EDS and XRD.

Laser-induced breakdown spectroscopy (LIBS) was an effective technique, unlike other conventional surface analysis techniques which require cumbersome sample preparation. LIBS measurements can be performed under ambient conditions, with no sample preparation and measurements can be taken in times on the order of one second.

In this paper, we show that the LIBS with a nanosecond pulse laser can be used to measure the elements content of the silicone rubber composites. The plasma properties of the silicone rubber was investigated. Several elements of the compositions in silicone rubber was found such as C, O, Si, Mg, Al and so on. And also we found that the depth of the laser ablation was linear relationship with laser pulses.

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