

## **Chemical Analysis of a Field-Failed Composite Suspension Insulator**

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### **Abstract**

The purpose of this research is to establish the type of corrosive environment responsible for brittle fracture of suspension composite insulators. A series of Fourier transform infrared spectroscopy (FTIR) experiments has been performed to identify chemical functionalities formed during the degradation process of composite insulators affected by brittle fracture. It has been shown that the brittle fracture process is caused by the formation of nitric acid either outside or inside an insulator leading to the stress corrosion cracking of the glass/polymer composite rod material. Nitrate has been detected on the composite fracture surfaces inside a 115kV suspension composite insulator which failed in service by brittle fracture.