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Title:Study on molecular behavior in oxidation of insulating oil using terahertz spectroscopy

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Abstract:The number of aged power equipment increases and it is important to clarify the characteristics of deteriorated insulating oil. This paper describes the basic study on molecular behavior in oxidation process of insulating oil by terahertz spectroscopy. The oxidation process of insulating oil was modeled by using various compositions of dodecane and 2-octanol. From the terahertz measurements, the absorption related to hydroxyl groups (-OH) was significantly observed between 6 and 7 THz. The absorption band was also observed in accelerated aging alkylbenzene used in power equipments as insulating oil, and sensitive to hydrogen bonds.

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