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标题: Quantitative Analysis for Monitoring Formulation of Lubricating Oil Using Terahertz Time-Domain Transmission Spectroscopy
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摘要: The quantitative analysis of zinc isopropyl-isooctyl-dithiophosphate (T204) mixed with lube base oil from Korea with viscosity index 70 (T204-Korea70) is presented by using terahertz time-domain spectroscopy (THz-TDS). Compared with the middle-infrared spectra of zinc n-butyl-isooctyl-dithiophosphate (T202) and T204, THz spectra of T202 and T204 show the weak broad absorption bands. Then, the absorption coefficients of the T204-Korea70 system follow Beer's law at the concentration from 0.124 to 4.024%. The experimental absorption spectra of T204-Korea70 agree with the calculated ones based on the standard absorption coefficients of T204 and Korea70. The quantitative analysis enables a strategy to monitor the formulation of lubricating oil in real time.
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