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Abstract:The frequency-dependent absorption characteristics of diesels with different sulfur content have been studied in the spectral range of 0.2-1.5 THz by the terahertz time-domain spectroscopy (THz-TDS). The absorption coefficient presented a regular change with the THz frequency and sulfur content, and the absorption coefficient increases with the frequency at the same concentration, vice versa. A nonlinear multivariate model was established and the sulfur content in diesel can be confirmed easily by means of the measured THz frequency-dependent absorption coefficient. The results made the quantitative analysis of sulfur content in diesel possible by THz-TDS technology and indicated the bright future in practical application.
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