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Title:Spectrum features of commercial derv fuel oils in the terahertz region
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Abstract:Characteristic spectra in the 0.5-2.5 terahertz (THz) range of three commercial derv fuel oils have been obtained using THz time-domain spectroscopy and calculated using density functional theory. The simulated results and experimental absorption curves suggest that the skeleton vibration is predominant in the THz region, and the absorption bumps of diesels are a superposition of various components. The investigation demonstrates that different diesels can be distinguished using THz time-domain spectroscopy and THz technology is a promising method to detect the composition and properties of diesels via chemical analysis.
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Inspec controlled terms:absorption - petroleum - spectra - vibrations
Uncontrolled terms:commercial derivative fuel oil - characteristic spectra - time-domain spectroscopy - density functional theory - absorption curve - skeleton vibration - diesel absorption bump - chemical analysis - diesel composition - diesel property - frequency 0.5 THz to 2.5 THz
Inspec classification codes:E3624 Fuel processing industry - E1780 Products and commodities - E2180D Vibrations and shock waves (mechanical engineering)
Numerical data indexing:frequency 5.0E+11 2.5E+12 Hz
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Discipline:Manufacturing and production engineering (E)
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