NEAR INFRARED SPECTRA OF VOLATILE ORGANIC COMPOUNDS

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Near infrared diode lasers have practical advantages for environmental sensing of specific compounds. Applying these lasers to measure volatile organic compounds is difficult both because the spectral line shapes are more complex than for simple molecules and because the line strengths are not well known.
Fourier transform spectra of ethanol, benzene, toluene, trichloroethylene and phenol over the wavelength range from 3000 to 7900 cm^{-1} with a resolution of from 0.1 to 0.0025 cm^{-1} are presented. The FT-IR spectrum of ethanol is compared to a diode laser absorption spectrum near 7180cm^{-1}. A sensitive method for ethanol detection based on wavelength modulation of the diode laser is reported. The technique does not require an isolated spectral line.