

SYNCHROTRON-BASED ATTENUATED TOTAL REFLECTION INFRARED SPECTROSCOPY OF ARTIFICIAL GASOLINE BLEND

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Attenuated Total Reflection (ATR) Infrared spectra(IR) of artificially-prepared gasoline blends have been recorded in the 600-4000 cm^{-1} region, using the Far-Infrared Beamline at Canadian Light Source. The observed spectra reveal rich but distinct vibrational signatures of the ethanol and gasoline blend. The analysis of C-C and CO stretch bands indicates significant vibrational shifts due to the changes of force constants as the hydrocarbon content increases. The present data provide vibrational centers useful for the characterization of ethanol in the presence of hydrocarbon matrices. The validity of ATR-IR for ethanol determination in gasoline mixture has been examined by measuring the ATR-IR signal response of artificial gasoline blend over a wide range of ethanol content(0 - 100%). The obtained linear correlations allowed the determination of recovery percentage(95-100%)and thus confirming the accuracy of ATR-IR method.