

DIAGNOSTIC OF SMALL WEAK INTERACTIONS IN GASOLINE BLENDS BY ATTENUATED TOTAL REFLECTION INFRARED SPECTROSCOPY

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Attenuated Total Reflection Infrared Spectra of artificially-prepared gasoline blends have been recorded using the Far-Infrared Beamline at Canadian Light Source in the 600-1200 cm^{-1} region. The CLS Far-infrared Beamline is a synchrotron facility equipped with a high-resolution FT-IR spectrometer and an attenuated total reflection instrument capable of offering a very stable bright light sources and spectral high resolution. The present vibrational spectra display multiple, but distinct, vibrational signatures of ethanol, isopropanol, and hydrocarbon. The analysis of OH bend, C-C and CO stretches by fitting the observed vibrational spectra to a Voigt profile allowed the determination of vibrational centers. For both gasoline blends, we noted significant vibrational shifts and attribute these to changes in force constants as a result of small weak interactions between hydrocarbons and polar component of gasoline blend.