

## DIRECT DETECTION OF SMALL POLAR TOXINS IN PETROLEUM PRODUCTS BY A K-BAND MOLECULAR ROTATIONAL RESONANCE (MRR) SPECTROSCOPY

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As a part of the efforts to extend the applications of rotational spectroscopy to downstream petroleum processing, a Benchtop K-Band molecular rotational resonance spectroscopy has been employed to record rotationally-resolved spectra of polar toxins in a gasoline and gumout mixtures. The analysis of the observed rotational spectra by matching them to those of available references reveals the presence of multiple polar toxins, including oxygen-nitrogen containing compounds, due to K-band MRR's sensitivity to only polar compounds. The complex hydrocarbon matrix, which in many analytical instruments obscures the signals from low concentration impurities, is eliminated. The capability for K-band MRR to extract small polar toxins in different petroleum products is being evaluated and the results will be given in this talk.