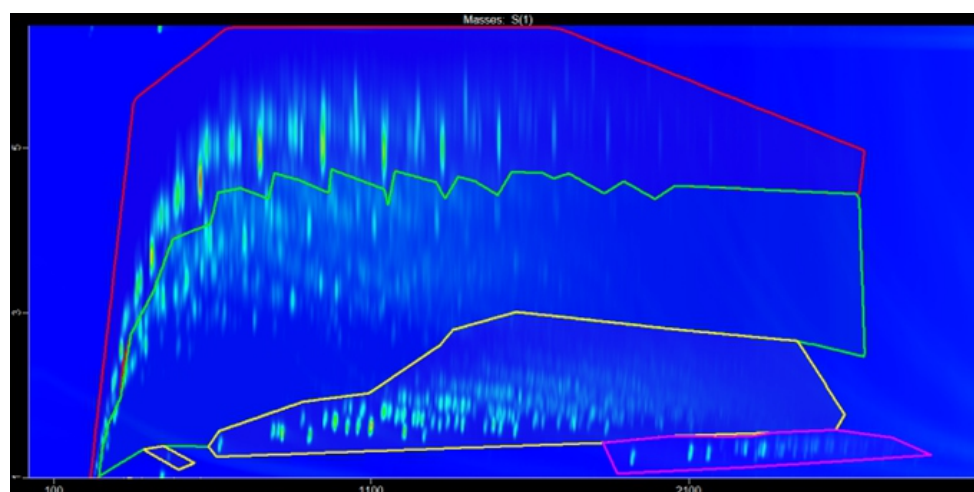


Instrument: LECO Paradigm GCxGC

Simple Group-Type Analyses of Aviation Fuels

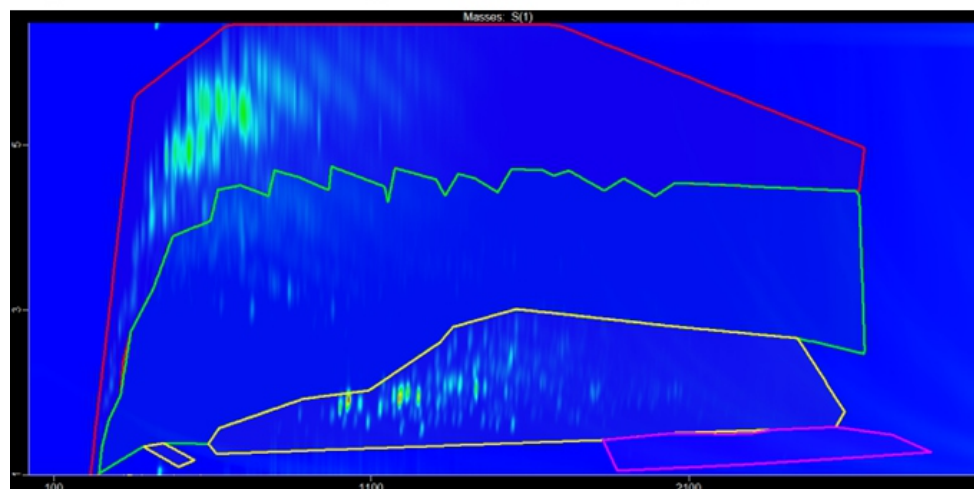
LECO Corporation; Saint Joseph, Michigan USA

Key Words: : Flow Modulation, Sustainable Alternative Fuels (SAF), Reverse Phase



Aviation Reference Fuel

Class	Mass Percent
N-Paraffins	21.4
Isoparaffins	24.4
Naphthenes	32.9
1R-Aromatics	19.1
2R-Aromatics	2.1



Fischer-Tropsch Synthetic Paraffinic Kerosene (FT-SPK)

Class	Mass Percent
N-Paraffins	0.9
Isoparaffins	75.3
Naphthenes	5.0
1R-Aromatics	18.5
2R-Aromatics	0.3

Group-Type analyses of an Aviation Reference Fuel and a Fischer-Tropsch Paraffinic Kerosene (FT-SPK) reveals significant differences in hydrocarbon distribution. A reverse phase column configuration (polar 1st dimension, non-polar 2nd dimension) and simple FID detection achieves challenging separations not possible with one-dimensional GC.

Group-type analyses of fuel products offer insight into critical product performance characteristics, including physical properties, energy potential, and degradation susceptibility. Inferring fuel properties from chemical composition is particularly important as new sustainable alternative fuels (SAF) are developed, approved, and brought to market. Flow modulated GCxGC-FID is an effective and inexpensive tool for performing high accuracy group-type analyses for traditional fuels and emerging alternatives.