



The Geochemistry of Liquid Hydrocarbons

AGAT Laboratories is equipped with state-of-the-art gas chromatography (GC) instrumentation for the molecular analysis of hydrocarbons from different geological settings and sample matrices. Having technical expertise in-house allows AGAT to not only conduct the analyses, but also enables our team to assist in the correct analysis as well as interpretation of the results.

Light Hydrocarbons (LHs)

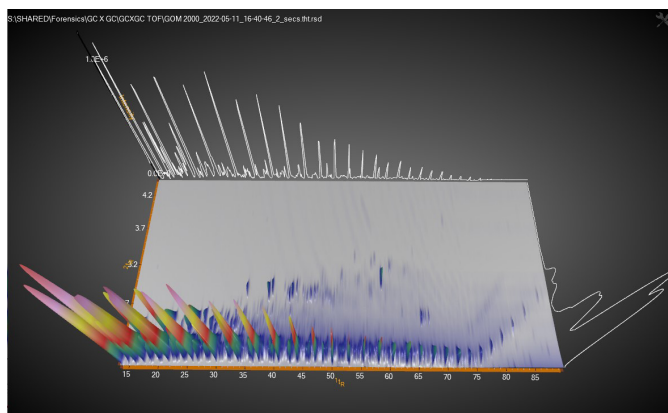
The screening of LHs is particularly relevant in unconventional plays such as the Montney and other gas-condensate/light oil reservoirs. The analytical approach is to use a High Resolution Gas Chromatograph (HR-GC FID) to fully resolve and quantify each of the hydrocarbon species present within the sample. This can be completed on the whole oil without a fractionation step required by some laboratories.

Crude oils, oil sands, and extracted bitumen

Heavier components from crude oil, bitumen from oil sands, and bitumen from source rocks/sediments are analyzed via HR-GC, supported with mass spectrometry detection (GC-MS and GC-MS/MS). This allows our Geochemists to conduct in-depth molecular fingerprinting necessary for the high complexity of hydrocarbon species present in heavier oils and bitumens.

Applications include:

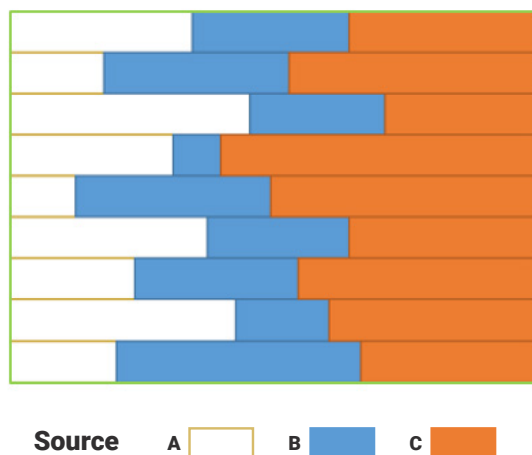
- Reservoir characterization
- Source identification in conventional and unconventional petroleum systems (including oil sands)
- Oil to Oil and Oil to Source correlations
- Thermal Maturity Assessment
- Alteration processes in the reservoir (e.g., biodegradation)
- Environmental Forensics
- Arson Forensics
- Pipeline and Midstream contamination and traceability studies



| Apportionment and allocation

Using the advantage of data science and statistical software, we have developed fluids apportionment and allocation that are not reliant on end member inclusion. These tools have impactful applications upstream in the supply chain (exploration and production of hydrocarbon fluids) and midstream (e.g., shared pipelines and storage).

Relative Source Contribution (%)



| Petroleum testing

AGAT has a long history of traditional petroleum testing methods as well as advance PVT study capabilities. These can be incorporated into full project scopes to ensure a robust analytical program is applied to your reservoir.

| Biomarkers and other geo-polymers

Molecular fossils have been key in geochemical assessment of petroleum systems and other sedimentary organic matter settings. A large number of other geo-polymers are also available for geochemical assessment. At AGAT, we identify and quantify these compounds using GC-MS, GC-MS/MS and/or two-dimensional GC with time of flight mass spectrometry (GCxGC-ToF-MS).

Contact AGAT today about how molecular analysis can enhance your geochemical characterization of the subsurface.

Geochemistry Services

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