

Malcom

Interactive fluid characterization software

APPLICATIONS

- Processing of gas chromatography (GC) and mass spectrometry (MS) data
- Quality assurance of petroleum geochemistry data
- Production allocation using geochemical fingerprinting
- Support of reservoir continuity studies
- Petroleum geochemical studies
 - Oil-oil and oil-source rock correlations
 - Petroleum source and maturity studies
 - Regional depositional system assessment
- Evaluation and comparison of heritage datasets
- Chromatographic data peak integration

BENEFITS

- Automated processing for data investigation and interpretation
- Quick inspection of data quality using ratios, graphic overlays, and quantitative compound data
- Improved efficiency by organizing geochemical data in one application
- Customizable and flexible workflows

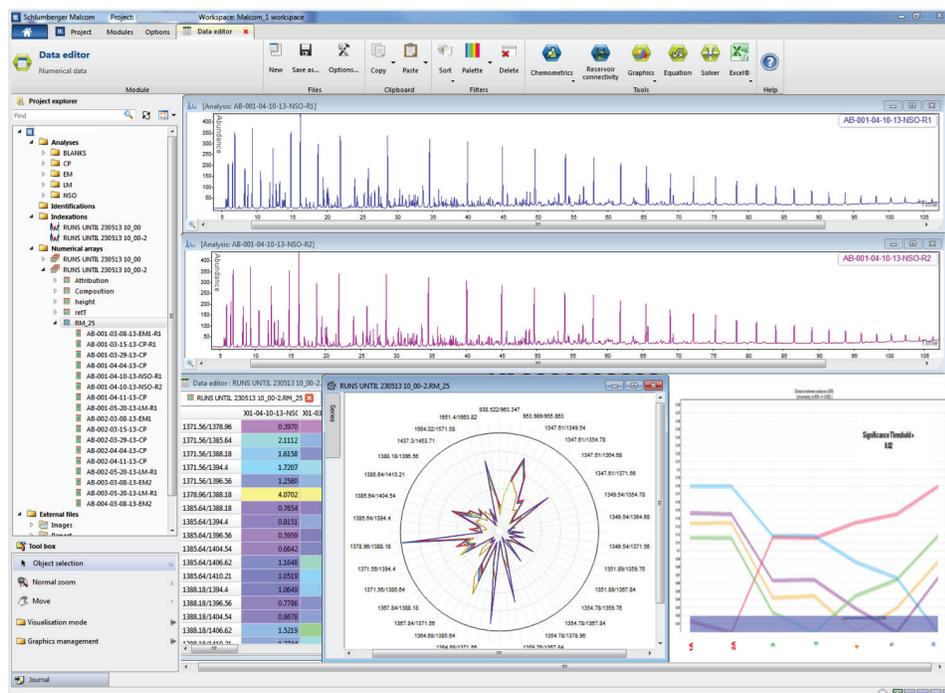
Comprehensive and rapid interpretation of geochemical rock and fluid properties, as well as integration within the larger reservoir or field context, requires advanced, intelligent software. To meet demands across the petroleum industry, Schlumberger developed Malcom* interactive fluid characterization software, which efficiently stores, evaluates, and processes geochemical data streams to facilitate the interpretation process. The software enables faster and more dynamic integration into the full chain of upstream exploration and production.

Malcom software is supported by the Schlumberger Montpellier Technology Center and Schlumberger Reservoir Laboratories, which employ proprietary QA/QC processes to assure the integrity of compositional PVT and geochemical data. Strict adherence to these standardized processes enables ease and confidence in investigating the analytical quality and accuracy of customer data.

Malcom software consists of four modules—Malcom Core, PARC, GeDI, and Workflow Builder.

Malcom Core

The software's Malcom Core module includes project management to organize and store geochemical datasets as well as chromatographic peak identification and quantification, extracted ion analysis, and indexation (alignment). The module also features high-quality chromatogram exporting tools that provide easy exploration and quality control of valuable geochemistry datasets. Embedded chemometric and graphic components allow immediate data investigation and plotting within the same software suite.



Malcom software allows comparing chromatograms for fingerprinting studies (top) as well as differentiating oil samples for quick display by using data-reduction tools (bottom center). Characterization of chemical compositional differences between oil samples (bottom right) can be performed in a matter of seconds.

FEATURES

- Connects with Schlumberger software suites including the Petrel* E&P software platform and the Techlog* wellbore software platform.
- Malcom Core
 - Raw chromatogram processing and storage
 - Indexation (chromatogram alignment)
 - Data extraction and comparison
 - Data investigation (graphing, chemometrics, and data reduction)
 - Python™ scripting
- PARC
 - Proprietary reservoir connectivity module based on interparaffinic peak ratios
 - Proprietary production allocation algorithms
- GeDI
 - Automated chromatogram processing and data generation
 - Efficient processing and interpretation of geochemical parameters
 - Library database for storage of compounds and ratios
 - Automated graph generation for interpretation
- Workflow Builder
 - Customizable processes for improved efficiency
 - Graphical interface for easy workflow building
 - Expert support available to create your process
 - Laboratory data quality system
 - Chromatogram processing
 - Report generation

PARC

Combining production allocation and reservoir connectivity (PARC) workflows, the PARC module helps discern reservoir fluid differences based on indexation and calculation of interparaffinic peak ratios. When coupled with accurate laboratory analysis, this module provides greater certainty in evaluating the differences between similar fluids of every origin. Applications include assessing changes in commingled production streams for back allocation, quantifying inputs from end-member reservoir fluids, and providing complementary information for complex reservoir continuity and gradients studies.



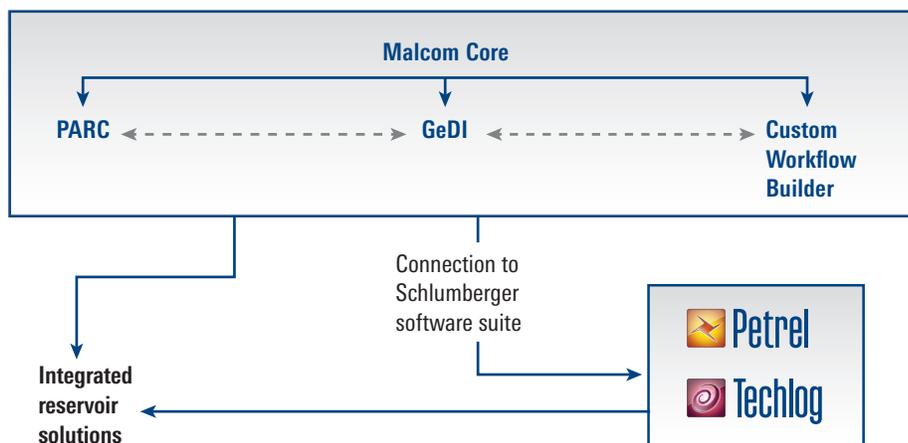
Reservoir experts at Schlumberger Reservoir Laboratories around the world use Malcom software to process chromatography data, perform statistical calculation, and deliver fast data interpretation.

GeDI

The geochemistry data interpretation (GeDI) module includes a compounds and graphics library that is specific to petroleum geochemistry interpretation. Custom workflows allow for interpretation of the whole-oil GC, saturate and aromatic biomarkers, gas isotopes, and source rock data. As a result, source, maturity, oil-oil and oil-source rock correlations, and in-reservoir processes can be rapidly assessed within one application.

Workflow Builder

Custom workflows can be encoded using Workflow Builder to rapidly and reproducibly convert raw data into petroleum geochemistry interpretation results. Workflow Builder can be used to implement other custom applications such as laboratory quality assurance. Python scripting gives advanced users additional freedom to customize functionalities.



The Malcom software workflow from input to solution.