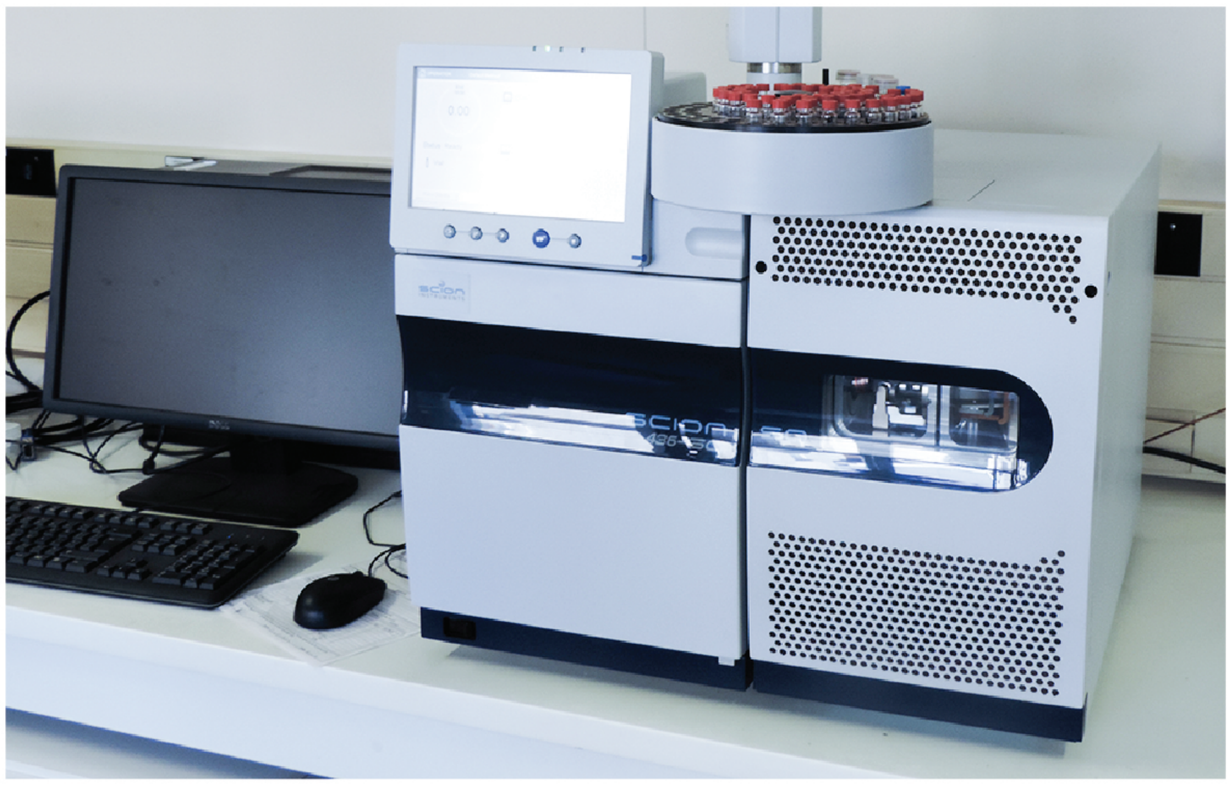
LOHC CHEMICAL CHARACTERIZATION

Overview

LOHC (liquid organic hydrogen carrier): Hydrocarbon molecule that store/ release hydrogen through catalytic hydrogenation/ dehydrogenation. The high boiling point, low melting point and high H_2 storage capacity (1m³ MSH= 624 m³ (57 kg) of H_2) express Marlotherm SH® as an excellent LOHC. Marlotherm SH® based LOHC is non-toxic, non-flammable, non-explosive and not consumable like diesel or gasoline, only H_2 is released. In addition, LOHC can be stored under ambient conditions for long periods without self-discharge. Existing infrastructure for fuel (tanks, trucks, ships) can be used to transport LOHC as it is also not classified as dangerous goods.

Characterization techniques

HySA Infrastructure established strong R & D capabilities for the LOHC technology. State-of-art analytical techniques developed for LOHC process characterization include but not limited to GC-SQ-MS, 2D-GC-MS-TOF, refractometer, FTIR and NMR. These analytical tools provide information on overall reactor performance and process optimization according to specification needs.



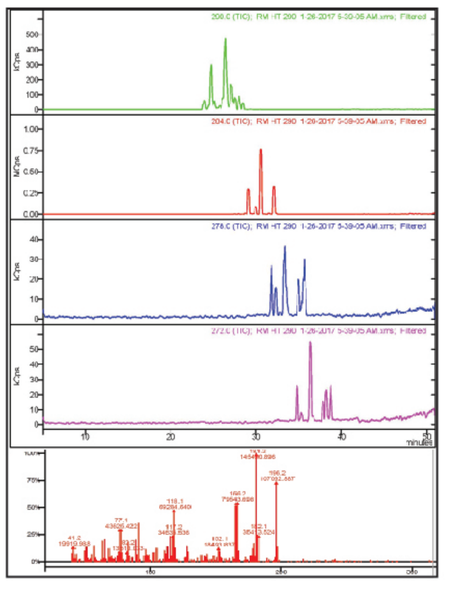
SCION 436 SINGLE QUADRUPOLE GC-MS

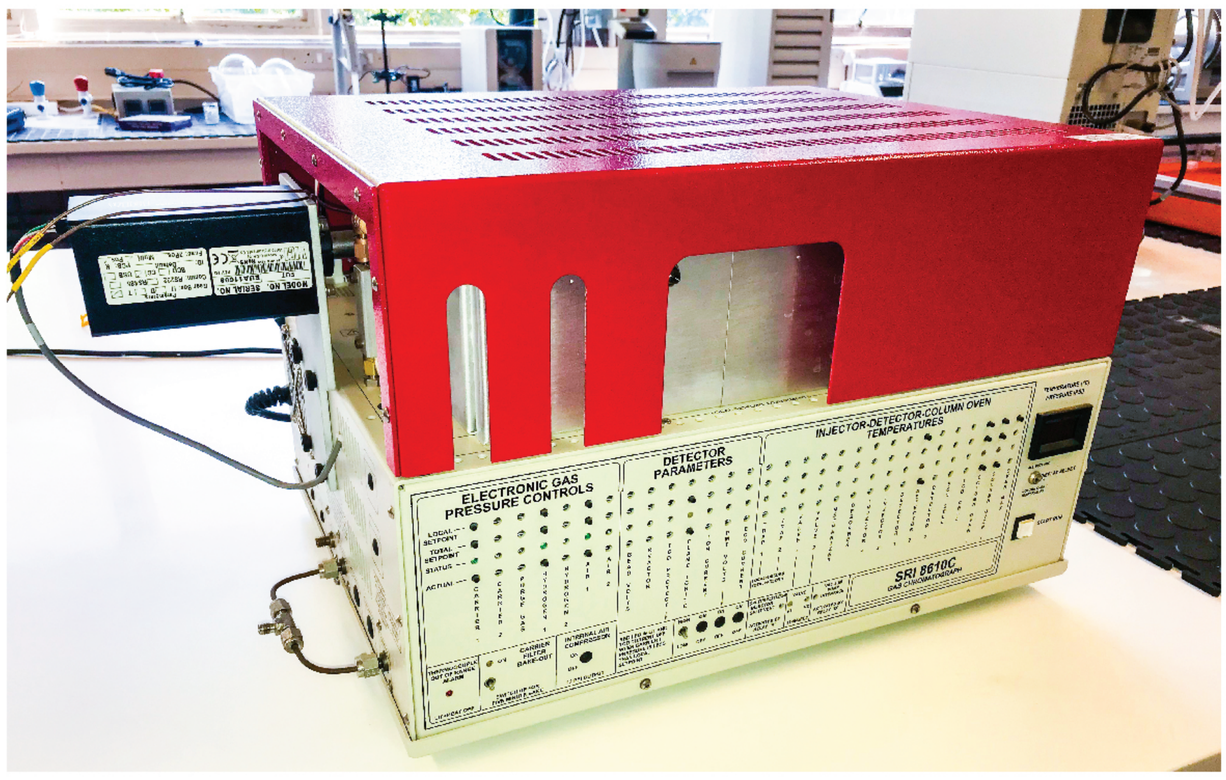
Key features

- Selective Ion Mode, Peak area, Total Ion Content (TIC)
- NIST library

Function

- Degree of hydrogenation
- Quantify/qualify isomer fractions and by-products





ANTON PARR REFRACTOMETER

Key features

- Refractive index

Function

- Degree of hydrogenation

SRI-GC

Key features

- High temperature injection valve
- Max injection temperature: 350
- Electric actuator
- FID detector
- Non-polar column

Function

- Customized for high boiling point hydrocarbons
- Determination of LOHCs in hydrogen stream