

Pyrolysis of car-tyre rubber



Keywords: [Pyrolysis](#), [OPTIC](#), [LINEX](#),

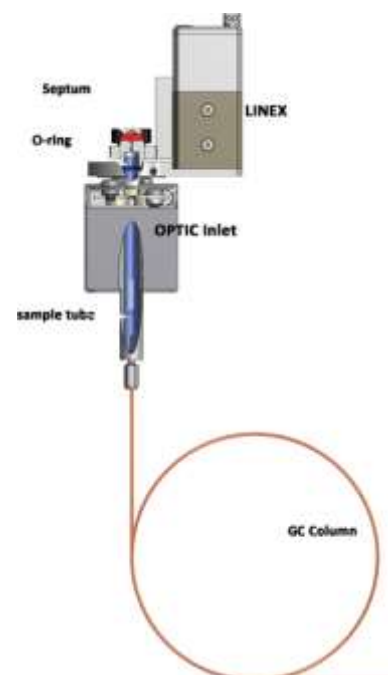
Introduction

For a sustainable future, it is wanted to reuse car tyres. You need to know the composition in which the rubbers and other compounds will break down when pyrolysed. This application note describes the ease in which you can do pyrolysis of a car-tyre, when using an OPTIC-4 in combination with the LINer EXchanger (LINEX) and Difficult Matrix Introduction (DMI) technique.



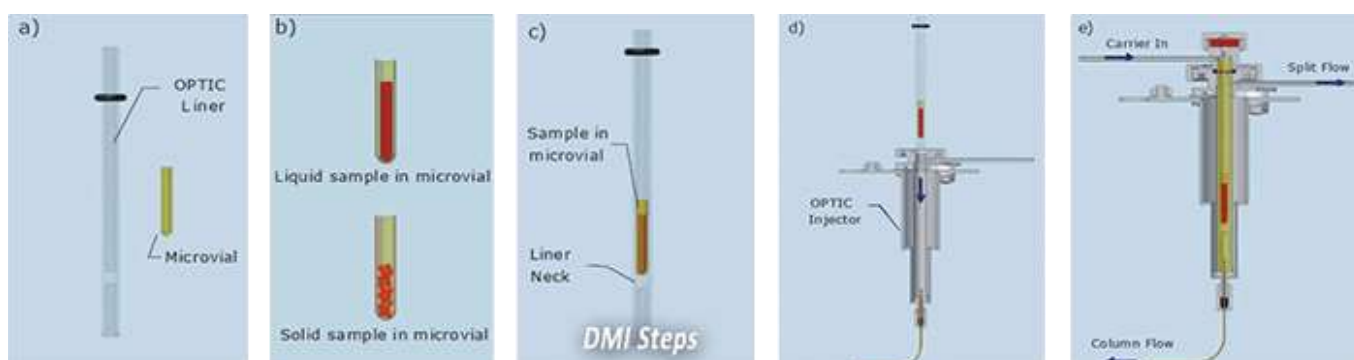
Analytical conditions:

Model GCMS:	GC-2030/MS-QP2020 NX, Shimadzu Corp.
GC Multimode Inlet:	OPTIC-4Pyro GC Inlet System, GL Sciences B.V.
Autosampler:	PAL3-RTC with LINEX Option, CTC Analytics AG
Column:	InertCap 5MS/Sil 0.25 mm x 30 m, 0.25 µm phase
Column Temperature:	40°C(5 min) → 20°C/min → 325°C
Injection mode:	Pyrolysis, Split Ratio 1:50
Sample:	Small piece of car-tyre
Column flow:	1 mL/min
Inlet temperature program:	40°C → 60°C/sec → 700°C
Detector temperature:	200°C (ion chamber), 250°C (interface)
Liner:	Quartz liner with DMI insert



Workflow:

A small piece was cut from a car-tyre which was placed in a DMI vial, which is then placed in the Quartz liner. This Quartz liner is taken from its rack position and transferred to the inlet. The Inlet is equipped with LINEX, which includes an automated head which can be opened or closed to accommodate the liner which is next to be analyzed.



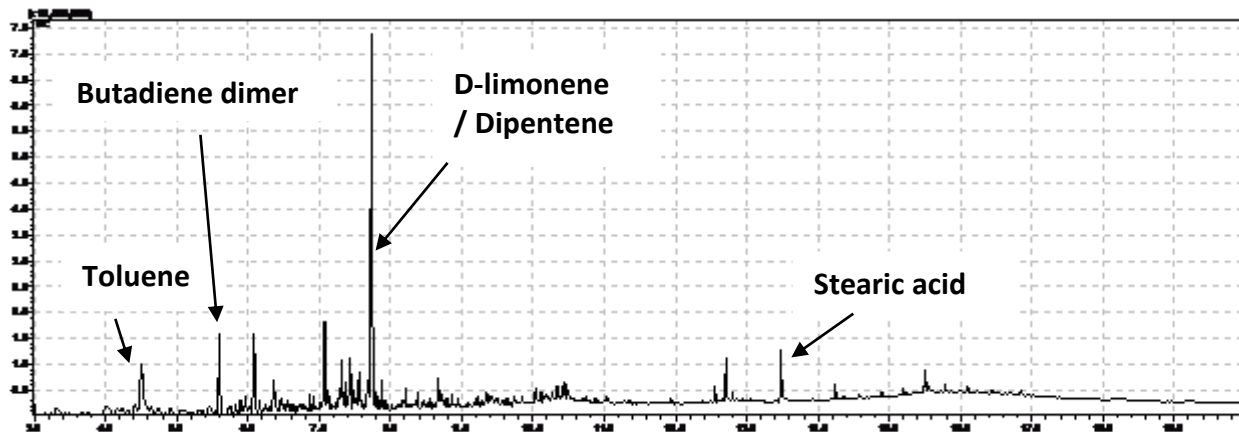
Results:

Figure 1. TIC chromatogram of Pyrolysis of Car-tyre.

Conclusions:

As shown from the chromatogram, It is very easy to use OPTIC-4 for pyrolysis applications. For automation the LINEX and a CTC PAL3 can be used.

The sample handling is very easy, just place a small piece of sample into a microvial. This microvial is place into the OPTIC-4 liner.

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