Lactones

Analysis of lactones for their optical purity

Application Note

Materials Testing & Research

Authors

Agilent Technologies, Inc.

Introduction

The Agilent CP-Chirasil-Dex CB column is very well suited for the chiral separation of (capro)lactones. The isomers of isopropyl substituted lactones (not shown) will co-elute partly with the propyllactones. For an enzymatically produced, optically pure lactone product, the optical purity can be analyzed at a concentration ratio higher than 100:1 (see Chromatogram 2).

Agilent Technologies

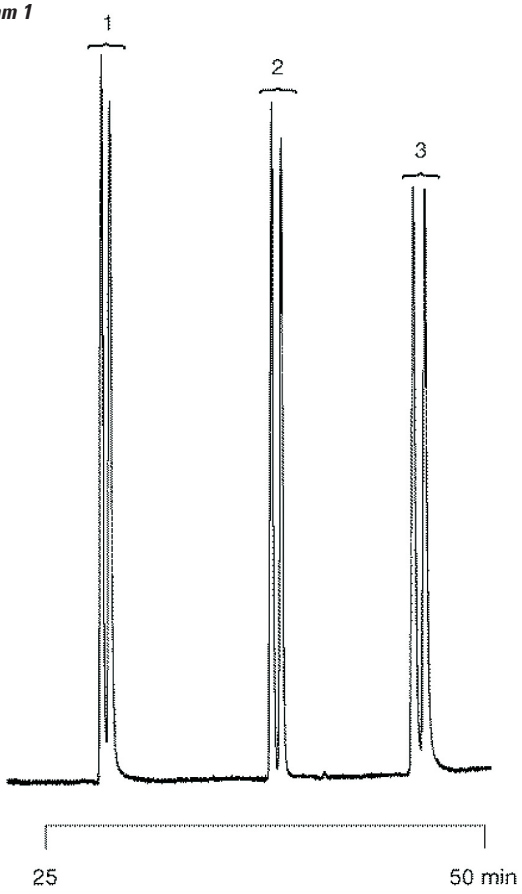
Conditions

Technique	:	GC-capillary
Column	:	Agilent CP-Chirasil-Dex CB, 0.25 mm x 25 m fused silica WCOT (df = 0.25 µm) (Part no. CP7502)
Temperature	:	100 °C (1 min) ⟶ 200 °C, 1 °C/min
Carrier Gas	:	He, 40 kPa (0.4 bar, 5.7 psi)
Injector	:	Split, 100 mL/min T = 250 °C
Detector	:	FID T = 275 °C
Sample Size	:	1 µL
Concentration Range	:	0.5%
Solvent Sample	:	diethyl ether

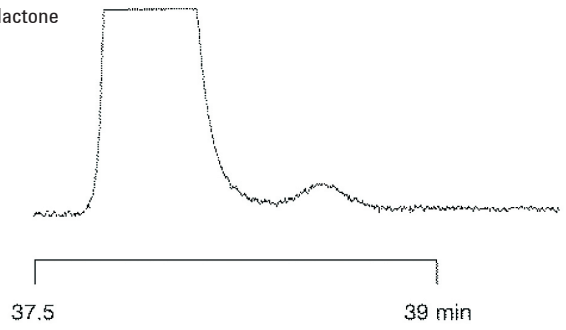
Peak identification

1. (+/-)-methyl substituted caprolactone
2. (+/-)-ethyl substituted caprolactone
3. (+/-)-propyl substituted caprolactone

Chromatogram 1



Chromatogram 2:
>99% optically pure
ethyl substituted caprolactone



www.agilent.com/chem

Printed in the USA
31 October, 2011
First published prior to 11 May, 2010
A01448

Agilent Technologies