Sensitive Analysis of Bisphenol A in Polycarbonates using HPLC and Fluorescence Detection

Angelika Gratzfeld-Huesgen

Polymer /chemical industry

Abstract

Bisphenol A can be used as an antioxidant for softeners, fungicide and as an intermediate during the production process of polycarbonates, epoxids phenol resins and dyes.

Method performance and results

Bisphenol A was analyzed using reversed phase HPLC. A diode array detector and a fluorescence detector were used as the detection systems. With diode array detection a spectrum can be taken and used as an identification tool in addition to retention times. However, using state-of-the-art equipment fluorescence detection is about 10 times more sensitive than diode array detection.

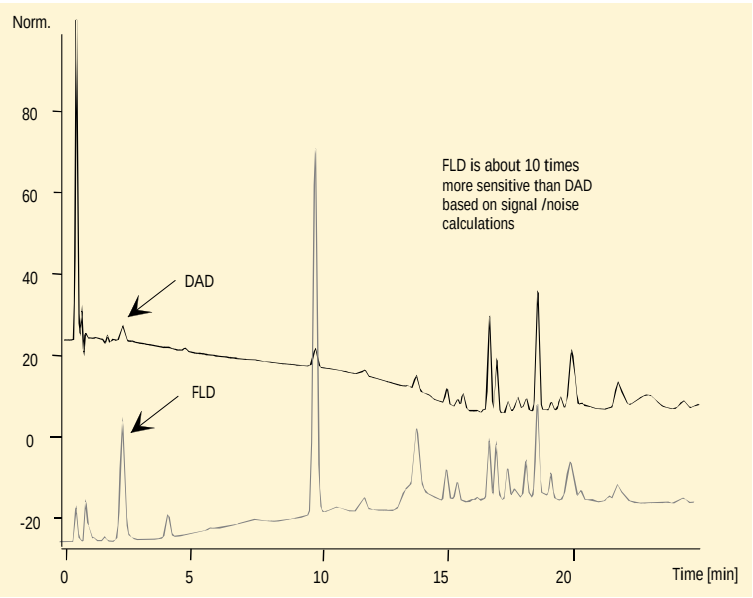
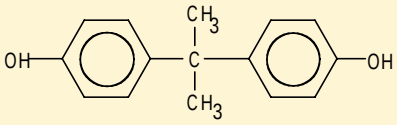


Figure 1
EIC traces from amine standards



Bisphenol A

Conditions

Column
100 x 2.1 mm Hypersil ODS, 5 µm
Mobile Phase
A = Water, B = Acetonitrile
Gradient
at start 40%B, at 15 min 95% B,
Post Time 4 min
Flow Rate 0.4 ml/min
Oven Temp 25 °C
Injection Vol 1 µl
Diode array detector
230/20 nm Reference 440/80 nm
Fluorescence detector
Ex = 225 nm, Em = 310 nm

Sample preparation
40 ml of a 10 % solution of PC in methylenechloride are extracted with 20 ml 0.1n NaOH. 10 ml of NaOH phase are filled with methanol to 50 ml.

Agilent Technologies
Innovating the HP Way

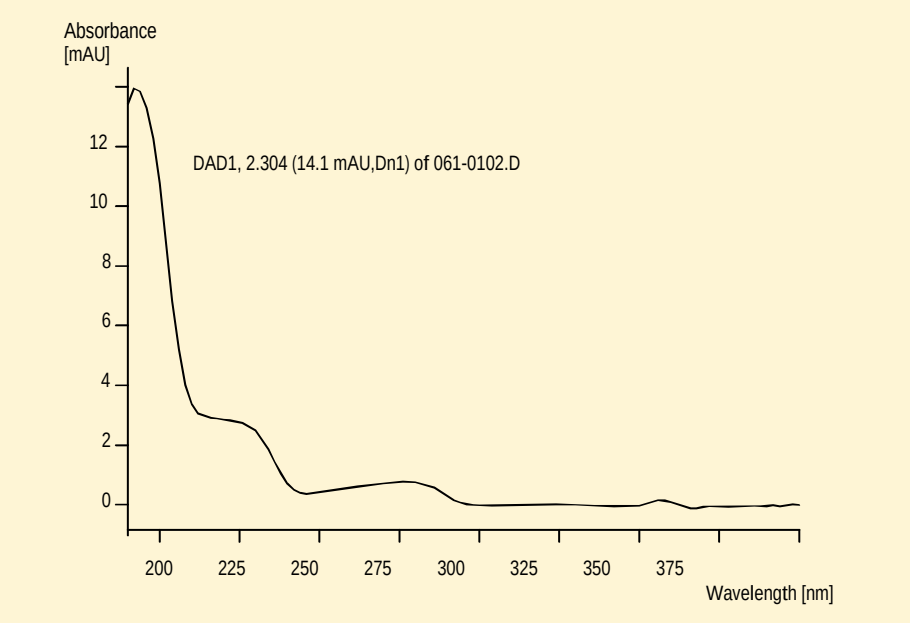


Figure 2
Spectrum of Bisphenol A

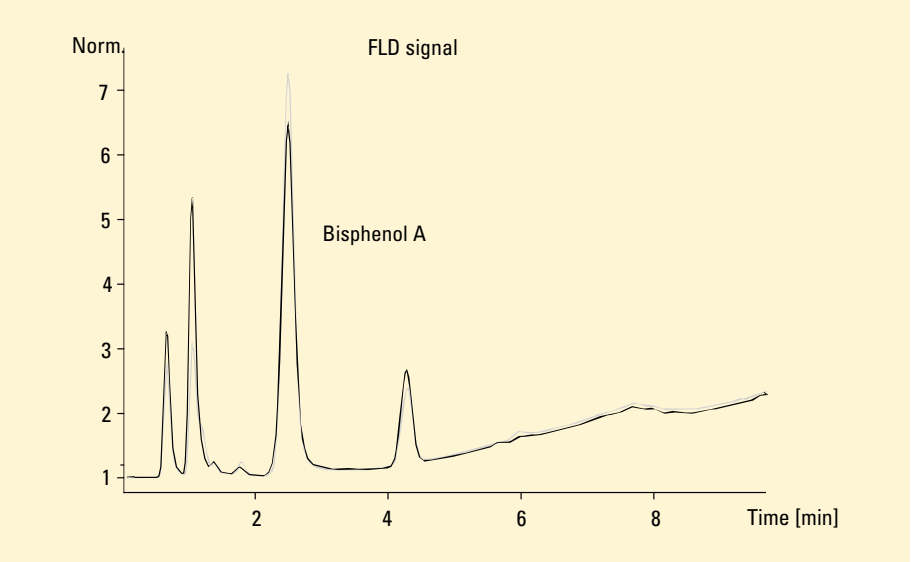


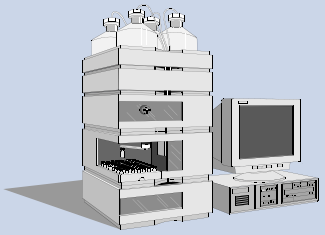
Figure 3
Content of Bisphenol A in two different polycarbonates

Equipment

Agilent 1100 Series

- degasser
- binary pump
- autosampler
- thermostatted column compartment
- diode array detector and/or FLD

Agilent ChemStation + software



Angelika Gratzfeld-Huesgen is application chemist at Agilent Technologies, Waldbronn, Germany.

For more information on our products and services, visit our worldwide website at http://www.agilent.com/chem

Released 06/97
Publication Number 5965-9043E

Agilent Technologies
Innovating the HP Way