

'...the increase in detection sensitivity at 210 nm (vs. 254 nm), made possible by the selection of solvents which may be used at low-UV wavelengths, is demonstrated...'

Antioxidants in Aviation fuel

HPLC is often the method of choice for the analysis of additives in petroleum products for the following reasons:

- (i) Analyses may be carried out at room temperature, avoiding degradation of thermally sensitive molecules.
- (ii) Derivatisation is usually unnecessary and therefore confidence in analytical results is higher.
- (iii) Instrumentation required is a simple, isocratic system capable of being operated by relatively unskilled technicians.
- (iv) The system may be fully automated.
- (v) Analysis is rapid, permitting high frequency monitoring if required.

Owing to the incompatibility of many petroleum products with the usual reversed phase solvents such as methanol and water, the selection of the appropriate column and mobile phase required some thought. In the set of chromatograms shown in Figures 1–3, non-aqueous reversed phase chromatography has been used for the separation of a commercial preparation of an homologous series of alkylated t-butylphenols, together with geometrical isomers.

The mobile phase chosen, 5% isopropanol in hexane, will tolerate small amounts of water in

Keywords:

Antioxidants, alkylated t-butylphenols, petroleum products

samples and the stationary phase, Spherisorb CN, is exceptionally robust under these conditions. In Figure 3, the increase in detection sensitivity at 210 nm (vs. 254 nm), which is made possible by the selection of solvents that are used at low-UV wavelengths, is demonstrated.

Conditions

Column: Spherisorb S5 CN,
250 x 4.6 mm ID
Guard: Spherisorb S5 CN,
50 x 4.6 mm ID
Mobile Phase: 5% Isopropanol in hexane
Flow Rate: 1 ml/min
Detection: UV at 254 and 210 nm

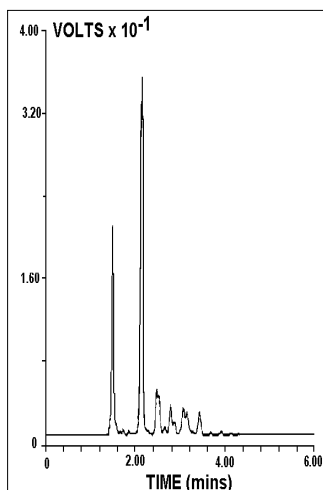


Figure 1 Alkylated t-butylphenols at 254 nm

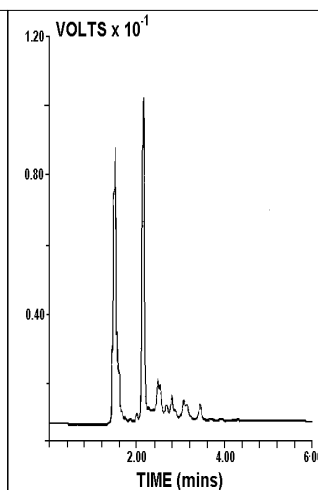


Figure 2 Aviation fuel sample at 254 nm

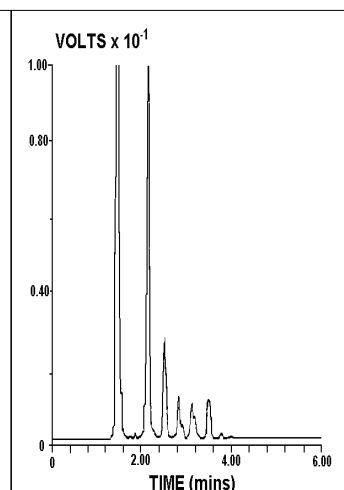


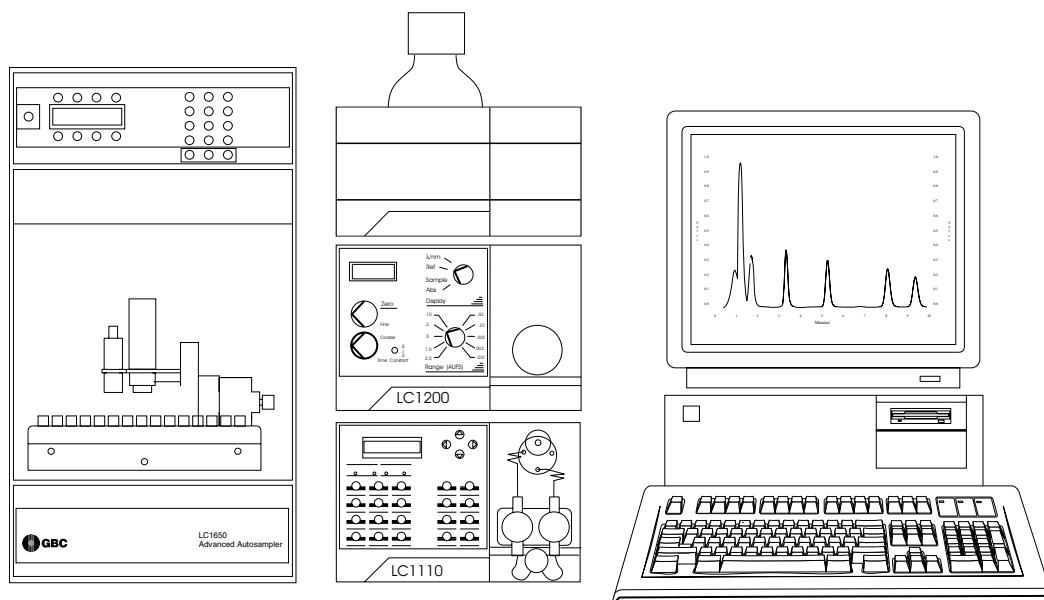
Figure 3 Aviation fuel sample at 210 nm



M4
01-0367-00

GBC HPLC Instrumentation

LC1110 Dual Piston HPLC Pump
LC1650 Advanced Autosampler
LC1200 Variable Wavelength UV/Vis
Detector
WinChrom Chromatography Data
Management System
LC1445 System Organiser



M4
01-0367-00

GBC Scientific Equipment Pty Ltd
A.C.N. 005 472 686
12 Monterey Road, Dandenong, Victoria, 3175, Australia
Phone: (03) 9213 3666 Fax: (03) 9213 3677

All rights reserved
GBC publication number 01-0367-00
September, 1995