This chromatogram was run on the new Perkin-Elmer® Model 601 LC System. Study it. You’ll be impressed.


Column 50 cm x 2.6 mm Cyano-Sil-X-I + 50 cm x 2.6 mm Amino-Sil-X-I

Gradient Concave 10-Minute Hexane → CH₂Cl₂

Flow Rate 2 ml/min.

Pressure 1200 → 1800 psig (80-120 atm)

Temperature 30°C

Detector LC-55 @ 273 nm, 0.4 AFS

Instrument Perkin-Elmer Model 601

Figure 1

Perkin-Elmer’s new Model 601 Liquid Chromatograph now joins the LC-55 variable-wavelength UV detector and Perkin-Elmer’s special column packings, to produce the most advanced liquid chromatography system available.

Please take a close look at the chromatogram of Figure 1, because many of the capabilities of the new system are apparent from it. Close study is a necessity, because you might not buy the Model 601 for its beauty alone (Figure 2).

A versatile gradient capability.

The mixture that was analyzed—condensed aromatics, aromatic ketones, and a nitro aromatic—must be separated by a wide-range gradient. We wanted to produce a chromatogram with evenly spaced peaks, in less than 15 minutes. Here’s how:

1. Two of Perkin-Elmer’s broad range of bonded-phase columns were connected in series. One contained Cyano-Sil-X™ packing, the other Amino-Sil-X.

2. A concave gradient was run, starting with 100% hexane. (In adsorption chromatography, a properly chosen concave gradient must be used to provide a linear change in solvent strength.) To achieve rapid results, the flow rate was set to 2 ml/minute. Note that, at this fast flow rate and one meter of column, the back pressure was less than 1800 psi (120 atmospheres). This low pressure is a tribute to the proprietary method for packing efficiency of Perkin-Elmer’s microparticulate columns.

3. The LC-55 variable-wavelength detector was set to 273 nm, where neither solvent absorbs significantly, to yield a flat baseline. The chromatogram was then run.

4. The LC-55 was then set to 239 nm, where methylene chloride absorbs much more than does hexane. The gradient was then rerun without a sample, yielding the true form of the gradient. Notice that this is quite different from the usual practice of indicating the gradient by recording the electrical impulses that drive the pumps, which may or may not have a real relationship to what actually happens. Here, you see the actual solvent composition at which each sample component elutes.

Syringe pumps without check valves are required.

Notice further that Peaks 1, 2, and 3 emerge during the first 10% of the gradient, while the pump delivering methylene chloride is accelerating smoothly from 0 to 0.2 ml/minute. For this, you need pulseless syringe pumps and a gradient system entirely free of check valves, because check valves would make it impossible to control very low rates accurately. Such performance represents an advance in the art of liquid chromatography.

Rapid refill, direct flow, and an oven.

One chromatogram can’t show everything. This one doesn’t show that you need the 601’s air-bath oven to do first-rate reverse-phase and ion-exchange work; that you can record directly against solvent flow, rather than against time; and that the new rapid-refill feature can refill the 500-ml cylinders in less than 90 seconds.

Please send for literature and ask for a demonstration. Write to: Instrument Division, Perkin-Elmer Corporation, Main Avenue, Norwalk, Conn. 06856.

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