PID Analyzers

Flame Photometric Detector

Theory

The sample is burned in a hydrogen rich flame which excites sulfur or phosphorus to a low lying electronic level. This is followed by a resultant relaxation to the ground state with a corresponding emission of a blue (S) or green (P) photon. This type of emission is termed chemiluminescence. The emission is at 394 nm for Sulfur and 525 nm for phosphorus. The S:C selectivity ratio is > 10,000:1. The HNU detector uses rare earth filters instead of interference filters for S & P to improve detection limits and eliminate some of the deficiencies of interference filters Detection limits in the 5 pg and 20 pg range for P and S respectively.

HNU Model 56 FPD

The HNU Flame Photometric Detector (FPD) incorporates a *rare earth* glass filter for improved performance. Our FPD offers a two to three-fold increase in sensitivity for sulfur (S) and phosphorous (P) compared to detectors with interference filters. Since band pass is no longer dependent on the viewing angle, results are more reproducible-regardless of flame geometry. Sensitivity is significantly increased due to improved interference rejection and a larger effective aperture. *Only HNU's FPD offers rare earth glass filters for more reproduci*ble *results and increased sensitivity.*

Our FPD also includes a quartz flame jet and a cylindrical glass flame shield to reduce hydrocarbon quenching commonly encountered in the sufur mode. The end of the capillary column is only 3 mm from the base of the flame and is confined within the quartz capillary flame jet-providing low dead volume and a highly inert sample path.

The detector's clean, miniaturized design makes it ideal for installation onto any Gas Chromatograph. Our dual detection design allows simultaneous selective analysis of S and P compounds-significantly reducing the number of analyses and facilitating compound identification.

An adjustable root function in the range of XO I - XO-I can be set to linearize the detector output.

The HNU FPD is ideal for use in the following applications:

- Mercaptans and sulfur compounds in paper plant
- Sulfur and Phosphorus based pesticides
- Environmental detection of S or P compounds
- Sulfur impurities petroleum streams
- Sulfur compounds in natural gas
- Process streams or stacks
- Ambient monitoring of S or P compounds
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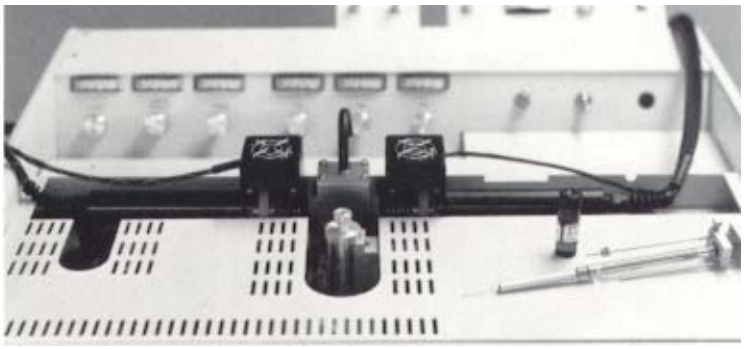
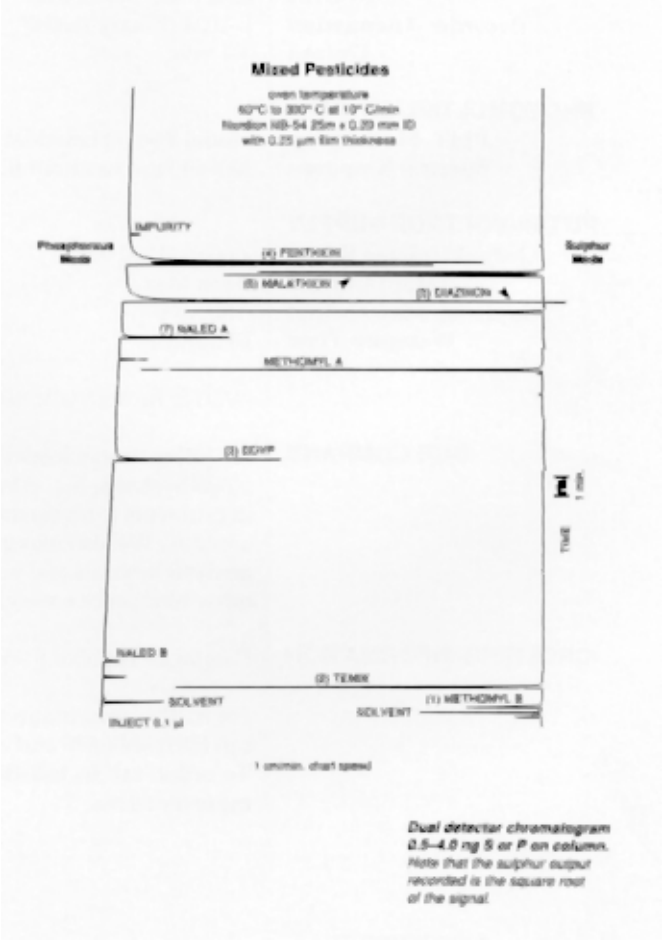
Features

PID Analyzers

- Rare earth filters for S & P improve detector performance
- Quartz jet
- Improved sensitivity
- Improved reproducibility





Dual detector chromatogram
0.5–4.0 ng S or P on column.
Note that the sulphur output recorded is the square root of the signal.