

Publication

Absorbance detector based on a deep UV light emitting diode for narrow-column HPLC

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A detector for miniaturized HPLC based on deep UV emitting diodes and UV photodiodes was constructed. The measurement is accomplished by the transverse passage of the radiation from the light-emitting diode (LED) through fused-silica tubing with an internal diameter of 250 µm. The optical cell allows flexible alignment of the LED, tubing, and photodiode for optimization of the light throughput and has an aperture to block stray light. A beam splitter was employed to direct part of the emitted light to a reference photodiode and the Lambert-Beer law was emulated with a log-ratio amplifier circuitry. The detector was tested with two LEDs with emission bands at 280 and 255 nm and showed noise levels as low as 0.25 and 0.22 mAU, respectively. The photometric device was employed successfully in separations using a column of 1 mm inner diameter in isocratic as well as gradient elution. Good linearities over three orders of magnitude in concentration were achieved, and the precision of the measurements was better than 1% in all cases. Detection down to the low micromolar range was possible.

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