

# SPD-20A / 20AV / M20A

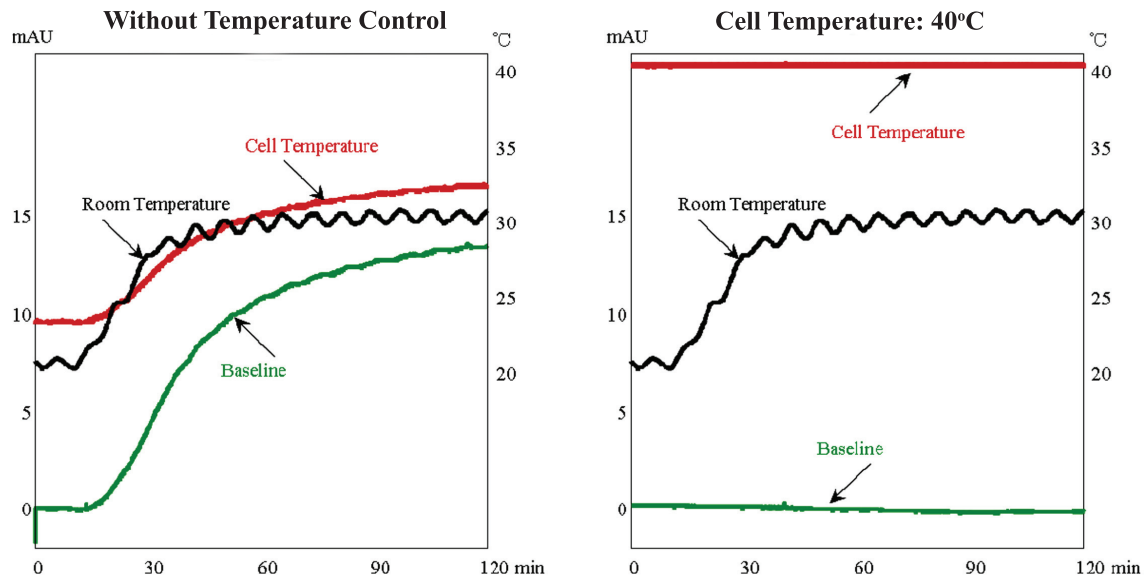


Building on a strong reputation of cutting-edge ultraviolet (UV) and visible (Vis) absorbance detectors, the Prominence series once again sets the benchmark for others to meet. Two models are offered from which to choose the best match for your intended application.

The **SPD-20A** can be used for all UV analysis in the 190 to 700 nm range, while the **SPD-20AV** at 190-900 nm is available for those that require a detector in the visible region. From superior optics and optical coatings to new signal processing technologies to the implementation of sound chromatographic principles, the Shimadzu Prominence series UV-Vis absorbance detectors give you the performance, stability and ruggedness demanded in today's fast-paced analytical laboratories. Analysts in a regulated laboratory will appreciate the built-in Mercury vapor lamp to assure wavelength accuracy at the touch of a button, along with many other diagnostic routines for compliance with all of your GMP/GLP operating procedures.

## Cell Temperature Control for Exceptional Baseline Stability

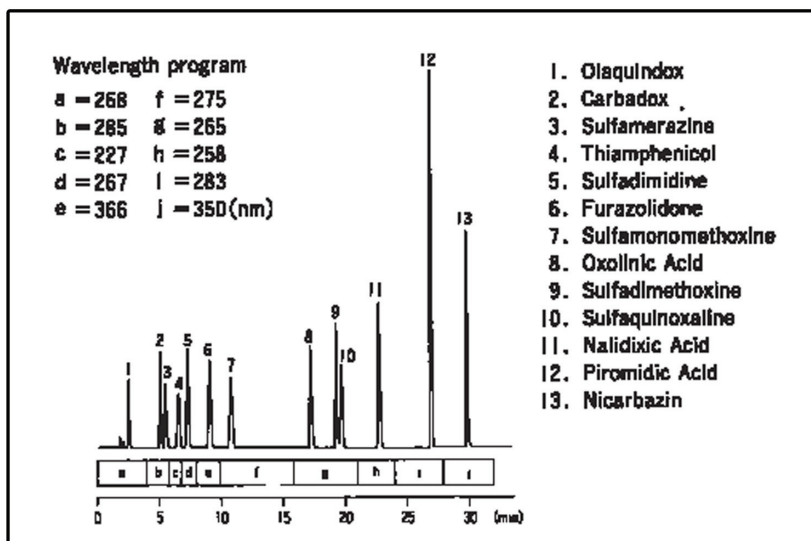
A temperature-controlled flow cell is standard in both models and helps to eliminate any baseline drift and adverse affects on signal-to-noise performance as a result of changes in room temperature. With a settable range of 5°C above ambient to 50°C, and when used in conjunction with the Prominence series column ovens, one is assured of maintaining a consistent separation temperature throughout the analysis.



*Effect of temperature-controlled cell - Room temperature raised from 20-30°C*

Shimadzu High Performance Liquid Chromatography

# Dual Wavelength Monitoring

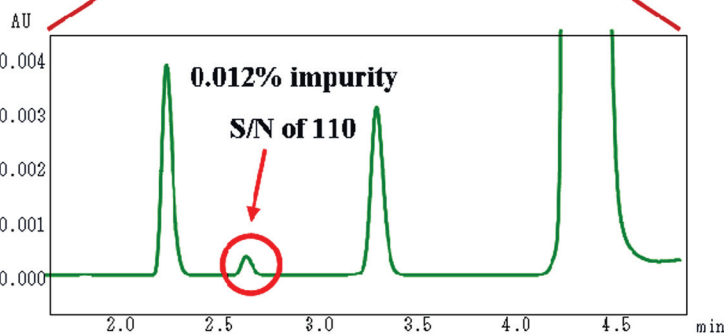
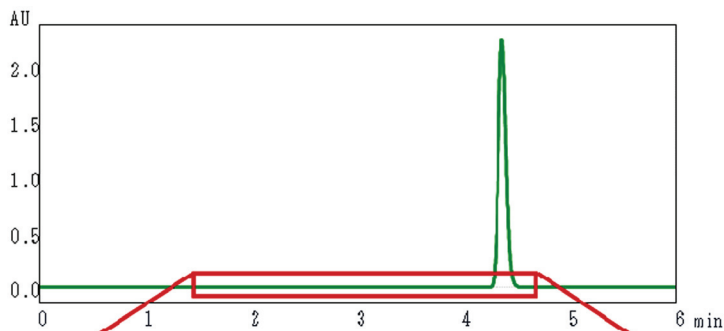


Dual wavelength monitoring is standard in the Prominence UV-Vis detectors. Combine the two signals to create a ratio chromatogram as a qualitative purity determination and use this to trigger fraction collection. Wavelength programming is available to optimize detector signal strength for a multi-component analysis. There are no worries about lamp choice and energy when using the SPD-20AV as both the Tungsten and Deuterium lamps can be lit simultaneously. Therefore, high-sensitivity analysis throughout the wavelength range is ensured.

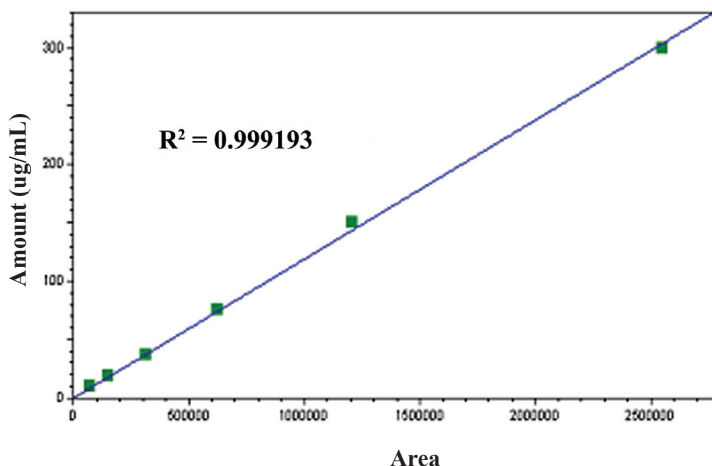
## Extended Linear Range

The SPD-20A and SPD-20AV have a linear range that extends to 2.5 AU, currently the world's highest. Add in the world's lowest noise of  $0.5 \times 10^{-5}$  for such devices, and you get a very powerful tool. The Prominence UV-Vis detectors enable target and trace impurity analysis in the same run – a real timesaver for metabolism, impurity, and degradation studies.

Impurity studies typically require two separate sample preparations and sample assays – one at a concentration level suitable for target compound analysis and one at a higher concentration for the impurities. The increased linearity of the Prominence absorbance detectors is demonstrated in the accompanying examples. First is an assay of a pharmaceutical agent demonstrating the ability to detect an impurity of 0.012% with a signal-to-noise of 110 to 1 while the target compound has an absorbance in excess of 2 AU. Second is a calibration curve for Caffeine at 272 nm from 9 to 300 ppm (0.077 to 2.672 AU) with a linearity of 0.999.



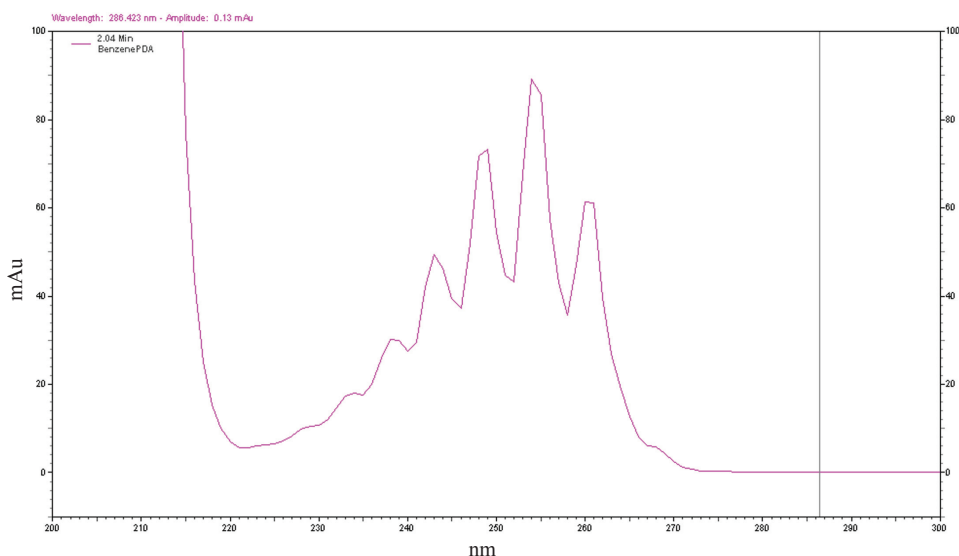
Peak Caffeine -- ESTD -- SPD-20A



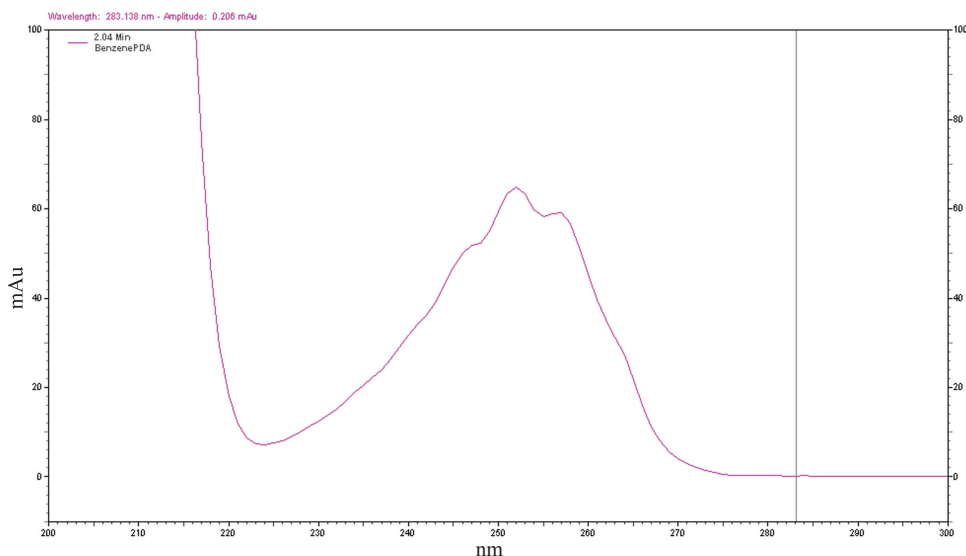
# SPD-M20A Photodiode Array

The **SPD-M20A** PDA is the third member of the UV-Vis absorbance detectors. The M20A, like the others, offers the world's best noise and linearity specification in its class. It also includes a temperature-controlled flow cell and the ability to have both lamps lit simultaneously. The Prominence PDA offers you more power to get more done by offering two slit widths: 1.2 nm for high resolution work and 8 nm for quantitative runs. Shimadzu software is used to perform spectral library searches for compound identification and peak purity determinations. Four analog output channels provide multi-wavelength detector functionality and are available for triggering fraction collection or other devices, or collecting chromatographic data into any other software package. Self-diagnostic features such as wavelength accuracy and wavelength calibration ensure compliance with regulatory requirements.

The Prominence PDA offers a user-friendly design that includes front-panel access to detector lamps and flow cell, easy connection through a standard ethernet terminal, and front-panel illumination of the detector's status. The Shimadzu SPD-M20A truly establishes a new standard for today's PDA detectors.



*Spectrum of Benzene in solution recorded using the SPD-M20A with a slit width of 1.2nm, clearly displaying the characteristic finger pattern.*



*Spectrum of Benzene in solution recorded using the SPD-M20A with a slit width of 8nm. Note the loss of resolution.*

## Standalone or Part of a System

The Prominence Series Absorbance Detectors are fully capable of being run from the front panel keypad. Or, for the most convenience, connect it to Shimadzu's innovative CBM-20 controller and take advantage of its industry exclusive web-based control. This means you can monitor and control the detectors and any other components connected to the CBM from anywhere in the world through your web browser. The CBM also acts as the conduit between the HPLC and the controlling software, whether it is a Shimadzu CDS package, MS control package, or any other software package that contains Shimadzu control.



## SPECIFICATIONS

	SPD-20A	SPD-20AV	SPD-M20A
<b>Light source</b>	Deuterium (D2) lamp	Deuterium (D2) lamp, tungsten (W) lamp	
<b>Number of diode elements</b>	N/A	N/A	512
<b>Wavelength range</b>	190 to 700 nm	190 to 900 nm	190 to 800 nm
<b>Bandwidth, slit width</b>	8 nm		1.2 nm, 8 nm
<b>Wavelength accuracy</b>	1 nm max.		
<b>Wavelength precision</b>	0.1 nm max.		
<b>Noise</b>	0.5 X 10 <sup>-5</sup> AU (under specified conditions)		0.6 X 10 <sup>-5</sup> AU (under specified conditions)
<b>Drift</b>	1 X 10 <sup>-4</sup> AU/h (under specified conditions)		5 X 10 <sup>-4</sup> AU/h (under specified conditions)
<b>Linearity</b>	2.5 AU (ASTM standard)		2.0 AU (ASTM standard)
<b>Functions</b>	Dual-wavelength detection in the range 190 to 370 nm and upwards of 371, ratio-chromatogram output, wavelength scanning		Contour output, spectrum library, MAX plotting
<b>Cell</b>	Pathlength: 10 mm Volume: 12µL Pressure: 12 MPa		Pathlength: 10 mm Volume: 10µL Pressure: 12 MPa
<b>Cell temperature-control range</b>	5°C above room temperature to 50°C		
<b>Operating temperature range</b>	4°C to 35°C (non-condensing atmosphere)		
<b>Dimensions, weight</b>	260 (W) x 140 (H) x 420 (D) mm, 13 kg		260 (W) x 140 (H) x 420 (D) mm, 12 kg
<b>Power requirements</b>	100 VAC, 160 VA, 50/60 Hz		100 VAC, 150 VA, 50/60 Hz

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