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Hitachi High Technologies America, Inc.

Improved Performance and Functionality in UV-Visible Measurements

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The new High-Performance UV-Visible Spectrophotometers, U-3900/3900H from Hitachi, feature an advanced optical design and new electronics affording reduced stray light and a wide photometric range, along with improved functionality and updated software features compared with previous models.

Photometric Linearity

The Hitachi manufactured stigmatic concave diffraction gratings and double-monochromator design result in the excellent photometric linearity and wide dynamic range of the U-3900/3900H models. The outcome is highly reliable quantitative analysis with excellent linearity as shown in Figure 1.

Sharp Focused Beam Effective for Trace Analysis

By using an optical system with a highly focused light beam in the sample compartment, the U-3900/3900H models are capable to measure micro sample volumes as low as 5 µL. In our testing of the instrument, nucleic acid adenosine was measured at concentrations as low as 10 µg/L, using a 25 µL micro cell and model U-3900, shown in Figure 2.

Reduced Noise in the UV Region

Additional scan-speed control specific for the UV region allows noise reduction in the UV range in scans over the entire UV-Visible region.

True Double-Beam Optical Beam

Equipped with a photomultiplier detector, a solid optical base, and state-of-the-art electronics, the U-3900/3900H provide a very stable baseline in the wavelength range of 190 to 850 nm. (Baseline flatness is within ±0.0003 Abs for the U-3900 and within ±0.0004 Abs for the U-3900H.)

Differential Monitoring System

The U-3900/3900H measures negative absorbance by monitoring the sample signal, reference signal, and zero point continuously during measurement. The photomultiplier voltage is adjusted to maintain a constant sample or reference signal, whichever is larger. This feature results in an increased dynamic range for the measurement of spectrum differences between different samples in both the reference and sample sides.

Improved User-Friendly Hardware Design

Installation of accessories and routine maintenance are made easier than ever. The computer communication interface is a high-speed USB port, which provides easy connection to a desktop or laptop computer. The top surface of the instrument is large enough for a laptop, saving precious bench space. Prealigned lamps with accessible connectors make replacement fast and easy.

Updated Software Features

An updated version of Hitachi UV Solutions is included with the U-3900/3900H. New features include improved data measurement and processing capabilities.

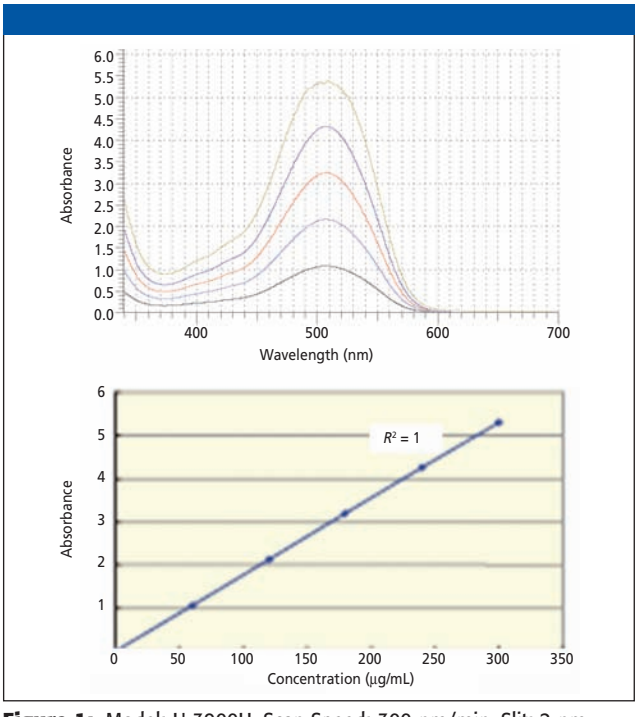

Figure 1: Model: U-3900H, Scan Speed: 300 nm/min, Slit: 2 nm.

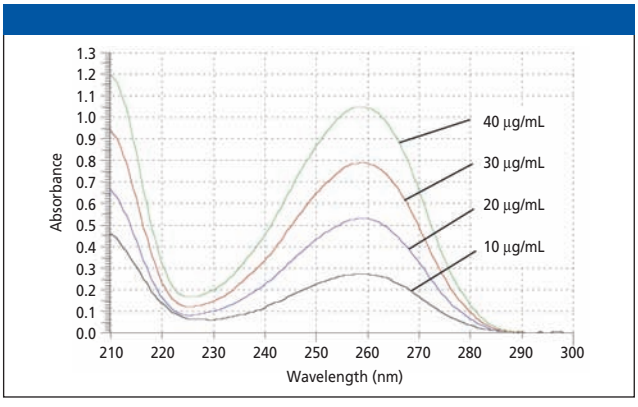

Figure 2: Model: U-3900H, Scan Speed: 300 nm/min, Slit: 2 nm, 25 µL micro cell.

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