biochrom
a division of
Harvard Bioscience, Inc.

SimpliNano™ Spectrophotometer

SimpliNano is a simple-to-use microvolume spectrophotometer for straightforward concentration and purity measurements of nucleic acids and proteins (Fig 1).

SimpliNano uses a built-in sample port that can be used with a variety of common lab chemicals and has no moving parts, making it reliable, easy-to-use, and clean. It has a fixed pathlength that does not require any calibration. The ability to pipette volumes down to 1 µl directly onto the sample port eliminates the need for cuvettes or other sampling tools. After measurement, the sample can either be easily recovered with a pipette or quickly discarded by wiping the sample port clean for the next measurement.

SimpliNano is preprogrammed with a range of preset methods for the quantitation of nucleic acids and direct UV proteins, with graphical display of resulting wavescans. The SimpliNano direct user interface means that there is no need for a computer, so fast instrument start-up is possible.

Fig 1. SimpliNano is an easy-to-use, low-maintenance spectrophotometer designed for analysis of low volumes of nucleic acid and protein samples, shown here with printer option.

SimpliNano offers the following benefits:

- **Simple sample handling:** Built-in sample port (Fig 2) with one fixed pathlength means that samples can be added and removed without the need for time-consuming pathlength calibration. SimpliNano contains no moving parts, which contributes to excellent instrument reproducibility and low maintenance.
- **Low sample volumes:** Reduce sample loss and eliminate the need for dilution by using low volumes of 1 to 5 µl for sample measurement. The sample can either be recovered or simply wiped away after measurement.
- **Built-in life science methods:** Measures nucleic acid concentrations at 260 nm, protein concentrations at 280 nm, and provides 230/260 and 260/280 ratios for determining sample purity. Wavescan plots from 220 nm to 330 nm can be achieved for nucleic acids and from 250 nm to 350 nm for protein. The methods include options for background correction at 320 nm and 340 nm.
- **Flexible instrument control:** Use as either a standalone instrument using its large, built-in screen for quick measurements or operate from a PC with optional Datrys software.
- **Choice of data output:** Output to any suitable PC via a USB cable, to an optional integrated printer, or to a USB stick.

Technical specifications for SimpliNano are given in Table 1.

Fig 2. The built-in sample port allows direct application of 1 to 5 µl volumes of sample.

Table 1. Technical specifications for SimpliNano

Wavelength range	190 to 1100 nm
Pathlength	0.5 mm
Minimum sample size	1 µl
Absorbance range	-0.3 to 2.5 Abs. units (10 mm equivalent to 50 Abs. units)
Spectral bandwidth	5 nm
Light source	Xenon
Detector type	CCD array
Data output to PC	Via USB cable (standard); USB memory stick (standard); integrated printer (optional)
Dimensions	260 x 390 x 130 mm
Weight	Approx. 3 kg
Power requirements	90 to 250 V, 50/60Hz, max 30 VA

Assays

Nucleic acids

SimpliNano allows you to measure the concentration and purity of nucleic acids in a variety of units (µg/µl, ng/µl, and µg/ µl) and also, to correct for dilution factors where necessary.

The spectrophotometer displays both individual absorbance values and absorbance ratios (260/280 and 260/230) on the screen, along with the sample concentration value. The results can be printed immediately with the on-board printer option. The prestored method includes the option of background correction at 320 nm.

You can examine the UV spectrum (220 to 320 nm) for hybridization, PCR, and sequencing studies or for quantitation of minipreps.

SimpliNano shows excellent linearity with double-stranded DNA (dsDNA) from 4 to 2500 µg/µl (Fig 3). This large linear dynamic range and high reproducibility means that you can proceed to the next stage of your workflow with a high degree of confidence in the data.

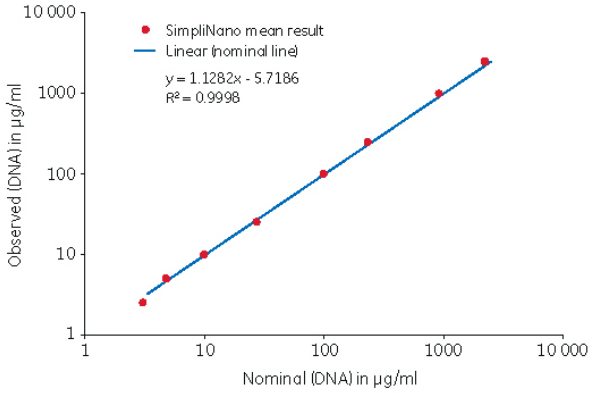

Fig 3. DNA concentration curve (4 to 2500 µg/ml) generated from 10 replicate salmon sperm dsDNA samples 12 pl volumes) measured at 260 nm on SimpliNano. The data in the graph is representative data from one instrument used in the validation study where a total of 6 instruments were tested.

Proteins

SimpliNano can be used to determine the concentration of protein samples in the near UV spectrum at 280 nm due to absorption by the amino acids tyrosine, tryptophan, and phenylalanine. The protein method shows individual absorbance readings for 260 nm and 280 nm and offers background correction at 340 nm. A 260/280 ratio is also provided on the screen. The absorbance at 280 nm varies greatly for different proteins because of their amino acid content and therefore, the specific absorption value for a particular protein must always be determined.

SimpliNano has built-in extinction coefficients for BSA, IgG, and lysozyme, allowing you to select the most appropriate values for your protein sample. You can also input your own extinction coefficients. Figure 4 shows protein linearity over the range of 0.12 to 50 mg/ml.

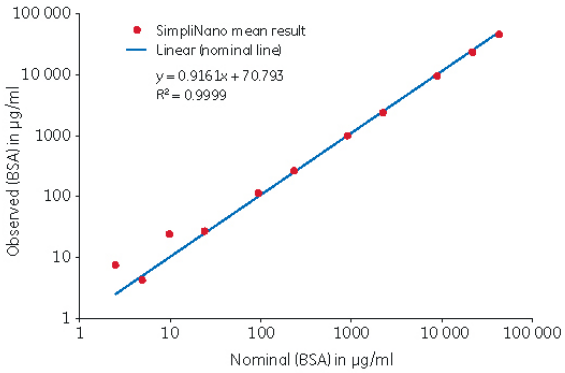

Fig 4. BSA concentration curve (120 to 50 000 µg/ml) generated from a 10% BSA solution. Ten replicate samples (2 µl volumes) were measured at 280 nm on SimpliNano using thing the BSA program to ensure correct protein coefficient was employed. The data in the graph is representative data from one instrument used in the validation study where a total of 6 instruments were tested.

The sample can be simply removed with a tissue to prevent cross-contamination thus improving data precision. To demonstrate this, sample carryover was determined using high concentrations of protein (BSA) and the results of the carryover experiments are shown in Figure 5.

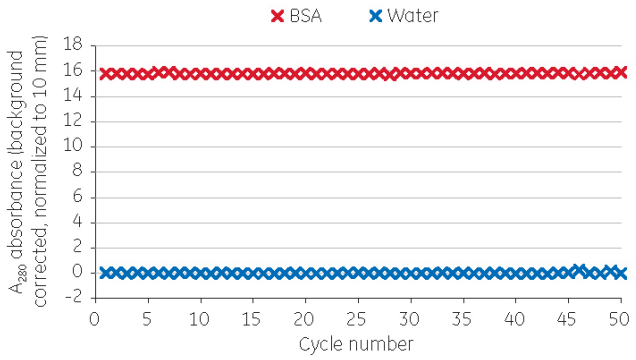

Fig 5. A sample carryover study using 25 mg/ml BSA with successive alternative additions of water and BSA, which was repeated 50 times. The data showed no significant change in absorbance readings throughout the study for the water samples or the BSA samples, indicating that there was no carryover.

Summary

SimpliNano spectrophotometer is an easy-to-use and reliable instrument for measuring nucleic acid and protein samples, without the need for pathlength calibration. SimpliNano offers wavescan plots for nucleic acids and proteins. Samples of 1 to 5 µl can be pipetted directly onto the sample port for measurement, and then simply recovered using a pipette. In cases where sample recovery is not necessary, the sample port can be quickly and easily wiped clean. This eliminates the need for cuvettes, capillaries, or other sampling tools—just drop, measure, and you're done.

Ordering information

Product	Qty	Code No.
SimpliNano	1	29-0617-11
SimpliNano with printer	1	29-0617-12

Related products	Qty	Code No.
NanoVue^{M} Plus Spectrophotometer	1	28-9560-57
NanoVue^{TM} Plus with integrated printer	1	28-9560-58
NanoVue^{M} Plus Spectrophotometer with SD card	1	28-9432-12
NanoVue^{M} Plus Spectrophotometer wireless	1	28-9560-20

biochrom
a division of
Harvard Bioscience, Inc.

Biochrom US
84 October Hill Rd
Holliston, MA
01746-1388
USA

Telephone: 1-508-893-8999
Toll Free: 1-800-272-2775
Fax: 1-508-429-5732
support@hbiosci.com
www.biochromspectros.com

10/2015