

## Minimal 30 $\mu$ l DNA Measurement in SpectroArt 200/200S

### Bio-Spectrophotometer

#### Introduction

While using standard cuvette or semi-micro cell to measure DNA or protein samples, most people concerned about sample volume and cleaning difficulty. Y-type micro cell offers a new solution to measure sample with lower volume and easy to clean. Moreover, as applied with SpectroArt 200/200S\* by loading sample lower to 30  $\mu$ l level, it can save more sample volume for the measurement. As the following, the Y-type cell performs remarkable analysis of DNA measurement.

#### MATERIALS

- SpectroArt 200/200S\*<sup>1</sup> (Wealtec)
- Calf Thymus DNA (Invitrogen)
- Black wall Y-type micro cell, 100  $\mu$ l, 5 mm light-path, 8.5 mm Z (Wealtec)

#### PROCEDURES

- Dilute the Calf Thymus DNA solution from 10 to 100  $\mu$ g/ml by ddH<sub>2</sub>O.
- Add 30  $\mu$ l and 50  $\mu$ l DNA sample in the Y-type micro cell.
- Insert the Y-type micro cell into the cuvette holder.
- Read the same sample ten times, and quadruplicate experiment.

## RESULT

Sample volume	50 µl		30 µl	
DNA sample (µg/ml)	Measurement	RSD%	Measurement	RSD%
10	12.76	3.04	12.85	3.41
20	20.98	2.55	22.50	2.27
40	42.62	3.31	44.40	2.03
80	80.81	0.02	81.03	0.01
100	103.88	3.22	103.70	1.44

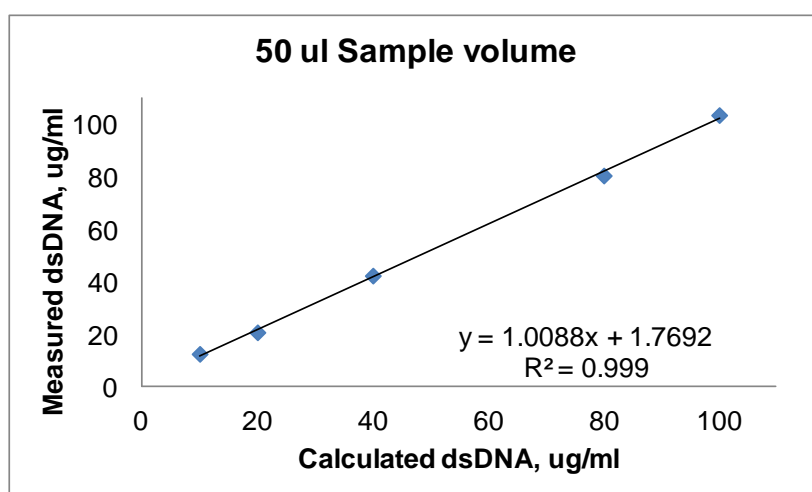


Figure 1. DNA measurement with 50 µl sample volume.

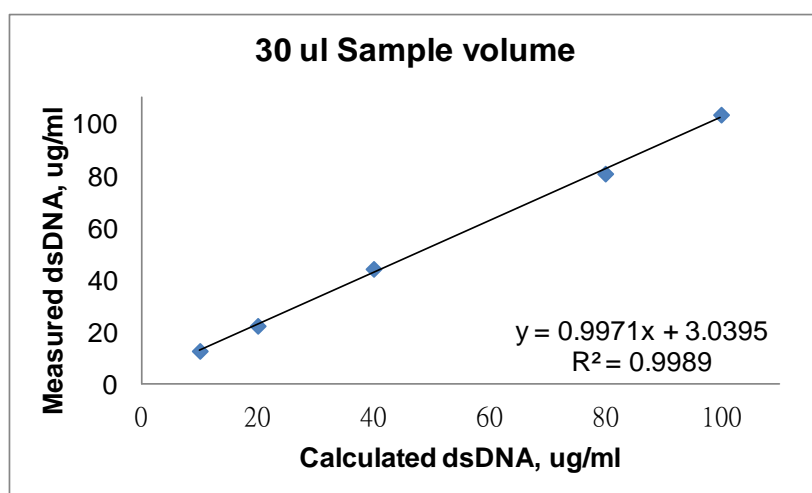


Figure 2. DNA measurement with 30 µl sample volume.

## DISCUSSION

For lower down sample volume purposes, the Y-type micro cell is designed with 5 mm light path. Base on the Beer-Lambert's law,  $A = \epsilon bc$ , the absorbance of the Y-type cell is half times when compared to 10 mm light path cell as performing the measurement, thus all result should be multiplied with 2 fold after measurement. As in this experiment, the sample volume of Y-type micro cell was proofed can be applied lower to 30  $\mu\text{l}$  level. According to the result in figure 1 and 2, the 50  $\mu\text{l}$  cuvette is a reliable cell for the DNA measurement with remarkable reproducibility, all RSD is less than 3.5%.

The SpectroArt 200 Bio-Spectrophotometer equipped with Flash Xenon light source, linear CCD array detector. Built-in thermo printer is a high efficient tool in protein/DNA measurement and calculation. In apply Y-type micro cell can get highly trustable and reliable result in all life science laboratory, direct dialogue operation and program bring accurate result as well as report generation, wavelength accuracy calibration easy for routine use and laboratory QC/QA program.

\*SpectroArt 200S is supplied with built-in Single Drop analysis mode and Tray cell which can be applied with 0.7  $\mu\text{l}$  sample volume measurement.