

Measurement of Micro-Volumes of Proteins and Nucleic Acid

Introduction

The SAH-769 One Drop accessory is used to quickly measure a small sample volume of only 0.6 μL or 5 μL dropped onto a disc cell with a 1 or 0.2 mm optical pathlength, respectively. The shorter optical pathlength configuration allows measurement of higher concentration samples without further dilution. The optical pathlength is precisely and reproducibly controlled by an integrated cover glass, and can be easily cleaned with a laboratory wipe.

The V-630BIO is a versatile and easy to use double-beam spectrophotometer that ensures high precision sample measurement. The V-630BIO can be operated using either the cross-platform Spectra Manager™ software or intelligent Remote Module (iRM) with color touch screen. In either case, the software includes standard programs for life science analyses. The Protein/Nucleic Acid Measurement program is used for protein or nucleic acid determination using absorbance ratios at selected wavelengths including 260 and 280 nm. The Temperature Control Measurement program with optional Peltier thermostatted cell holder can be used for DNA thermal melting experiments, and the Advanced Kinetics program can also be used with the temperature controlled cell holders.



V-630BIO
UV-Visible Spectrophotometer

Keywords

V-630BIO, UV-Visible/NIR, Life Science, Biochemistry, SAH-769 One Drop, Microsampling

Experimental

Measurement Conditions			
Scan Speed	200 nm/min	Data interval	0.5 nm
Bandwidth	1.5 nm	Response	Medium

Solutions of calf thymus DNA in $\text{KH}_2\text{PO}_4/\text{NaOH}$ buffer (pH 7) at several concentrations were measured by using cells with 1 and 0.2 mm pathlengths. The measurement procedure for the SAH-760 One Drop accessory is shown in Figure 1.



Figure 1. Measurement procedure using the SAH-769 One Drop Cell.

Results

The absorption spectra of various concentrations of calf thymus DNA using 1 and 0.2 mm pathlengths are shown in Figures 2 and 3, respectively.

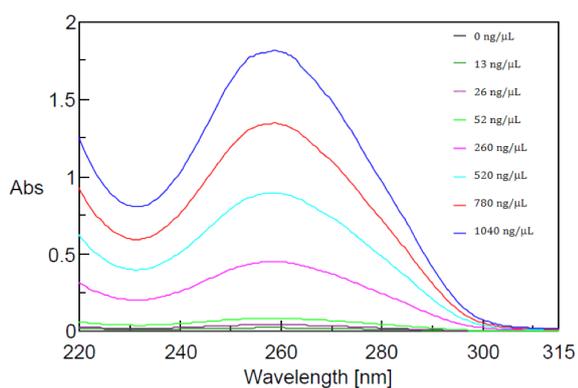


Figure 2. Absorption spectra of calf thymus DNA using a 1 mm pathlength cell.

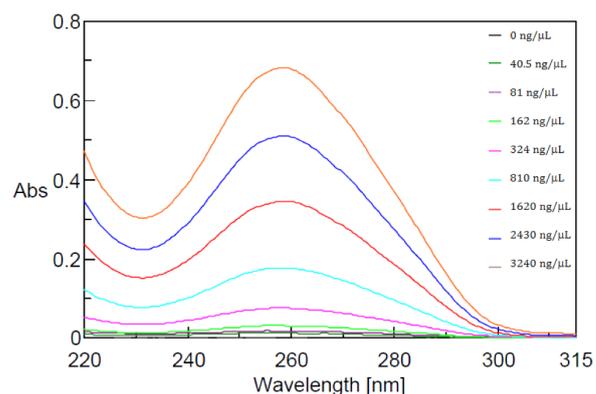


Figure 3. Absorption spectra of calf thymus DNA using a 0.2 mm pathlength cell.

The corresponding calibration curves using the absorbance maxima at 260 nm are shown in Figures 4 and 5. Both curves demonstrate good linearity.

Figure 4. DNA absorbance calibration curve in a 1 mm pathlength cell.

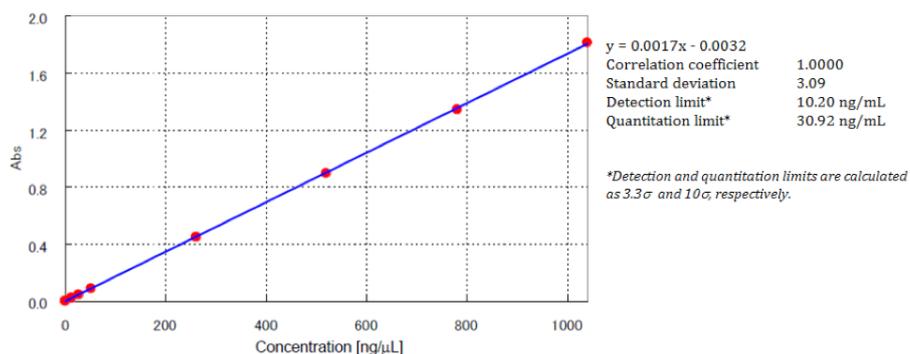
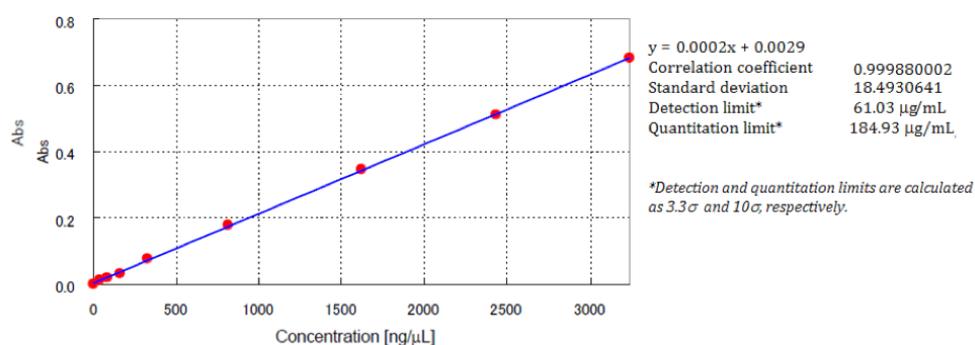


Figure 5. DNA absorbance calibration curve in a 0.2 mm pathlength cell.



The disc cell and cover glass were wiped clean after measuring the absorbance of the highest concentrated sample in the 1 mm pathlength (5 μL volume) cell. 5 μL of solvent was then measured to evaluate sample cross-contamination of the disc cell. The DNA sample absorbance was 1.8832 while the solvent absorbance was 0.0002, indicating that wiping is enough to remove all the traces of the sample from the cell.