Operating Instructions for Beckman DU 520 UV-Visible Spectrophotometer

in Scanning mode

Turn on the power and lift up the LCD display. The instrument will perform a series of diagnostic tests to ensure proper operation of major system components. It will take about 3 minutes during which the cover of the sample compartment must be kept closed. The main menu will be displayed when the tests are completed.

user program fixed λ scan λ kinetic timer (more)

Select **"scan λ "** (by pressing the "Λ" key below it) to go to the next menu.

baseline options start timer

Select **"options"** to go to the next menu.

λ min 400 nm λ max 800 nm λ step 2 nm view: abs (more)

Make sure the wavelength parameters are the same as shown above. To change a parameter, select it, enter the desired value, and hit **"enter"** key. Select **"more"** to go to the next menu.

group 0427 sample 0001 scale auto save program (more)

Make sure the group and sample numbers are the **same** as shown above. If not, enter the numbers. Press **"exit"** key to go back to the previous menu. In this experiment, you will save the spectra **first** and read the absorbance later. The instrument can store up to 10 spectra. Thus, you need to make sure that there is enough memory to store all your spectra. Press **"recall"** key to find out how many spectra are being stored in the memory. To free up some room, delete all the **files.** Press **"exit"** key to go back to the previous menu.

baseline options start timer

Fill a cuvette with deionized water and place it in the holder. Press **"baseline",** the instrument will scan the baseline.

start scan baseline cursor ← → options start timer

Now you can start to measure your samples by pressing **"start scan".** The new spectrum will replace the previous one (if any) on the display. The spectra will be saved automatically under group number "0427" and spectrum numbers "0001,

0002, 0003, ... (sequentially)". After you measure all the samples, you can recall all the spectra to be overlaid on display for reading the absorbance. Press the **"recall"** key, and a list of spectra stored will be displayed. One spectrum will be highlighted, press **"enter"** key to retrieve the spectrum. The spectrum will be displayed with a new menu.

view table zoom in cursor ← cursor → (more)

Select **"more"** to go to the next menu.

view table scale: auto mode: track overlay scan (more)

Select **"overlay scan"** to retrieve all of the other spectra one by one; use the ↑ and ↓ keys to switch from one file to another. Now you should have all your spectra displayed on the panel, and you can locate the peak wavelengths and read the absorbance. Use cursors ← and → to move the vertical dotted "cursor line" to the peak λ's, record the λ's and absorbance. Use the ↑ and ↓ keys to switch from one spectrum to another (only one spectrum is "activated" at a time), the name of the "active" spectrum (*e.g.*, S0001, S = sample) and the group number (e.g., G0427, G = group) will be displayed next to the ABS axis, and the wavelength and absorbance (of the "active" spectrum) will be displayed below the λ nm axis. Record the peak wavelengths and absorbance in your notebook.

Alternatively, you can use **"view table"** function to locate the peak λ's and read the absorbance.

view table mode: track go to λ overlay scan (more)

The **"mode"** can be changed from **"mode: track"** to **"mode: peak"** (*i.e.*, peak λ) and to **"mode: valley"**.