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5.310: Kinetics - Appendix 2

Appendix #2

Guidelines for Kinetics Runs using the HP8452 diode-array spectrophotometer Written by M. D. Gheorghiu

1. At the main menu of the HP89532A software, select “**Kinetics**” from the program choices.
2. Click on “**Functions**” and then on “**Single Wavelength.**” Enter 420 as the chosen wavelength (units are in nm).
3. Click on “**Time/Cells,**” and change the parameters (time is in seconds) to the following:
 - Run Time: 1200
 - Cycle Time: 60
 - Integration Time: 1.0
 - Start Time: 0
 - Autostorage: ON
 - Acquisition: Minimum
 - Shutter: Closed
4. Click on “**ScanScreen**” followed by “**PreRun.**”
5. First, a plastic cuvette filled with distilled water must be scanned as a blank to provide a spectral background. **Never touch the clear sides of the cuvette since it will always be in the path of the light beam! Keep the exterior clean and dry!**
6. Place the capped cuvette in the holder and push the black lever down to lock it. Click on “**Meas. Blank.**” After 5 seconds, the blank scan will appear as a very noisy line. This is not a problem since the scale shown here is very small (auto-scaling). Click on “**SampleInfo,**” and enter the appropriate information. Note that the background spectrum is stored in Register A.
7. Unlock the cell holder and remove the cuvette.
8. Now the kinetics runs may begin. Have your solutions available. Place the capped plastic cuvette filled with solution in the cell holder. Click on “**Start Run**” and enter the pertinent information (informative comments should be used). Click on “**Begin.**”
9. Follow the change in the Absorbance as a function of time for 1200 seconds (20 minutes).
10. When done, the computer will output some data to the printer (much of which is irrelevant). Click on “**Rescale,**” then on “**Zoom Out,**” followed by “**Hardcopy,**”

ending with "**Print Graphics.**" After printing, hit FF (form feed) on the printer if the paper needs to be aligned for the next run.

11. Repeat steps 9-12 for the following kinetics runs. What is the relationship between Absorbance at **time=0** for the different solutions? How can this be used as a quick check to determine whether one of the runs might be bad even before you leave the laboratory (but only if recording begins immediately after each solution is mixed)?
12. Once the kinetics runs are completed, the data must be converted to a tabular format. Click on "**Files,**" then on "**Replay Multicell Kinetics File.**" Choose a **MKD** file, press the space bar, and then press escape. Now click on "**Tabulate**" and then "**Time Trace File.**" Repeat for each file. After printing, hit FF (form feed) on the printer if it is necessary to align the paper for the next run.
13. Click "**Exit**" when done.