

Brookhaven 90 Plus Nanoparticle Size Analyzer Protocol

(Dynamic Light Scattering, DLS)

1. Turn on the power switch located on the back of the particle sizer (right side). This will also start up the computer.
2. Open BIC Particle Sizing Software by double click on the icon. This will turn on the laser. Allow 15 minutes warm up time before you start collecting data.
 - Once you open the program, leave it open till the end! It is not good to turn the laser on and off frequently!
3. Go to *File-> Database*. This will open up the File Utility window. If you are a new user, click on **Create Folder** and type in the name of your folder (usually your name) and click **OK**.
4. Double click on your folder and make sure it is selected as the active folder and click **Exit**. All new data files will be saved in this folder.
5. The Particle Sizing Software window will always show the parameters used in the last run. Click **Clear** to clear the window and click **Parameters** to enter the parameters for your experiment.
 - If you want to reuse the parameters from a previously saved experiment, choose that data file in the File Utility window and click **Open File**.
 - Choose Auto Save if you want the software to automatically save the result at the end of each run. You can also manually save the data after the run.
6. Load your sample and close the lid. Your sample should be ~3 ml and well suspended.
7. Click **Start** to start the run(s). The DLS will start collecting data. You can stop the run at any time by clicking **Stop**.
 - In general you want the *Avg. Count Rate* to be in the 50-300 Kcps range. The accuracy of the data will decrease if your particle suspension is too dense. Dilute your sample with solvent to adjust the count rate.
8. If Auto Save is not activated, you can save your data manually by going to *File-> Save*. The data will be saved in the folder you have selected in step 4. You can also save your data as a text file by going to *File-> Save As* and click **Text File Report**. You can also save the graphs by using the **Copy to Clipboard** button.
9. When you are done, close the software window and turn off the instrument.
 - It is not good for the laser to be turned on and off frequently. If someone else needs to use it within an hour, leave the software open. This will keep the laser on. If turned off, leave the laser off for at least an hour before turning it back on.
10. Clean up the area and dispose your samples.
11. Sign the use log.

Additional Information:

- The sample size for DLS should be 2nm~3μm.
 - The temperature control range is 5~75°C.
 - Polydispersity close to zero indicates monodispersed sample.
 - Sample quality indicates the difference between measured and calculated baseline of the correlation function. The highest number (best quality) is 10.
 - The correlation graph should be lognormal and level off on the baseline. If it is well above the baseline, turn on the dust filter. If it is still above the baseline, you have a messy sample.
 - The columns in the text report file represents:
 - D: diameter
 - G(d): relative percentage contribution of the size range. The largest group has the frequency of 100.
 - C(d): cumulated percentage contribution.
- ❖ For additional information, please refer to the **Instruction Manual** in the drawer below the DLS.
- ❖ For technical support, you can also contact **Graheme Williams** at 631-758-3200 Ext. 112, or email gwilliams@bic.com.