Zetasizer Start up/ Shut down Protocol Simplified

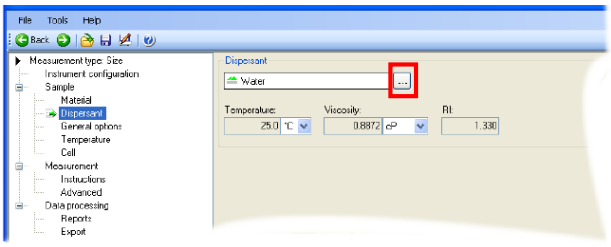
STOP This protocol is for qualified users operating Zetasizer in IBC 402 only. Dr. Jao accepts no responsibility for actions taken as a result of using this protocol. Reading the manufacturer's software user guide is highly recommended.

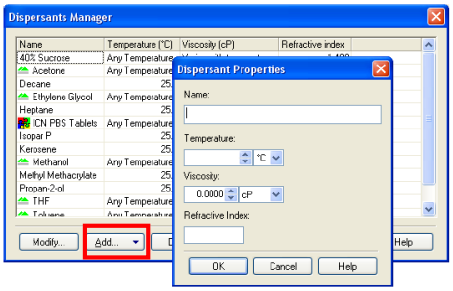
Startup procedure

1. Turn on instrument and control PC. Give the laser at least 30 minutes to warm up.
2. Start Zetasizer Software and you will hear a series of 4 beeps.

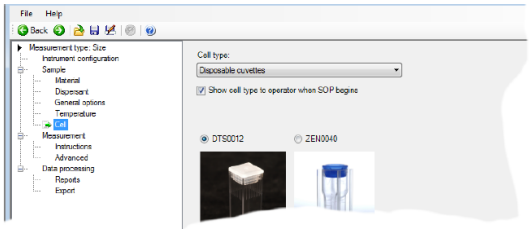
Dynamic light scattering experiment

1. Choose **File: New: Measurement File** or click the new icon in the tool bar.
2. Name your measurement file in C:\Document\Malvern Instrument\Measurement Data\Institute and select **save**.
3. Choose **Measure: Manual** to start a new measurement.
4. Choose **size** for the **Measurement type** in the left side Experiment tree.
5. Click **Sample** to name your sample.
6. Click **Sample: Material** and enter physical properties of your sample. Please note that the material RI is only needed to change the distribution from intensity-based to a volume- or number-based distribution. In the case of Rayleigh scatters, the RI can be ignored.
7. Click **Sample: Dispersant** and click the icon ... to select your solvent. If your solvent is not on the list, click **Add** to create a new dispersant. Enter the parameters of your solvent, including temperature, viscosity and refractive index. Dielectric constant is not used for DLS measurements.





8. Click **Sample: Temperature** to set up experimental temperature and equilibration time.
9. Click **Cell** to select cell type.

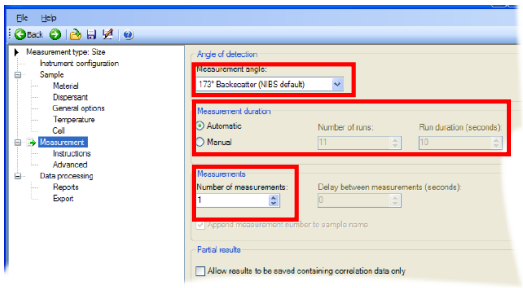


10. Click **Measurement,** choose **173 ° Backscatter** for measurement angle and select **Automatic** for the measurement duration. Alternatively, you can select **Manual** to fix the number of runs

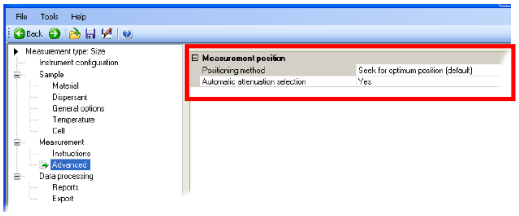
Jin-Hsuan Yu 2021/10/12

and duration time.

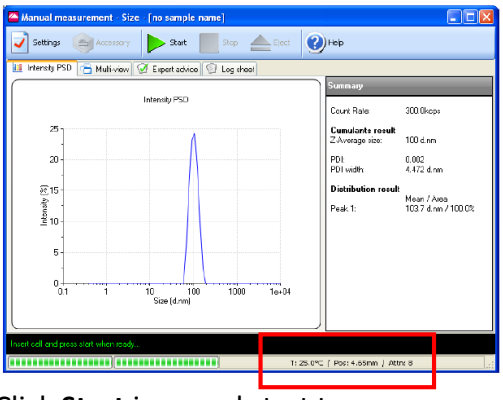
11. Choose repeat **3 times** for your measurement.



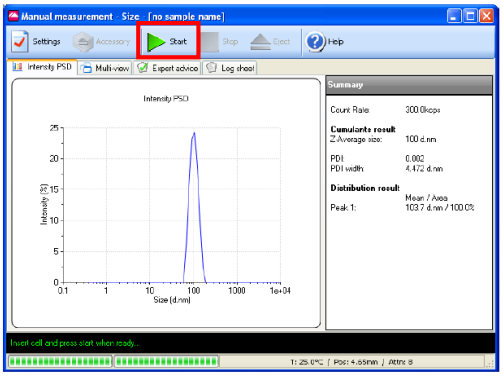
12. Click **Measurement: Advanced** and select **Seek for optimum position (default)** for positioning method. You may fix the position if needed.
13. Click **Measurement: Advanced** and select **Yes** for Automatic attenuation selection. You may fix the attenuation level if needed.



14. No need to change the **Data processing** parameters.
15. Click **Ok** and the measurement window will be displayed.
16. Load your cuvette in the instrument.
17. Confirm the temperature is reached.

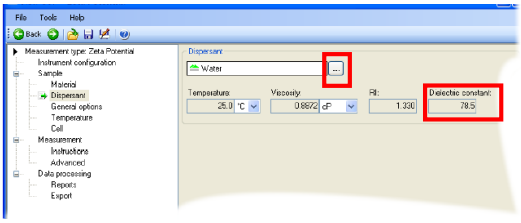


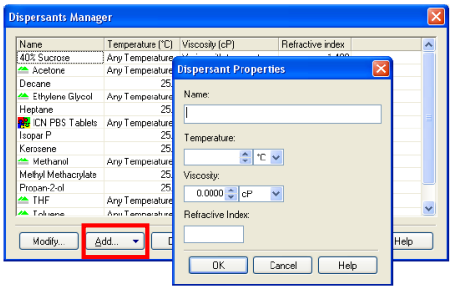
18. Click **Start** icon and start to measure.



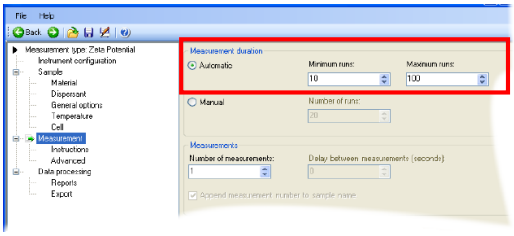
Zeta potential experiment

1. Choose **Zeta Potential** for the **Measurement type** in the left side Experiment tree.
2. Click **Sample** and create your sample name.
3. Choose **Sample: Dispersant**  and click the icon to select your solvent. if your solvent is not on the list, you can click **Add** to create a new dispersant.

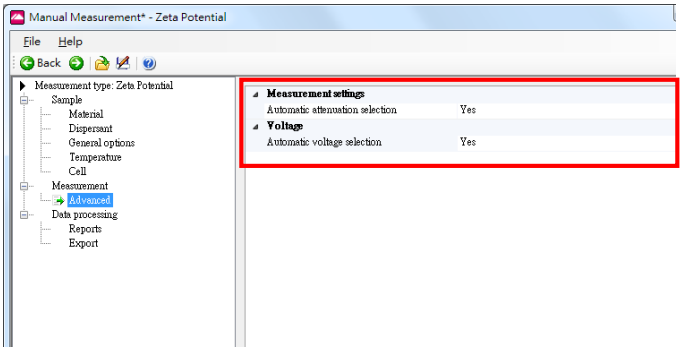




4. Click **Sample: General options** to select Hunry's Function F(Ka).
   For **polar** buffer (dielectric constant >20), select **Smoluchowski: 1.5**.
   For **non-polar** buffer (dielectric constant <20), select **Huckel: 1.0**.
5. Click **Sample: Temperature** and set on your measurement temperature and equilibration time.
6. Click **Cell** and select your cell type.
7. Click **Measurement** and select Automatic for measurement duration. You can select **Manual** to fix the number of runs.
8. Choose repeat **3 times** for your measurement.



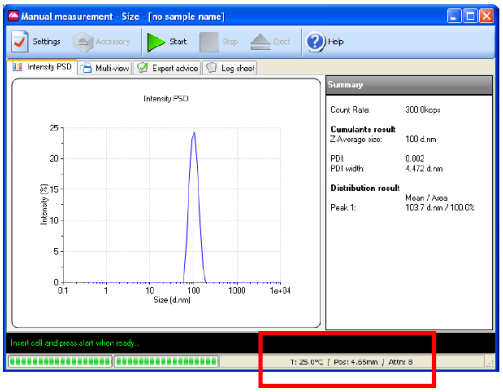
9. Click **Measurement: Advanced** to set on attenuation level and voltage application.
   Select **Yes** and the measurement will be automatically adjusted by software.



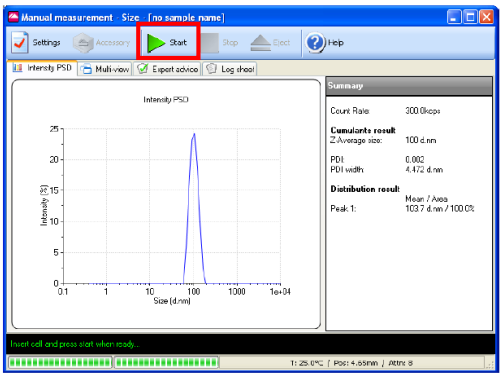
10. Click **Data processing** and select **auto mode** for analysis modal.
    In **Auto mode**, the measurement will be automatically analyzed by General purpose or Monomodal analysis which depends on the conductivity of your sample.
    In **General purpose**, you can obtain a distribution regardless of conductivity.

If conductivity is more than 10 mS/cm, it suggests use **Monomodal** analysis.

11. Select **Ok** and the measurement window will be displayed.
12. Load your cuvette in the instrument.
13. Confirm the temperature is reached.



14. Click **Start** icon and start to measure.



Sample loading tips for zeta potential measurement

1. Invert the cell.
2. Slowly inject the standard sample from its syringe into the cell and fill the U tube to just over half way.
3. Check no air bubbles in the cell. Tap the cell gently to dislodge any bubbles.
4. Turn the cell upright and continue injecting slowly until the electrodes are completely immersed.
5. Remove the syringe and insert a cell stopper in each port.

Shut down procedure

1. Close the software.
2. Please confirm that you save your data in your folder.
3. Turn off control PC and Zetasizer instrument.
4. File the log book.
5. Discard used disposable cuvette and take the wastes away with you.