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Zetasizer quick user guide

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Instrument and pc are usually on. There is no password for the pc or the software.

Measurement set-up

The data collection software is DTSNano, which is usually running (shortcut on desktop if required).

File → *New* → *Measurement File* to create a new file (.dts) or *File* → *Open* → *Measurement File* to open an existing one. These should be saved in your folder in Measurement Data via a shortcut on the desktop (C:\Documents and Settings\Zetasizer\My Documents\Malvern Instruments\DTS\Measurement Data).

To set up a measurement, go to *Measure* → *Manual* then select the type of measurement required, *e.g. File* → *New* → *Size*. Work down the list and fill in the parameters as required:

Sample	Add a sample name etc	
	Material	Choose one that is similar to your sample, or create a new material if you know the refractive index
	Dispersant	As above
	General options	No changes
	Temperature	As required
	Cell	Select the correct cuvette
Measurement	Leave as auto to start with. Select number of measurements required.	
	Advanced	No changes
Data processing	Use normal resolution	
	Reports	Generally not used
	Export	Can be done manually after the experiment

Press *OK* and the instrument will heat or cool to the temperature specified.

Sample preparation

A standard disposable cuvette requires ~ 1 ml. These are suitable for aqueous samples at temperatures up to approximately 60 °C. Outwith these conditions a glass or quartz cell should be used. A small volume cuvette may be required for small samples; ensure that it is loaded into the instrument in the correct orientation for the light beam. Cells for zetapotential measurement (folded capillary cells) should be ordered from Malvern; the part number is DTS1070.

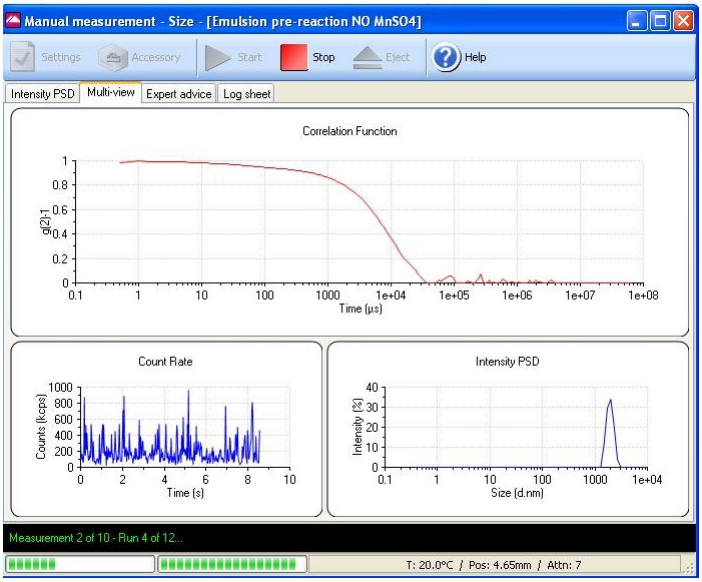
For size measurements use around 10 wt % suspension, as a guide aim to be able to see through but with some sample visible. Ideally use 10 mM NaCl solution rather than pure water; it will suppress the electric double layer around the particles and give a more accurate size reading. You may wish to filter the sample to remove dust.

Fill the sizing cuvette to level indicated on door, slide cuvette in and push down, fit lid especially if heating and close the top. Zeta potential cells should be flushed through with the dispersant before use, then filled using a 1 ml syringe with the cell inverted. When the sample reaches half way round the U, turn upright and continue to fill. Place in instrument with the Malvern logo facing forwards (see the cell box for more details).

Analysis (Size)

Press Start, and the sample will equilibrate for the specified time period, then run some preliminary scans to optimise the system.

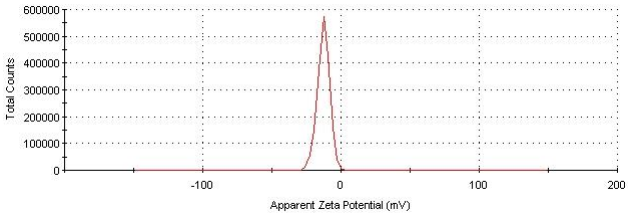
When data collection begins, the *Mutiview* tab shows the correlation function, counts and intensity distribution. The correlation function should be a smooth s-shaped curve.



When the measurement is complete the data can be inspected on the *Intensity* tab – right click in the plot area to display the data as a volume or number distribution. A PDI value is given; a value larger than 0.3 suggests that the polydispersity is too large to give a satisfactory result. A size value is displayed for each peak, and an average size for the sample.

Analysis (Zetapotential)

Press Start. The instrument will optimise conditions and then collect data. If successful, the data will appear as a sharp peak.



Insert the next sample for measurement, or close the data collection window to return to the .dts file.

Data and export

The first tab, *Records View*, shows a list of all the runs. Other tabs are displayed depending on the workspace selected. The plots displayed can be saved as screen shots only.

Data can be exported using *File → Export.* Chose *Export to file*, either *all* (everything in the list) or *selected,* and browse to your folder. On the *Parameters* tab, select *Use export template parameters* and select the appropriate template. This will output a text file in which the data is in rows rather than the more conventional columns, and thus requires a bit of tidying.