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User training- Dynamic Light Scattering Achieving reliable Nano particle sizing

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|--------------------|---|
| Presenters: | ATA Scientific Pty Ltd |
| Time: | Registration 9am finish approx 4.30pm* |
| Course fee: | \$200(+gst), includes notes, refreshments and lunch |
| Venue: | Contact us for updates |

This one day course is designed for users of Malvern Dynamic Light Scattering particle size analysers. It will help users understand how these instruments work, how to make reliable measurements and how to interpret the data. Important sampling and maintenance procedures are also covered in practicals.

Who should attend

Users of Malvern Zetasizer series particle size analysers. This course will be valuable for both new users and existing users who will learn “best practise” in the operation and maintenance of these instruments.

The course consists of theory presentations and practical sessions.

Theory presentations

- Dynamic Light Scattering (DLS) theory
- Experimental considerations
- Zeta Potential theory
- Data interpretation

Practicals

- Correct measurement procedure
- Achieving repeatable size measurements
- Achieving repeatable zeta potential measurements
- Data analysis and report design

*Lunch will be provided (please advise of any special dietary requirements).



Course Outline

This course introduces the user to the Zetasizer Nano. It will allow the user to understand, what the Zetasizer is, what it does, how to make good measurements and how to interpret the data from measurements. The course consists of both theory presentations and practical sessions.

Section 1: Introduction to dynamic light scattering theory

- DLS theory and particle/molecular size concepts
- Brownian motion and rate of intensity fluctuations
- Data interpretation (correlation function)
- Analysis options (Cumulants vs Distribution)

Section 2: Size measurements using the Zetasizer Nano

- Sample and dispersant requirements
- Understanding the upper and lower limits for size and concentration
- Sample preparation and polystyrene latex sizing standard
- Setting up Standard Operating Procedures
- Live measurement display
- Measurement sequence
- Data interpretation

Section 3: Introduction to Zeta Potential Theory

- Zeta Potential Overview
- Laser Doppler Electrophoresis Measurement Principle
- Phase Analysis Light Scattering (PALS)

Section 4: Zeta Potential measurements using the Zetasizer Nano

- Sample and cell preparation and loading
- Instrument Verification
- Creating SOPs and live measurement display
- Data Interpretation (Phase/Frequency Plots)
- Zeta Quality Report
- Expert Advice System



Practicals

The following series of practical experiments provide an introduction to the analysis of the varied sample types that may be characterised using a Zetasizer Nano.

SIZE:

Practical 1 - Check the operation of the instrument and investigate effects of dispersion medium, temperature, etc.

- a) Measure 60nm latex in 10mM NaCl
- b) Measure 60nm latex in deionised water

Practical 2 – Find the minimum and maximum concentration at which repeatable size measurements can be made

- c) High concentration sample

Practical 3 – Measure sample in water /physiological buffer and compare data before and after filtration

- d) Sub nm size measurement – 30% sucrose
- e) Protein sample – BSA (molecular weight ~64kDa)

ZETA POTENTIAL:

Practical 4 – Check accuracy/repeatability of the standard using Zeta Potential

- f) Zeta transfer standard

Practical 5 - Find the minimum and maximum concentration at which repeatable Zeta Potential measurements can be made

- g) High concentration sample

Practical 6 – Measure sample in physiological buffer and compare data before and after filtration

- h) Protein sample – BSA (molecular weight ~64kDa)

For more information or to register please complete the [online registration form.](#)