

Nanosight NS300: Standard Operating Procedures (SOP)

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Objective:

This document aims to provide a detailed process description for operating the Nanosight NS300, a nanoparticle tracking analysis (NTA) system, ensuring accurate and reliable characterisation of nanoparticles in liquid samples. This standard operating procedure (SOP) serves as a guide for laboratory personnel involved in operating the Nanosight NS300 instrument.

Equipment and Materials Required:

1. Nanosight NS300 instrument
2. The sample to be analysed
3. Appropriate sample chamber
4. Diluent or dispersant (if required)
5. PPE (personal protective equipment), including lab coat, gloves, and safety goggles

Procedure:

1. Preparing the Nanosight NS300 Instrument:
 - a. Ensure that the Nanosight NS300 instrument is in good working condition and that all necessary components are correctly connected.
 - b. Power on the instrument and allow it to initialise and stabilise, following the manufacturer's instructions.
2. Instrument Calibration (Once a year during PM):
 - a. Per the manufacturer's guidelines, perform instrument calibration using the provided calibration beads.
 - b. Ensure that the calibration is performed for the appropriate particle size range.
3. Sample Preparation:
 - a. Prepare the sample to be analysed, ensuring it is in a suitable liquid form.
 - b. If necessary, dilute the sample using an appropriate diluent or dispersant to achieve an optimal concentration for analysis.
 - c. Avoid introducing air bubbles into the sample.
4. Loading the Sample:
 - a. Load the prepared sample into the sample chamber.

- b. Ensure that the sample chamber is clean and free of contaminants.
5. Setting Up the Nanosight NS300:
 - a. Launch the Nanosight NS300 software on the connected computer.
 - b. Configure the instrument settings, including camera level, detection threshold, and analysis parameters.
6. Particle Tracking Analysis:
 - a. Initiate the analysis through the software interface.
 - b. The Nanosight NS300 will perform particle tracking analysis, tracking the Brownian motion of individual nanoparticles and providing concentration and size distribution information.
7. Data Analysis:
 - a. Retrieve the data generated by the Nanosight NS300.
 - b. Analyse the particle size distribution and concentration using the provided software or compatible analysis tools.
8. Cleaning and Maintenance:
 - a. After analysis, clean the sample chamber thoroughly to prevent cross-contamination.
 - b. Follow the manufacturer's guidelines for routine maintenance to ensure the instrument's optimal performance.
9. Data Interpretation and Reporting:
 - a. Interpret the results, considering the particle size distribution and concentration.
 - b. Record the analysis results in a lab notebook or electronic data recording system, including sample information, date, and relevant observations.
 - c. Generate a formal report summarising the nanoparticle analysis.
10. Shutdown:
 - a. Properly shut down the Nanosight NS300 following the manufacturer's guidelines.
 - b. Turn off the instrument.