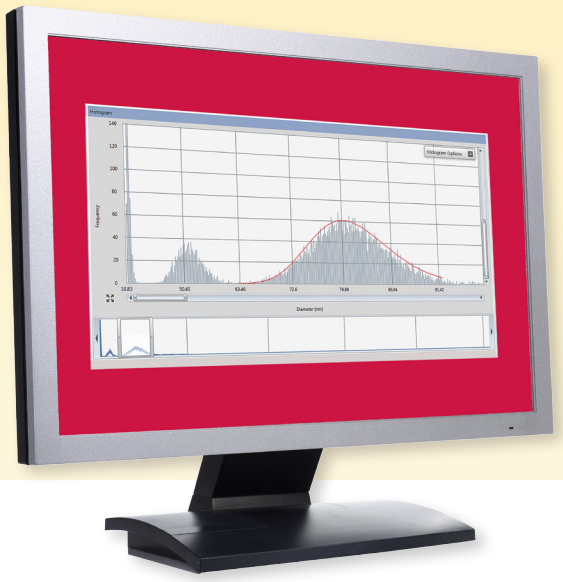
PRODUCT NOTE

ICP - Mass Spectrometry



Key Benefits:

- Ease-of-use
- Speed
- Flexibility
- Automation

Syngistix Nano Application Module for Single Particle ICP-MS

Introduction

Syngistix™ Nano Application Module is the first commercially available software that combines real-time single particle acquisition with fast data processing for routine analytical use. This vertical module is an extension of PerkinElmer's Syngistix for ICP-MS software and NexION® 350 ICP-MS that allows for fast continuous data acquisition (100,000 pts/s at 10 µs dwell time), thanks to a combination of unique hardware, software and scientific know-how for the analysis of nanomaterials. These capabilities provide users with several important nanoparticle characteristics such as inorganic composition, concentration, size, size distribution, agglomeration as well as the ability to differentiate between ionic and particulate fractions – all through a single interface that eliminates the need for labor-intensive data processing.

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Syngistix Nano Application Module incorporates all single particle analysis needs into an intelligent workflow. The first panel – Analysis (Figure 1) – allows the user to set up methods and batches, calculate transport efficiencies, and view data acquisition in real time. The second panel – Results (Figure 2) – is for reviewing and making adjustments to the data. With this intelligent workflow, users will be able to focus on what matters most – the results.

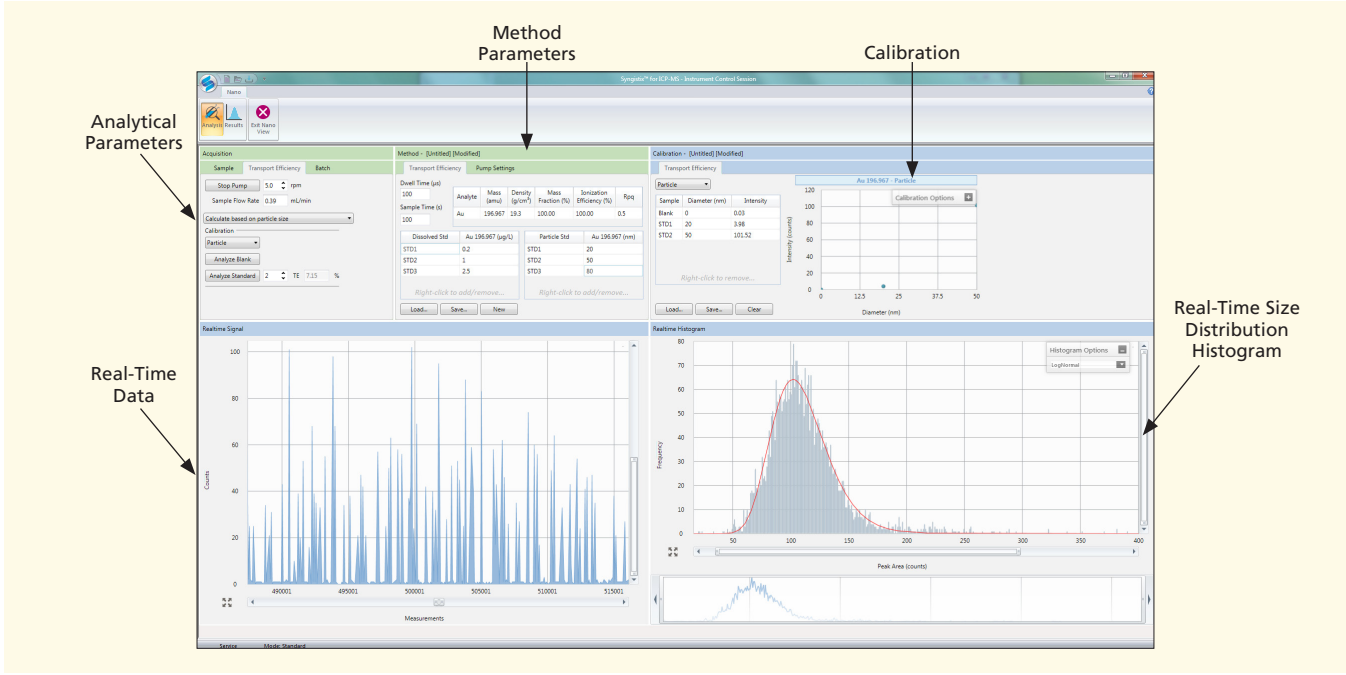

Figure 1. Analysis panel in Syngistix Nano Application Module.

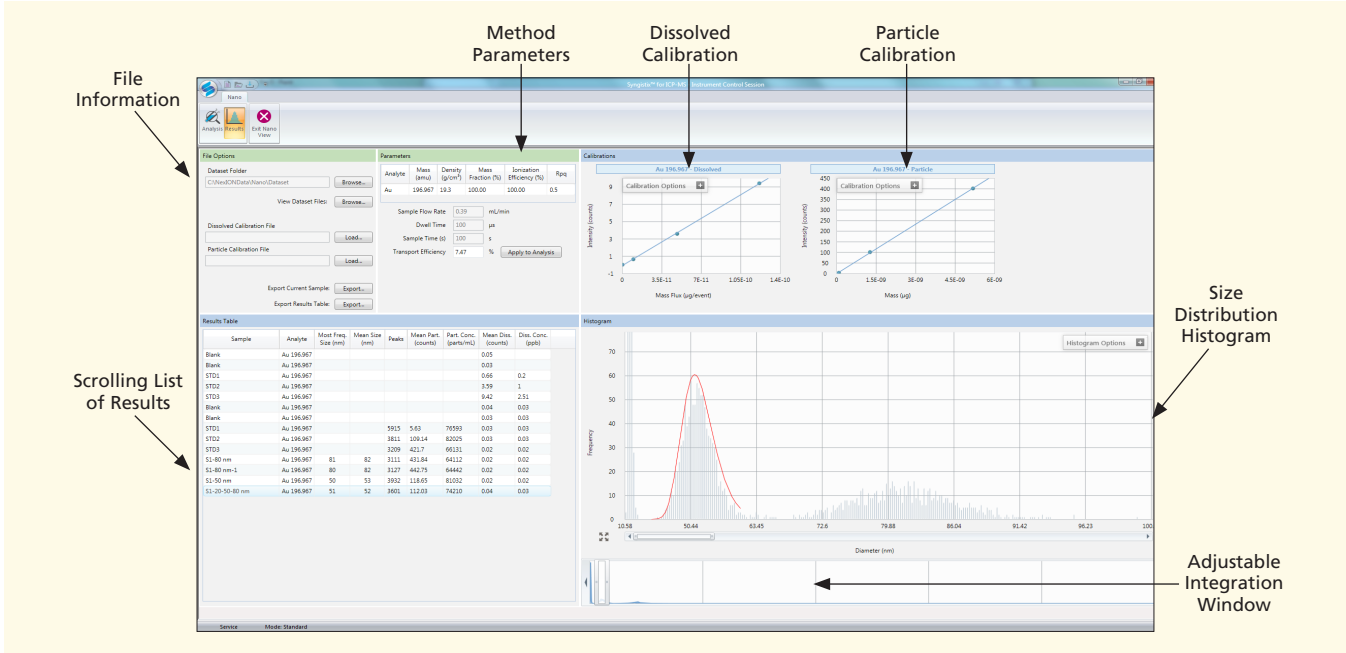

Figure 2. Results panel in Syngistix Nano Application Module.

With the Nano Application Module, data can be viewed as it is being acquired in real-time, allowing individual nanoparticle events to be viewed while the intensity histogram is building. The real-time view feature is represented in Figure 3. This feature, unique to Syngistix Nano Application Module, provides users with instant information on the sample being analyzed including whether further dilution is necessary to avoid particle coincidence.

Using the batch functionality available in the Nano Application Module, sample lists with multiple methods and calibrations can be created and run automatically, allowing for high throughput, maximizing flexibility and eliminating the need for user intervention. An example of this batch functionality feature is displayed in Figure 4.

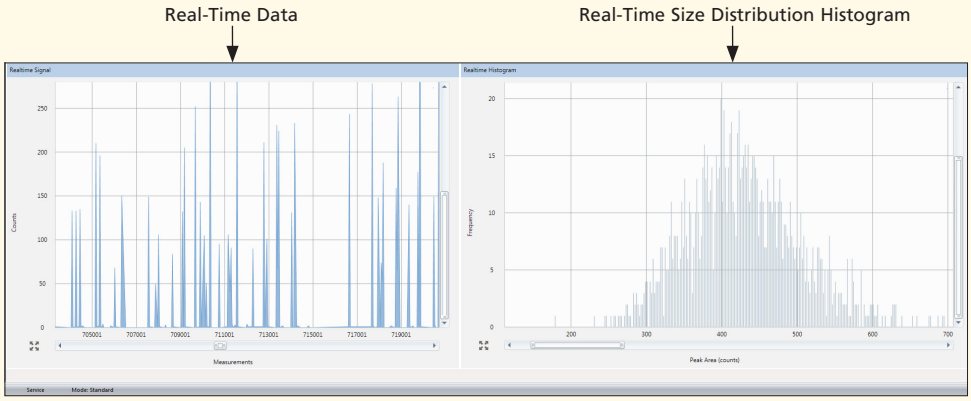

Figure 3. Real-time view of fast data acquisition in Syngistix Nano Application Module.

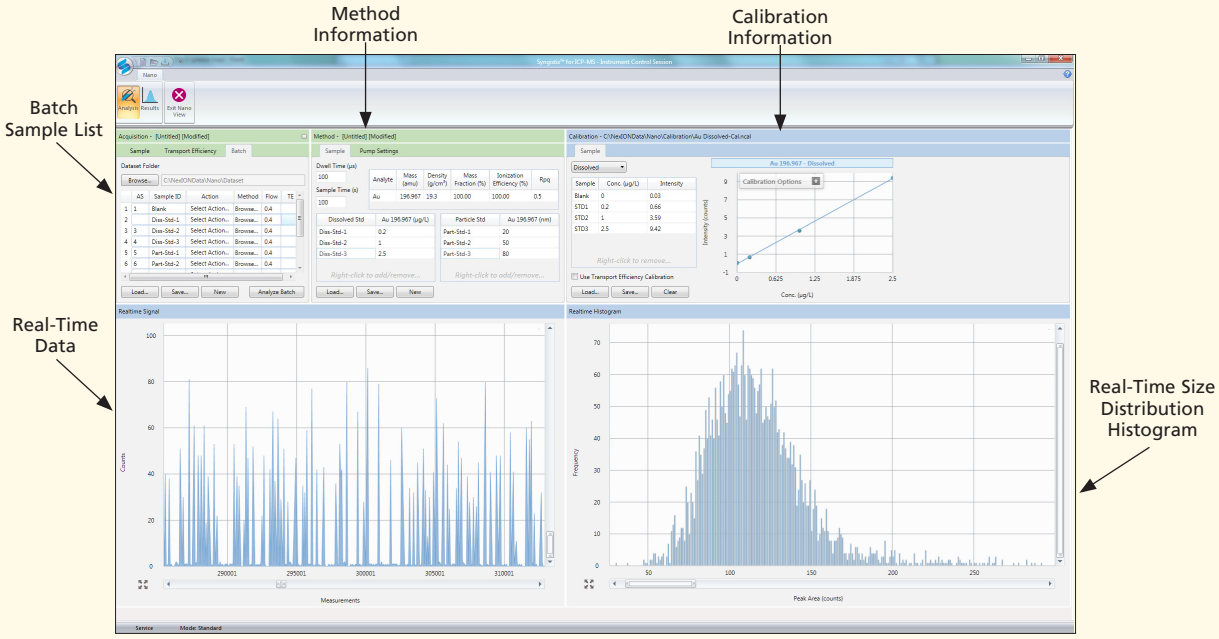

Figure 4. A screen shot of the Analysis page of the Nano Application Module showing Batch mode, the method, and the dissolved calibration.

To facilitate the review of all of the data generated, the Nano Application Module incorporates the data acquired into tabular format for ease of verification, offering a multitude of additional information such as: most frequent size (nm), mean size (nm), number of peaks detected by acquisition period, mean particle counts, particle concentration (part/mL), mean dissolved counts, and mean dissolved concentration (µg/L). This information is instantly updated to reflect the fitted area using the dynamic fitting window with three types of histogram options (Gaussian, log normal and maximum intensity).

Last but not least, the Nano Application Module provides two different types of export functions to share data with collaborators or colleagues, providing even greater convenience:

- Export the data table for quick review
- Export all the information on a single sample for post processing – this includes sample data, size and intensity histograms as well as the calibration information used.

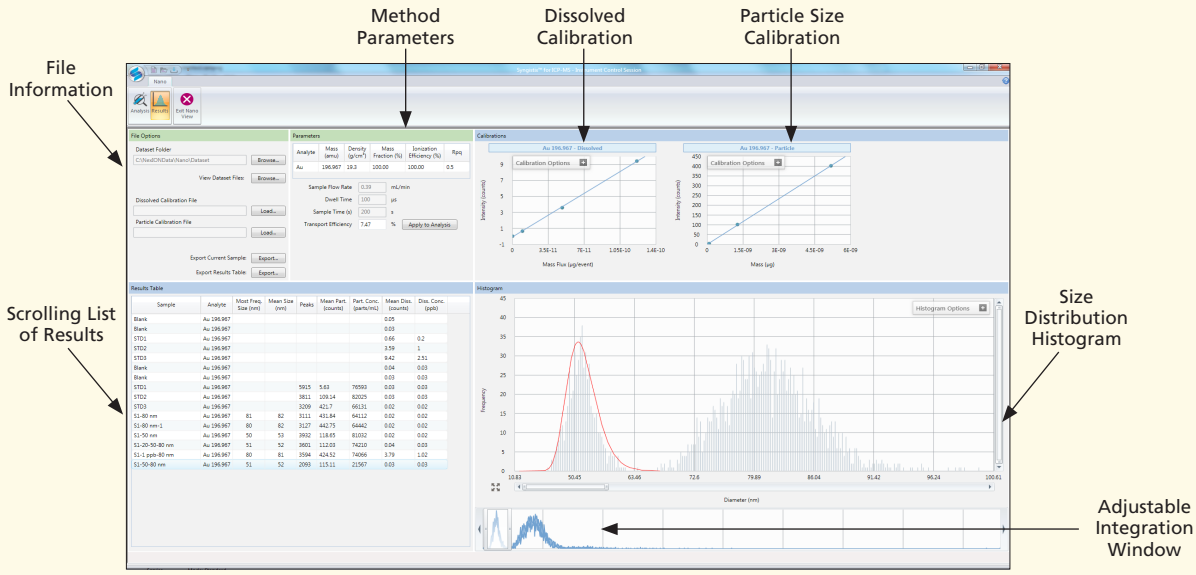

Figure 5. The Results page showing the calibrations, the results for all samples run, as well as the histogram of the highlighted sample. The Results grid can be exported.

The Nano Application Module within PerkinElmer's Syngistix for ICP-MS software is the ideal tool for laboratories analyzing nanomaterials. This unique application module allows the differentiation and quantification between the dissolved and particulate fractions of the same analyte. In a single analysis, particle composition, concentration, size and size distribution can be determined without the need for subsequent data processing. Coupled with the NexION 350 ICP-MS, the Syngistix Nano Application Module is the world's first single particle ICP-MS dedicated analysis software, delivering speed, flexibility, automation, and ease-of-use.

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