

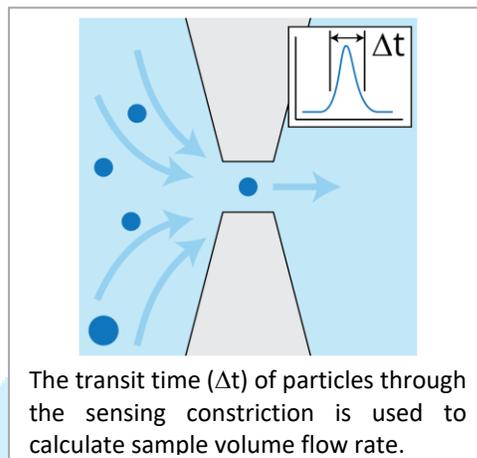
Dynamic Concentration Analysis –

An Improved Method for Calculating Concentration by MRPS

Spectradyne is proud to announce the deployment of an improved method for calculating nanoparticle concentration by Microfluidic Resistive Pulse Sensing (MRPS)—here’s how it works.

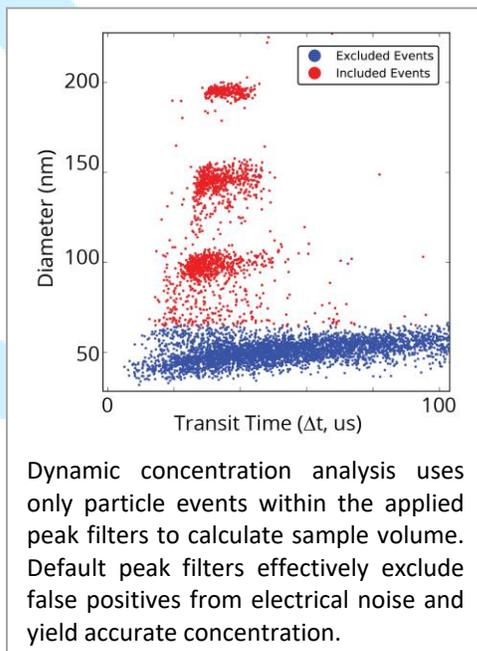
The fundamentals – How does MRPS determine concentration?

- MRPS counts and sizes nanoparticles one by one as they flow through a sensing constriction in the microfluidic cartridge. (Learn more at our [technology page](#)).
- Concentration is the number of particles per unit volume, so to calculate concentration from raw counts requires knowing the volume of analyte in which the particles were counted.
- In MRPS, two parameters are used to determine sample volume:
 - o A factory-calibrated conversion factor to calculate sample volume from the speed of the sample as it flows through the sensing constriction.
 - o The speed of the sample, determined from the average transit time of particles passing through the constriction.



What’s new? The set of particles used to calculate the sample speed.

- The average particle transit time calculation depends on which events are included in the average.
- Old method:
 - o Rigid parameters set the particle events used to calculate sample volume. This worked well in most applications!
- New method:
 - o The applied peak filters set the particle events used to calculate sample volume. This is better in all applications!
 - o The concentration updates dynamically with the filters.
- In most applications the default filters—which are automatically applied at data processing—will do the best job of accurately determining the concentration. No action is required by the user.
- In special situations when custom peak filters are required to completely exclude false positive events, the concentration accuracy will be improved after the peak filters are applied.



What does this mean for you?

- More accurate and robust concentration measurements for any stats and combined files generated with Spectradyne Tools version 2.5.0.314 or later.
- Stats and combined files created prior to the upgrade will not be changed by the new analysis method.
- Raw data collected using cartridges with a box date after 11/1/2021 is eligible for reprocessing using the new method.
- It’s always good practice to ensure that the peak filters applied to the data are correctly excluding any false-positive events and deliver an accurate assessment of the real particles in the sample.