KANOMAX FMT

A Kanomax Company

NANOPARTICLE MEASUREMENT SOLUTIONS

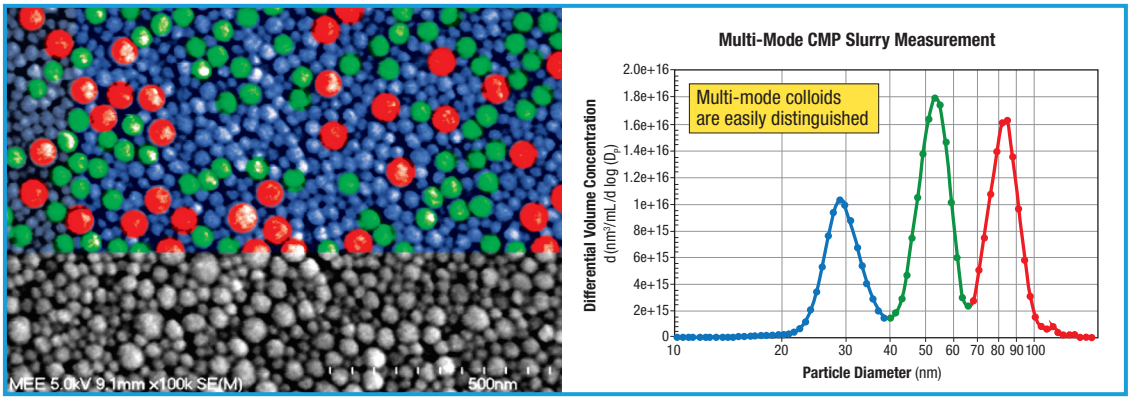
# Liquid Nanoparticle Sizer (LNS) System

*Model 9310*

## Size Nano Colloids Precisely and Quickly

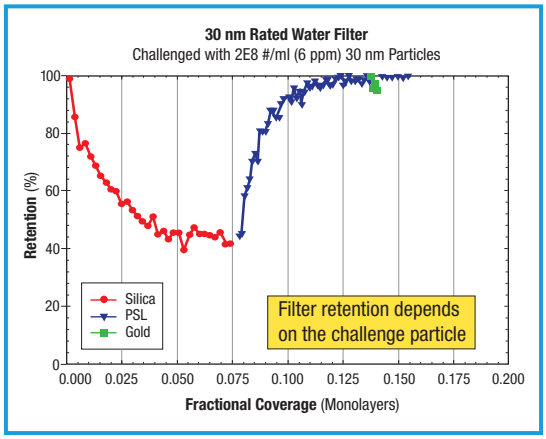
- 6 – 360 nm measurement range in under 5 minutes
- Actual quantitative concentrations
- Any particle, any shape, any composition, any distribution (including multimodal)
- Great for CMP slurry, resin rinse, bio-pharma, and filter characterization, monitoring, and control

### CMP Slurry Characterized with the LNS System



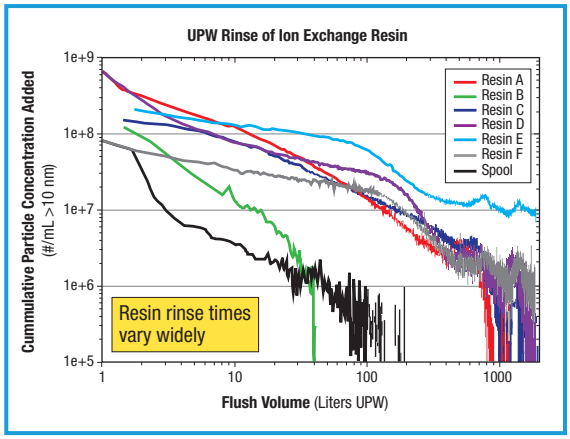

Van Schooneveld et. al., Nanotech 2011: Technical Proceedings of the 2011 Nanotechnology Conference and Expo

### Filter Performance Testing




Van Schooneveld et. al., American Filtration Society Spring Conference, Minneapolis, MN, 2013

### Resin Rinse Benchmarking

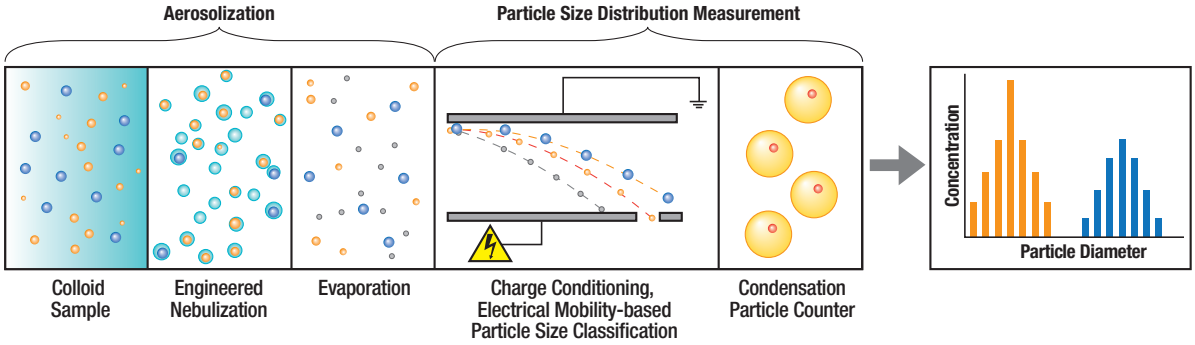



Data prepared and presented by CT Associates to the SEMI Ion Exchange Task Force on 02/27/2014

## Industry Recognition

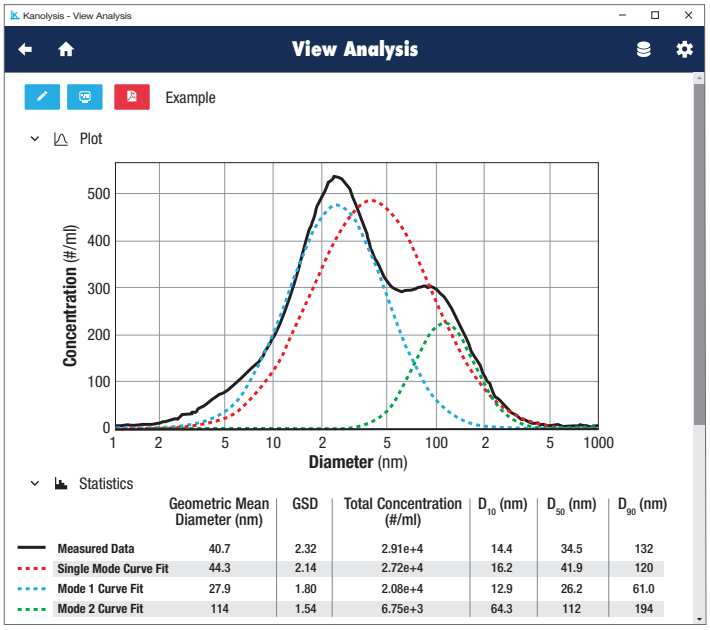
- C79-0113 Guide to Evaluate the Efficacy of Sub-15 nm Filters Used in Ultrapure Water (UPW) Distribution Systems
- C93-0217 Guide for Determining the Quality of Ion Exchange Resin Used in Polish Applications of Ultrapure Water Systems

## Principle of Operation




## Integrated Software Platform - Kanolysis

- All-in-one control of the LNS system
- Automated sampling sequence
- Real-time data analysis




| | Geometric Mean Diameter (nm) | GSD | Total Concentration (#/ml) | $D_{10}$ (nm) | $D_{50}$ (nm) | $D_{90}$ (nm) |
|---|---|---|---|---|---|---|
| Measured Data | 40.7 | 2.32 | 2.91e+4 | 14.4 | 34.5 | 132 |
| Single Mode Curve Fit | 44.3 | 2.14 | 2.72e+4 | 16.2 | 41.9 | 120 |
| Mode 1 Curve Fit | 27.9 | 1.80 | 2.08e+4 | 12.9 | 26.2 | 61.0 |
| Mode 2 Curve Fit | 114 | 1.54 | 6.75e+3 | 64.3 | 112 | 194 |

## Specifications

**Particle size range:** 6-360 nm
**Particle size resolution:** 64 channels per decade of size
**Measurement time:** <5 minutes
**Inspection volume rate:** 0.2-1.0 µL/min
**Total liquid sample flow rate (online):** 50-280 mL/min
**Nebulizer flow rate:** 0.5-3.0 mL/min (direct injection)
**Dilution factor range:** 50-20,000
**Colloid concentration range (post dilution):** 3E7-3E11 number/mL
**Response time to concentration change:** <90 seconds
**Inlet water pressure (online):** 140-300 kPa (20-45 psig)
**Compressed air flow rate/pressure:** 2.5 std L/min CDA or Nitrogen 2.8 bar (50-60 psi)
**Wetted surfaces (before nebulization):** PFA, PTFE, sapphire, 316L stainless steel, PEEK
**CPC working fluid:** n-butyl alcohol (butanol)
**I/O Communications:** Ethernet, internal memory
**Power requirements:** 100/115/220/240 VAC; 50-60 Hz
**Operating temperature:** 10-35°C
**Operating humidity:** 0-90% RH non-condensing
**Storage temperature:** 5-35°C
**Dimensions:** 9.5 × 8 × 36 inches (D/W/H)
**Software – computer operating system:** Windows 10

Refer to individual product sheets for component details.
Computer not included.

Specifications subject to change without notice.
The LNS System was developed in collaboration with CT Associates, Inc.
The LNS System uses a soft X-ray charge conditioner.

## Patent Protected

- Patent numbers 8,272,253 and 8,573,034 have been issued to CTA and licensed by Kanomax.
- Kanomax has applied for additional domestic and international patents for technology contained within the LNS System.
- Patent number 7,852,465 has been issued to Kanomax.

**Kanomax FMT and the Kanomax Group have unique aerosol expertise and can deliver powerful solutions to your nanoparticle measurement challenges. Let's get started - connect with us today!**

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Printed in the USA. 6/2019


Distributed by: