



Size Determination of Inkjet Pigment Dispersions by Nanoparticle Tracking Analysis

NanoSight's technology rapidly and accurately sizes pigment particles in suspension, combining a unique dynamic view with comprehensive size determination, rapidly and at low cost.

Background

Particle size remains a core measure in determining the functional properties of pigment-based inkjet inks. Colour density, opacity and viscosity depend directly upon particle size. As jet nozzles get smaller and the resolution demands of customers grow, the need to fully understand the whole of the particle size distribution increases.

Existing techniques that address particles size in the sub-500nm range have significant limitations with inkjet systems:

- Dynamic Light Scattering (or Photon Correlation Spectroscopy) is inherently limited in its method of sizing suspensions with a range of particle sizes. This is due to the measured signal being strongly intensity-weighted towards larger particles as the scattering from deeply sub-micron particles is proportional to the sixth power of their diameter.
- Electron microscopy, whilst providing a detailed insight into morphology, surface structure and much more, is inherently intrusive in preparation and provides limited statistically useful data.

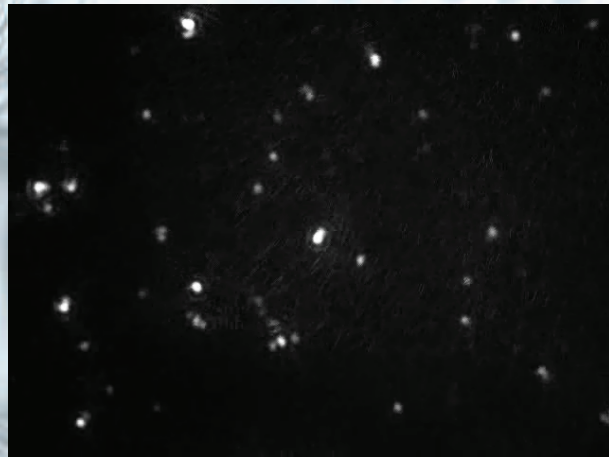


Figure 1. Commercially-available inkjet ink. Still image from NanoSight system, shows range of particles, brighter and more polydispersed than those below. [The real-time video clips are available on our website: these provide an information-rich view of particles in Brownian motion].

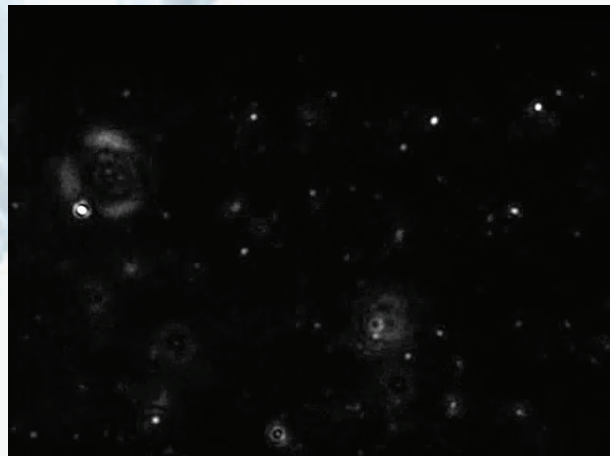


Figure 2: Advanced Digital Ink. Particles much smaller, and similar in appearance (monodisperse).



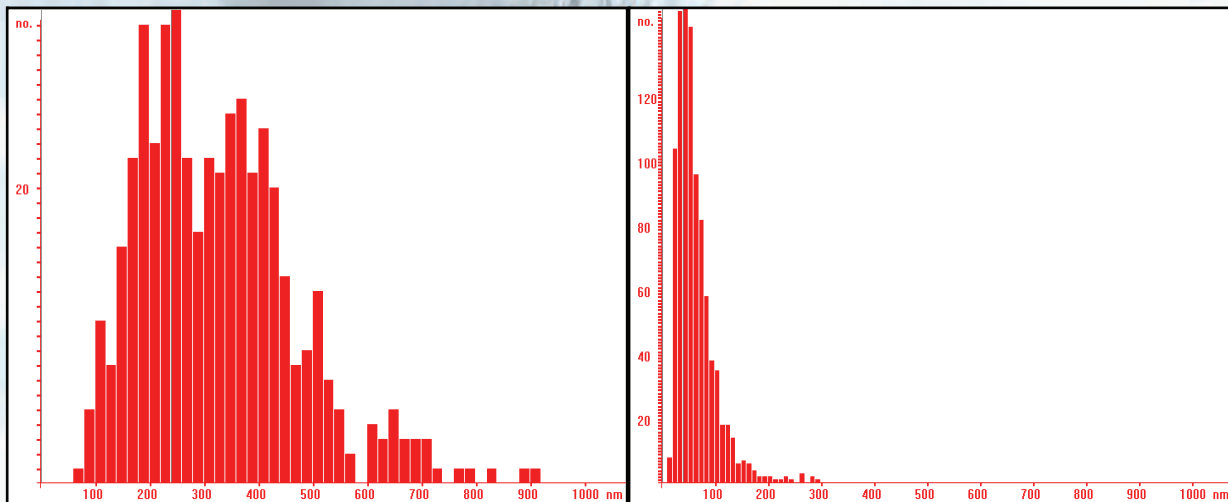


Figure 3: Comparison of NanoSight Particle Size Distributions for the two inks above, illustrating NanoSight's ability to demonstrate polydispersity, and the clear differences between them. In both cases the x-axis scale is particle diameter. The y-axis is the number count of particles at that size.

Sizing by NanoSight Systems

NanoSight's technology uniquely provides inkjet formulators with:

- A unique view where the individual pigment particles are visualised, moving under Brownian motion.
- A particle-by-particle, number size distribution of pigment particles provided by tracking the diffusion of individual particles, using video and specially developed software.
- An opportunity to study time-dependent effects, using real-time observation.

Key features

- Compatible with most inkjet solvents
- Proven on inorganic, organic and specialty pigments
- Small sample volume
- Full range of reporting functionality
- All data exportable to spreadsheet.
- Rapid Results
- Low cost to purchase and operate

And most importantly, the particle size data is validated by a unique and informative dynamic view of the particles in suspension.

Contact details

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Distributor details

...seeing is believing