



Model 2300-NPT Particle Deposition System

- Deposit PSL spheres to create calibration standards for wafer surface inspection tools (KLA-Tencor, Hitachi, Applied Materials, Topcon, etc.)
- Deposit Process Particles of Si, SiO₂, Si₃N₄, Al₂O₃, Ti, TiO₂, TiN, W, Ta, Cu and other materials to produce challenge wafers for particle removal efficiency studies.
- Deposit particles on photomasks for inspection and cleaning process applications.
- Develop proprietary processes.
- Realize the cost savings, quality control, and convenience offered by an in-house Particle Deposition System.



DESCRIPTION

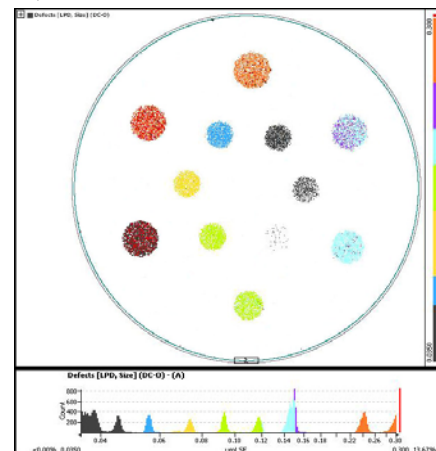
The Model 2300-NPT™ Particle Deposition System is a highly advanced tool for depositing micro- and nano-sized particles on silicon wafers for creating NIST-traceable particle size standards for calibrating scanning surface inspection system (SSIS) tools and for producing challenge wafers for cleaning process studies.

Using the latest advance in Nano-Particle Technology™ (NPT™) from MSP for nano-particle generation, classification and deposition, the 2300-NPT produces calibration wafers with unparalleled accuracy in deposited particle size and count, and deposited pattern size and shape.

The NPT is easy to operate through recipe control. Up to 12 different PSL sizes may be deposited with a single recipe without swapping out or adjusting particle suspension mixtures. Automated wafer handling in the Model 2300-NPT-2 allows up to 25 wafers to be deposited in a single control job. Six-inch photomasks may be deposited in the manual-loading Model 2300-NPT-1, in addition to 200mm and 300mm wafers.

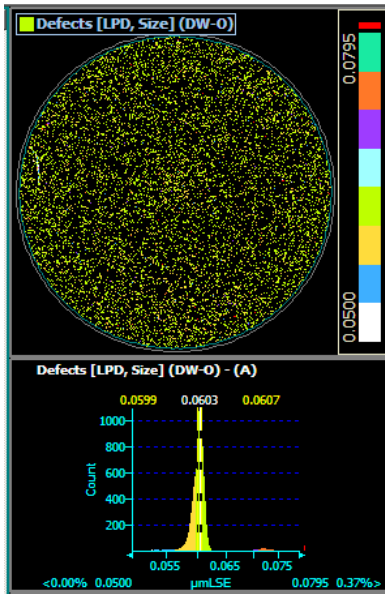
FEATURES

- Nano-particle atomization and DMA size classification for cluster-free deposition of PSL spheres as small as 20nm (verified by AFM and SEM defect review analyses)



- Up to 12 different PSL sphere sizes and 50 different deposits with a single recipe

- Full wafer deposit and Spot, Arc, and Ring deposits



- Automatic adjustment of gas-borne particle concentration for superior count control
- Recipe control of deposited particle density on wafer surface
- Offline concentration and peak diameter measurement
- Electrical Ionizer (no radioactive material required)
- Water-based CPC (no butanol required)
- ISO Class I Mini-Environment (Model 2300-NPT-2)

BENEFITS

There are many benefits to producing your own wafer standards with a Model 2300-NPT rather than purchasing them from an outside supplier.

Cost Savings. Device manufacturers use SSIS tools to measure particles on bare Si and a variety of films, each with different optical properties that affect tool response. Generation of each film-specific calibration curve typically requires 10 or more calibration standards. The cost of purchasing many calibration standards from an outside supplier can be quite high. An NPT system can pay for itself from the cost savings alone from just a few calibration jobs.

Quality Control. It can be difficult to ship deposited wafers without introducing contamination. Having an in-house tool to deposit wafers virtually eliminates contamination issues and facilitates precise control over the end product, including the exact type of substrate used for deposition.

Convenience. The lead time for procuring wafer standards from an outside supplier is much longer than the time required

to produce standards in house. Having ready access to a tool for research purposes is another great convenience.

AUTOMATION OPTIONS

- Wafer Size / Carrier Options:

Wafer Size / Carrier Type	Std. Config.	200mm Option	FOSB Option
300mm / FOUP	X	X	X
200mm / FOUP		X	
300mm / Auto-Door FOSB (Colored Door)	X	X	X
300mm / Auto-Door FOSB (Clear Door)			X
300mm / Manual-Door FOSB			X

- Edge-Grip contact for 300mm
- RFID tag readers
- Light tower with configurable rules
- Host connectivity (automated carrier loading)

SELECT SPECIFICATIONS

Particle Size Range	20nm to 2000nm (DMA-Mode), 50nm to 3000nm (Direct Mode)
Particle Size Accuracy	$\pm 1\text{nm}$ ($D_p \leq 50\text{nm}$), $\pm 2\%$ ($D_p > 50\text{nm}$)
Particle Size Distribution Width	$\leq 5\%$ FWHM (standard operation)
2300-NPT-1 Size	64 x 104 x 188 cm (W x D x H)
Weight	360 kg
2300-NPT-2 Size	132 x 176 x 188 cm (W x D x H)
Weight	780 kg

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