



## Advanced automated nano-printing system

AltaDrop® represents a new generation of nano-particle patterning system enabling the following features:

- Complex pattern generation from mask files (gds, bitmap)
- Full water alignment via advanced optical recognition
- Pattern are aligned with lower level layers
- Fully automated processing with pre- and post-treatment capability
- Patterning of up to four different materials on one platform

### Specifications

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#### Substrate handling

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- **Substrate type** 4-, 6-, 8-, 12-inch wafers  
100 mm x 100 mm to 1000 mm x 1000 mm substrates  
Circular or rectangular wafers  
Thinned, transparent or flexible substrates
- **Positioning**  $\pm 4 \mu\text{m}$  accuracy
- **Speed** Up to 1000 mm.s<sup>-1</sup>
- **Temperature** Regulated, 20°C – 120°C  $\pm 1^\circ\text{C}$

#### Treatment

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- **Pre-treatment** User specific (atmospheric plasma, etc.)
- **Post-treatment** IR drying module, UV curing station



## Printheads

- **Types** Piezo dispensing devices, microvalves, syringes, etc.
- **Drop volume** From 10 picoliters to 1 nanoliter (piezo)  
Few nanoliters (microvalves)
- **Viscosity** 0.5-20 Cp (heated: correspond to 0.5-100 Cp at room temperature)
- **Frequency** Up to 20 kHz (ink dependent)
- **Printhead** Single nozzle printhead (1 to 80 nozzles)  
Multi (128 or 256) nozzles printhead (1 to 4)
- **Channels** 1 to 80 different inks

## Vision

Automatic alignment  
 Pattern recognition  
 Post-deposition inspection  
 Droplet vision and monitoring with camera

## Software

- **Printing mode** Print-on-position and print-on-the-fly  
Drop and drag recipe editor  
Droplet control and monitoring  
Friendly GUI  
SECS compatible

## Mechanical & Electrical

- **Power** 220-240 VAC, 50-60 Hz (115 VAC optional)
- **Vacuum** House vacuum, 22 inch Hg, 1.25 cfm
- **Pneumatic air** 85 psi, 1 scfm
- **Nitrogen** 15 psi
- **Footprint** 1150 mm x 900 mm, 750 kg (main unit)  
800 mm x 600 mm x 2200 mm, 200 kg (electronic rack)
- **Ambience** Cleanroom compatible
- **Safety** CE marked

## Applications



### μFuel cell

- C/Pt catalyst
- Nafion® Electrolyte
- Gold cathodic collector

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### RFID

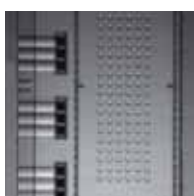
- Antenna printing



### MEMS

- 3D assembly sensors
- 3D modeling
- Sensors

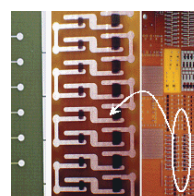
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### Lab-on-chip

- DNA reagent deposition
- Biochip micro-dispensing
- Pathogen detection

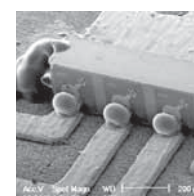
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### Flexible electronics

- Flex circuit
- Wearable electronics
- Organic components
- Passive components

Courtesy Microfab



### Wafer bumping

Courtesy Microfab