# MEMS (Micro Electro Mechanical System)



ULVAC Solutions

## ULVAC original technologies for MEMS device production

- NLD Etching System
- Carbon nanotube
- Mass-spectrocopy
- Nano particle
- Vapor Deposition Polymerization
- Surface Analyzing Technology
- QCM Bio-Sensor

### Processing Technology for MEMS Production

**Etching Processing**

Making material and etching them.
Example: Photo etching, Anisotropic etching, Micro PDM
Micro-beam processing, Machining.

**Deposition Processing**

Forming materials and simultaneously shaping and producing functional device.
Example: Sputtering, Evaporation, CVD, Oxidation,
Light molding.

**Combined Processing**

Matching which combine etching processry and deposition processing.
- Processing minute parts and assembling them simultaneously -
Example: Micro ECM, Surface layer etching,
Cylindrical geometry stator manufacturing,
Shell body manufacturing.

# MEMS (Micro Electro Mechanical System)



## Product for Solutions

### Dry Etching System

## NLD-6000

For Deep Trench Etching of $SiO_2$

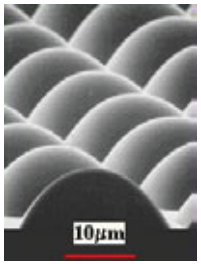

### Features

- NLD plasma source equipped. (NLD = Neutral Loop Discharge)
- High rate etching. (0.6 ~ 0.7 μm/min $SiO_2$)
- Ideal anisotropic etching performance using low pressure and high density plasma.
- High etching uniformity (1%) for optical parts manufacturing.

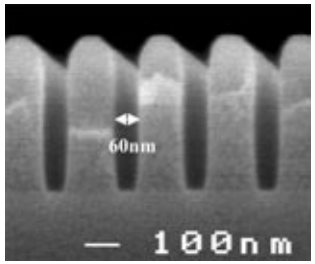
✻ NLD-500 available to R&D

### Example: Post etching profile


Optical device




Micro-lens




Organic Low-k

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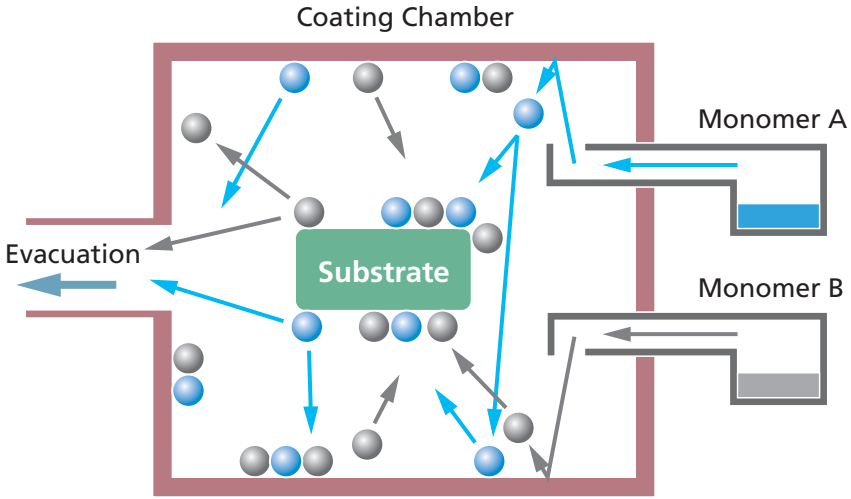
### ULVAC original technology

## Vapor Deposition Polymerization

For polymer thin film production

In the Vapor Deposition Polymerization (VDP) process the diamine and the dianhydride are coevaporated onto a substrate where they react to from a polyimide precursor, which converts to polyimide upon thermal curing.

### Outline of VDP

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