

Sputtering Equipment

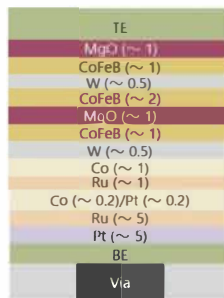
NC7900 Sputtering Equipment

Ø200 mm / Ø300 mm



Features

- ◆ Offers excellent film thickness distribution of $\pm 1\%$ or less
- ◆ Low pressure deposition process achieves flat film surface and low-resistivity for metal films
- ◆ Provides high MR ratio with ultra-high vacuum
- ◆ Extensive deposition module lineup (multi cathode specification)



Example of pMTJ stack



TEM image of CoFeB/MgO/CoFeB

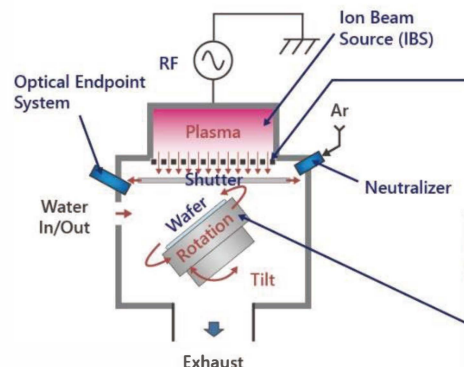
NC8000 Etching Equipment

Ø200 mm / Ø300 mm



Features

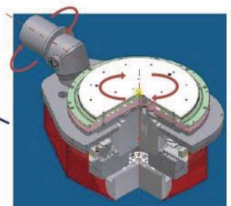
- ◆ Good uniformity and high productivity by large diameter grid
- ◆ Overall etching process by clampless holder with 2 axes of revolution and stage angle



Schematics of IBE-NX module



Carbon grid



ESC rotating substrate (ERST) holder

Sputtering Equipment

FC7100 Sputtering Equipment

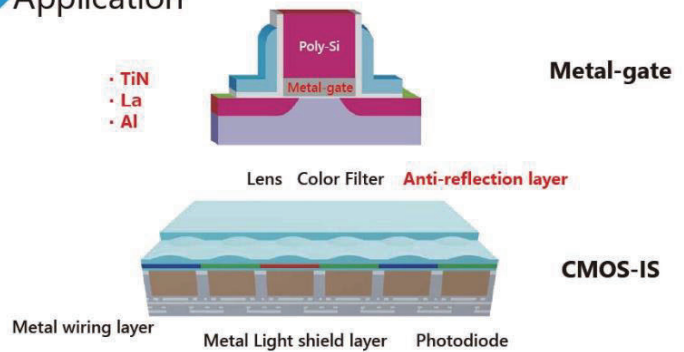
Ø300 mm



Features

- ◆ Capable of controlled film composition through ultra-high vacuum and oblique angle co-sputtering
- ◆ High-precision control of (0.1 nm unit) ultra thin film thickness and excellent uniformity ($1\sigma < 1\%$)
- ◆ Low material cost through use of compact cathode. Easy material changeover

◆ Application



IC7500 Sputtering Equipment

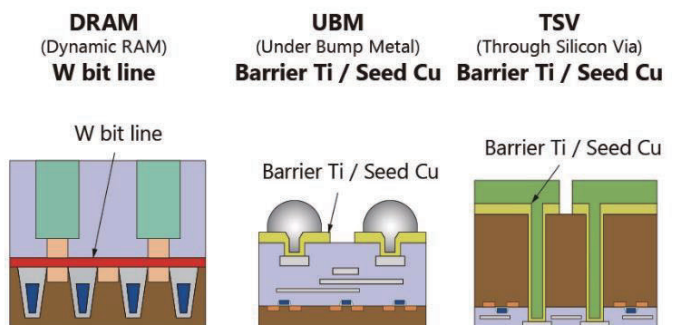
Ø300 mm



Features

- ◆ Cathode magnet position (3D) is variable in-situ per each recipe (easy optimization of uniformity and cleaning)
- ◆ Provides >90% uptime rate at semiconductor memory production line (failure rate < 1%)

◆ Application



Wafer Bonding Equipment

BC7000 Series Wafer Bonding Equipment



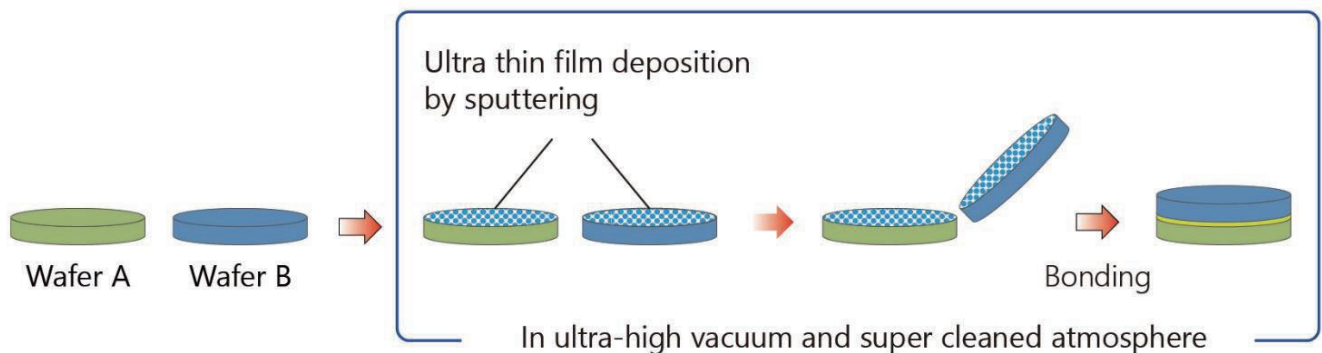
BC7000 $\varnothing 100 / \varnothing 150$ mm



BC7300 $\varnothing 200 / \varnothing 300$ mm

Features

- ◆ Bonding at room temperature
- ◆ No applied force
- ◆ High bonding strength
- ◆ Bonding of any similar or dissimilar materials
- ◆ High throughput
- ◆ Strong bonding by diffusion of sputtered atoms



Atomic Diffusion Bonding Process Flow