DNP

Mask Manufacturer as a Customer

Naoya Hayashi

Electronic Device Laboratory
Dai Nippon Printing Co., Ltd.

Contents

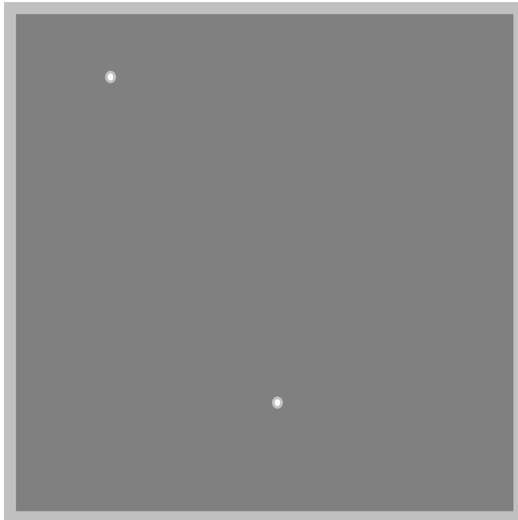
1. Concerns from EUV blank user
2. What should be standardized?
3. Infrastructures needs

1. Concerns
   - Defect level ?
   - Flatness ?
   - Storage / Handling ?
2. Standardization
   - Substrate handling
     - Carrier from blank vender
   - Defect dispositioning
   - Metrology
     - Defect, flatness, etc.
3. Infrastructure needs
   - Metrology tools
   - Handling tools

Substrate Control System

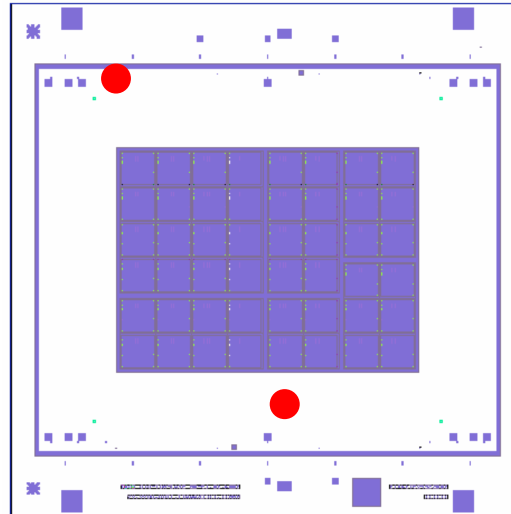
Optimize the best position of the substrate based on supplier's defect information

PH : Pinhole defect

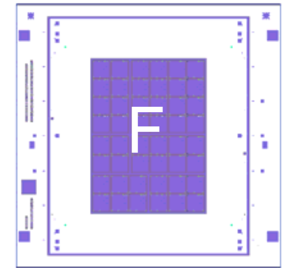


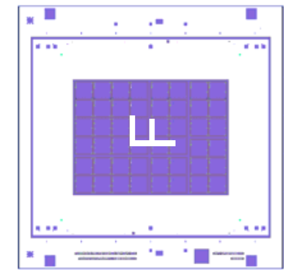
Plate

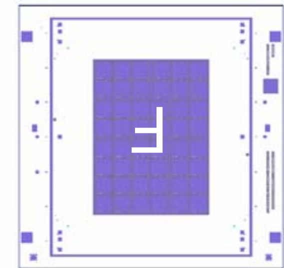
Search best rotated position

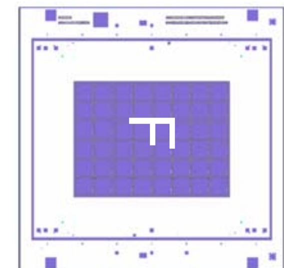


Mask Data







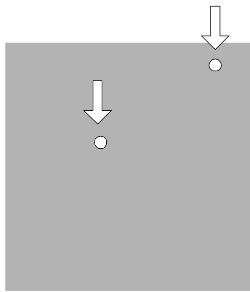


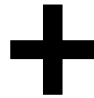
DNP

Substrate Control System

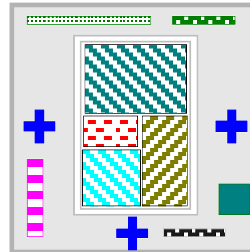
Calculate the probability of the defect influence based on defect information and pattern layout

Defect on substrate

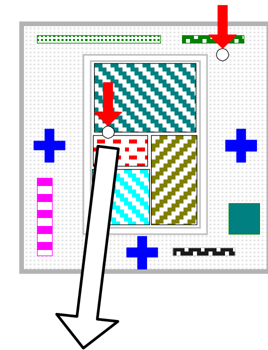


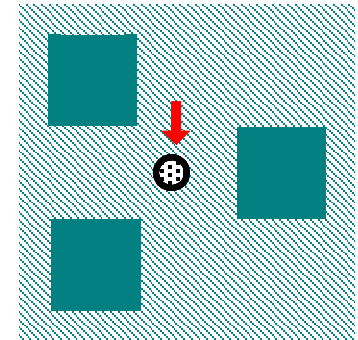


Mask pattern layout



Overlapped image





Summary

1. Substrate structure, material, and specification need to be fixed based on lithography requirement.

2. Data management through “Mask food chain” will be needed to control the defectivity.

3. Specifications and metrology need to be standardized based on the global requirements.

4. Technologies and tools for various area need to be developed with industry support.