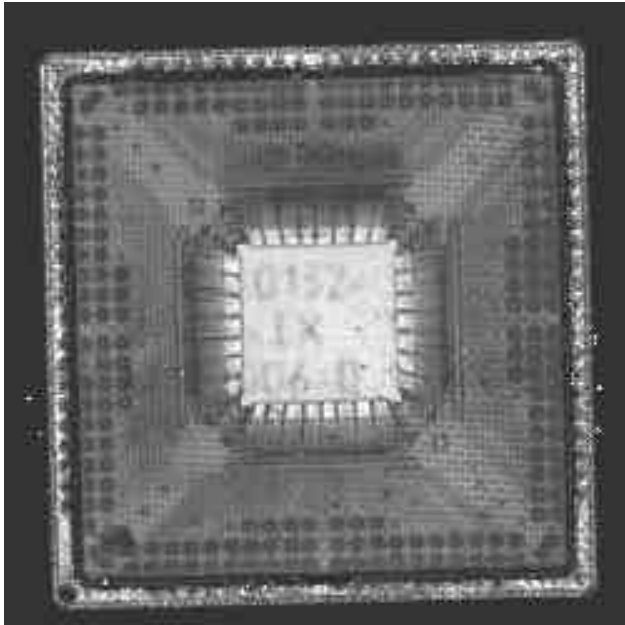
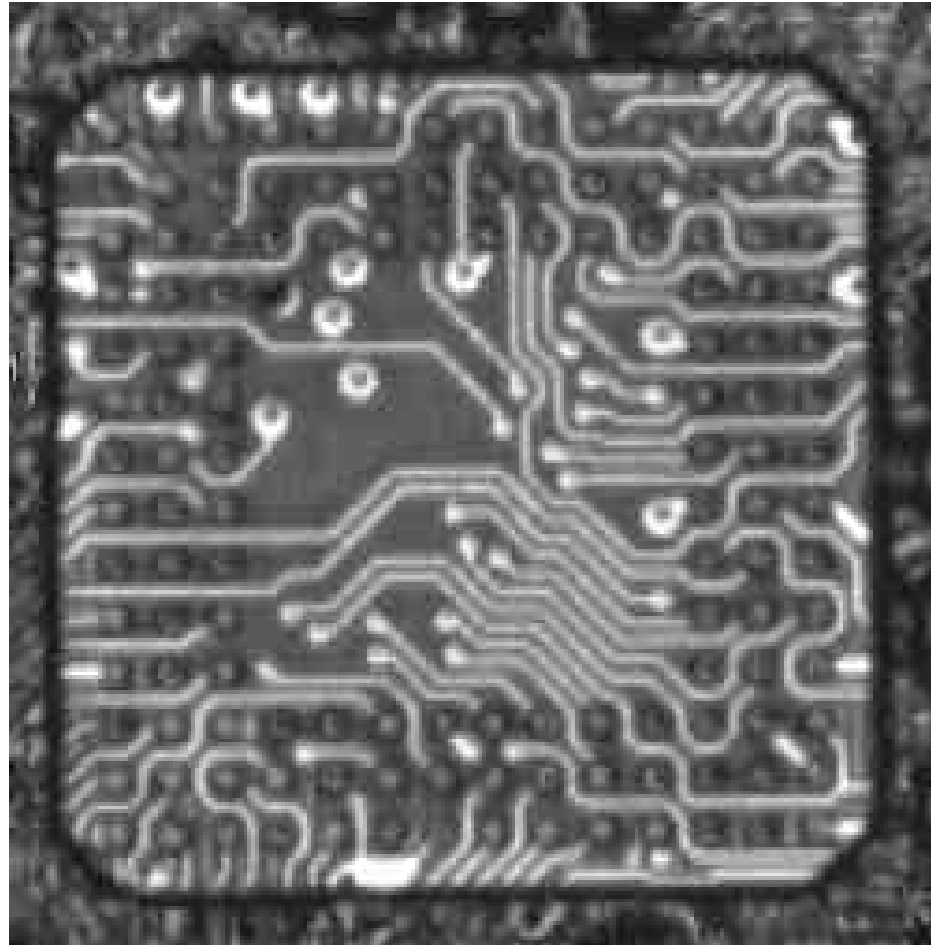


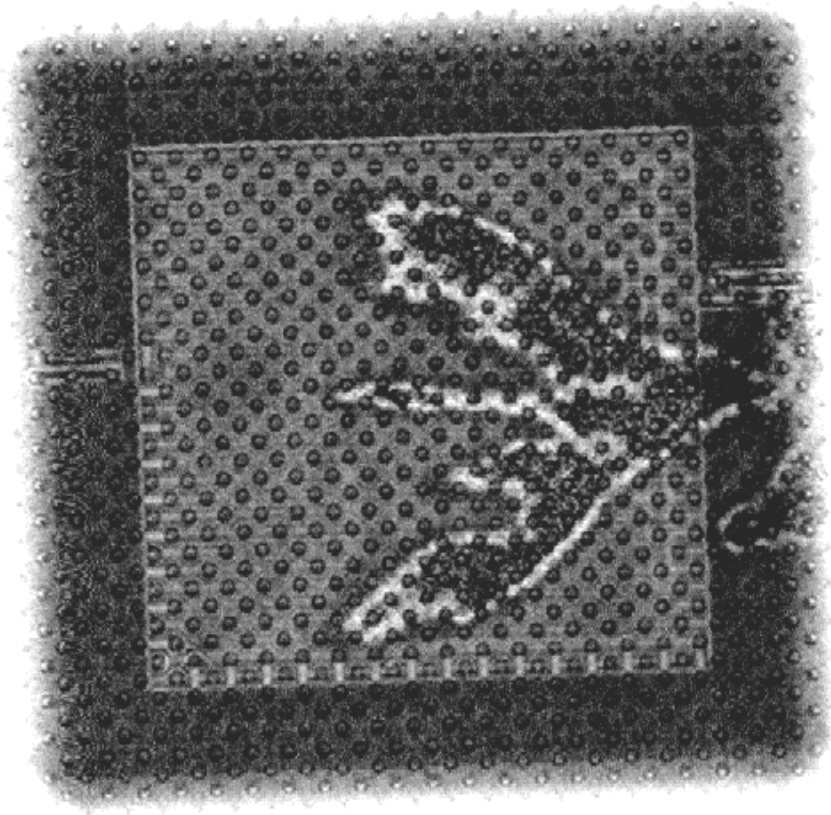
# Semiconductor applications



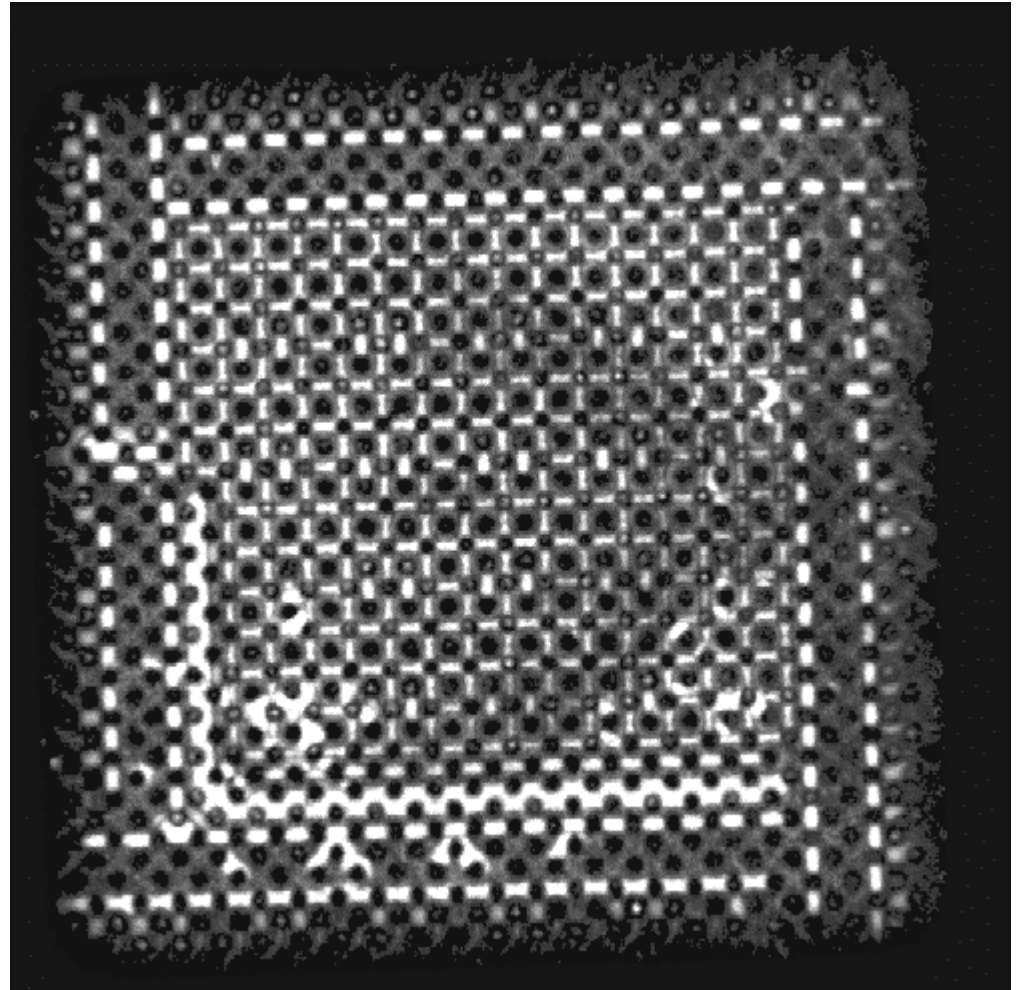
Resolution examples:  
clear resolution of  
ball grid arrays,  
quality of ball grids



# Analysis of Flip Chip Arrays

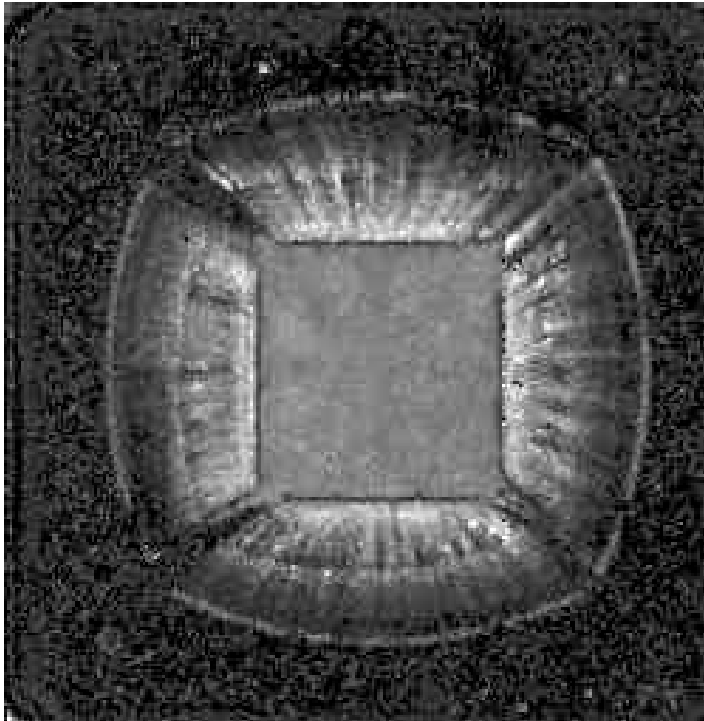


Lead frame chip

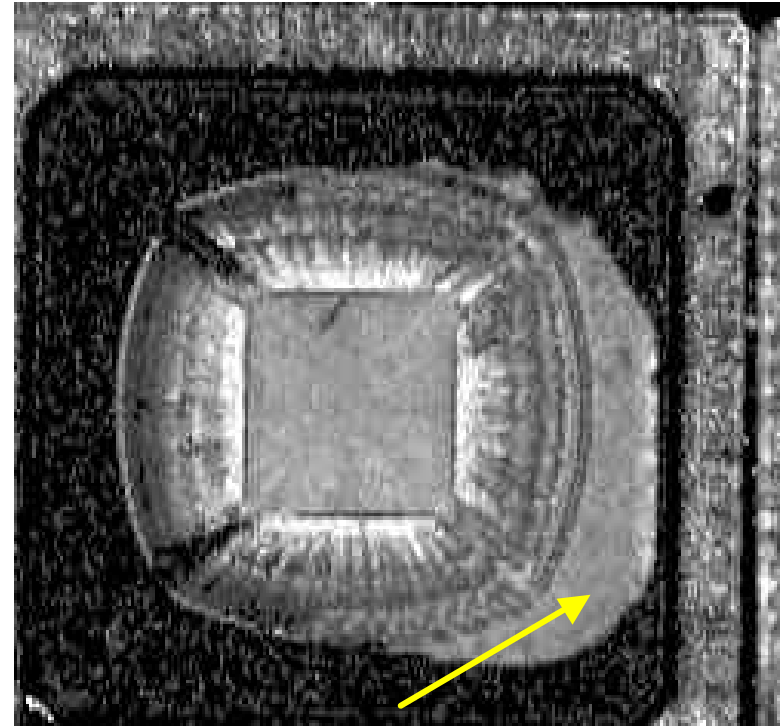


Lead frame area

## Delaminated BGA



No delamination

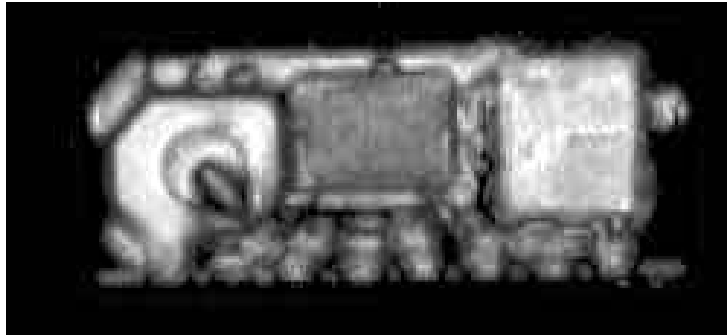


Delaminated area

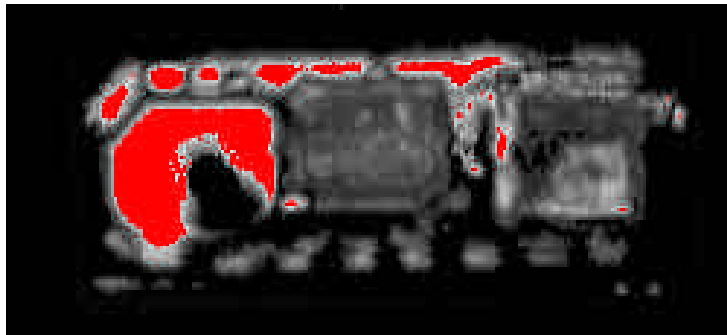
# Semiconductor applications

## C – Scan

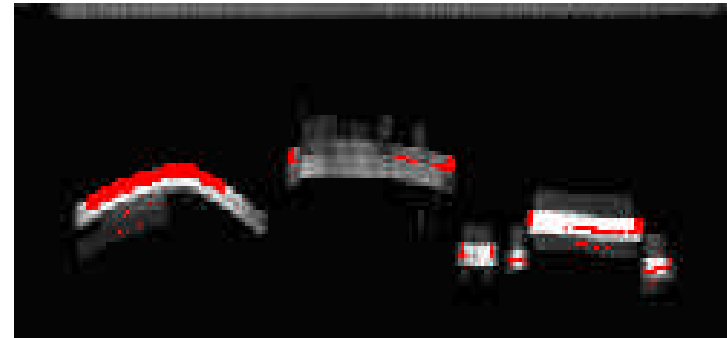
Defect free



Delaminations



## B - Scan



Detection



### Delaminations:

- Die top
- Die pad
- Lead frame

### Cracks:

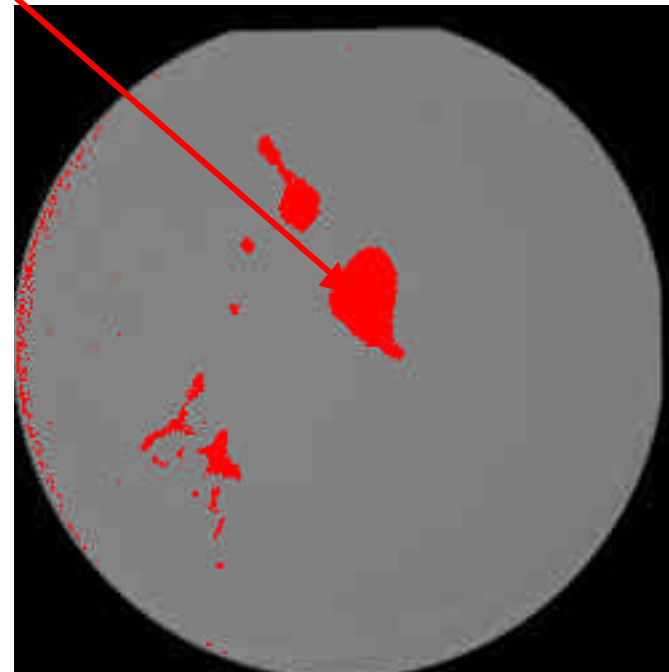
- Chip, lead frame, bond wires

### Packaging problems:

- Embedding of the die
- Voids in mold compounds

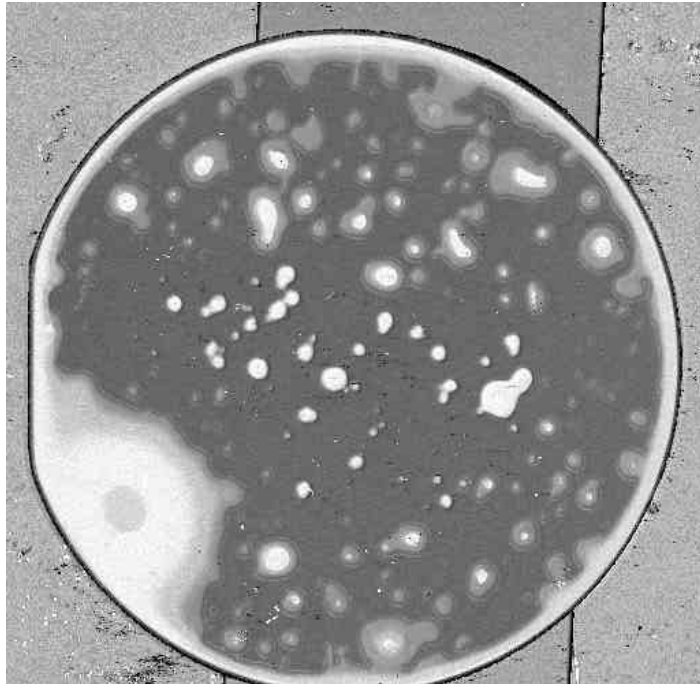
## Delaminations in wafer coatings

Delamination between Si wafer and coating material



Using the color filter delaminations are marked by a certain color (here red).

# Filter functions to increase the contrast



Bonded Si wafer, defects in the interface area Si/Si (700  $\mu\text{m}$  depth)

Color filter

Pseudob 3D -image

