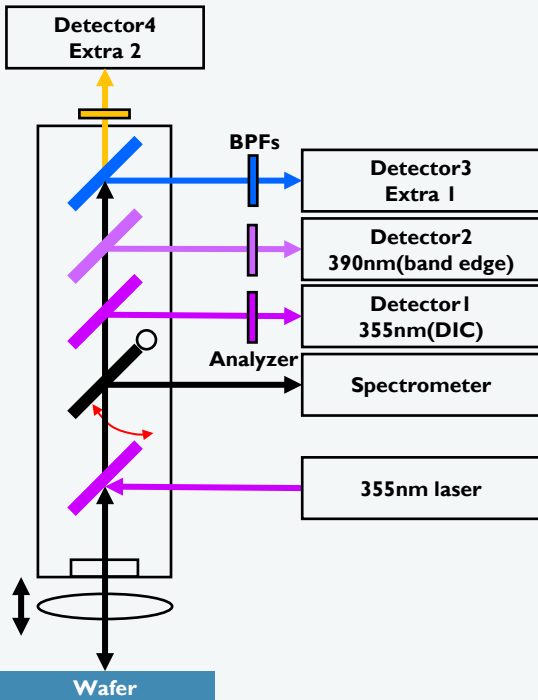


MiPLATO-SiC

General Configuration

EtaMax



Full Automatic PL Intensity Mapper

- Spiral scan with 1800 rpm rotation stage with Linear motor stage
- 355nm excitation laser source
- Micro PL with 50x objective lens & 2 um laser beam size
- 5 detectors : 1 spectrometer, 4 PMTs
- PMT mapping and Spectra mapping for the whole wafer
- 12 pcs/hr (2 heads) and 6 pcs/hr (1 head) for 6" wafer

Deep-Learning Based Defect Classification

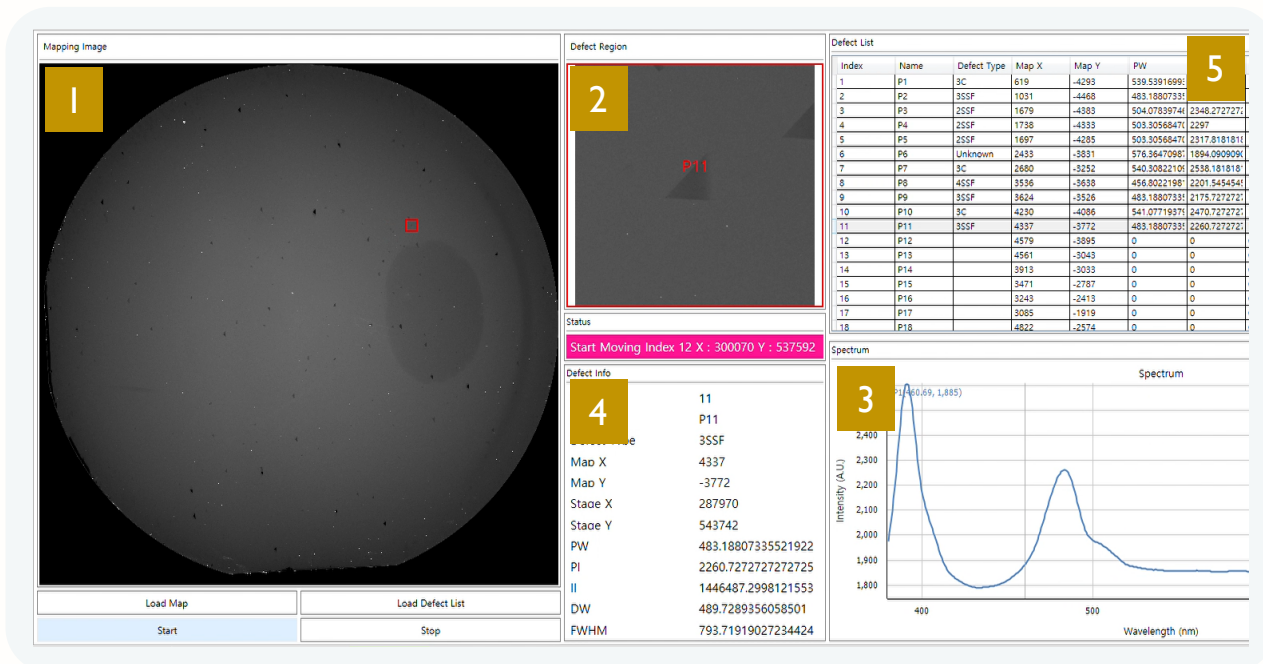
- Surface defects by 355 nm Laser DIC
carrot, scratch, droplets, 3-C triangular defects
- Internal defects by PL at the band gap
BPD, Shockley stacking faults, Bar type stacking faults, interfacial dislocation, dislocation arrays
- Auto-Navigation function for stacking faults : See next page

MiPLATO-SiC

Auto-Navigation for SFs

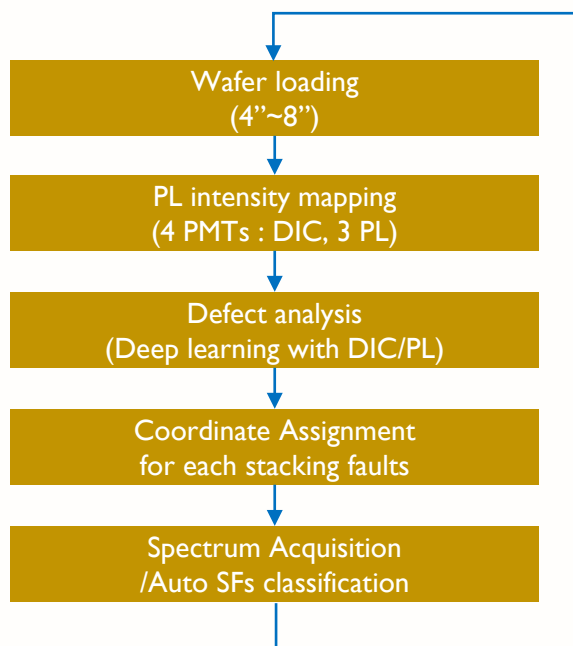
EtaMax

Spectrum Acquisition Process



1. Mapping image by PMT
2. Cropped image of SF being measured
3. Spectrum data of SF
4. Classification of SF from spectrum
5. Report of Classified SFs

Auto-Navigation Algorithm



Measurement Speed : 6" wafer

- W/O SFs classification < 10 mins
- W/ SFs classification < 15 mins
(< 100 stacking faults)

Classification of SSFs

- 1SSF : 420 ± 5 nm
- 2SSF : 500 ± 5 nm
- 3SSF : 480 ± 5 nm
- 4SSF : 455 ± 5 nm
- 3C type : 540 ± 5 nm

Ref : I. Kamata, et al, Mat. Sci. For.
725 (2012) pp. 15-18

Patent pending

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Defect Samples

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Image Example for Carrots : Ch. 1 (DIC)

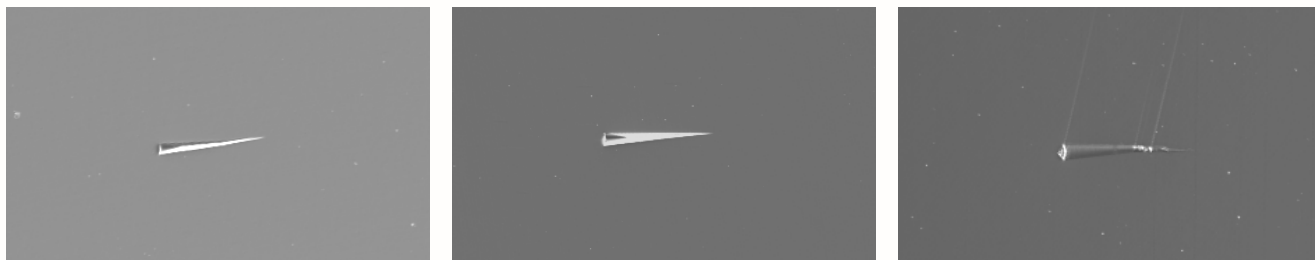


Image Example for BPDs

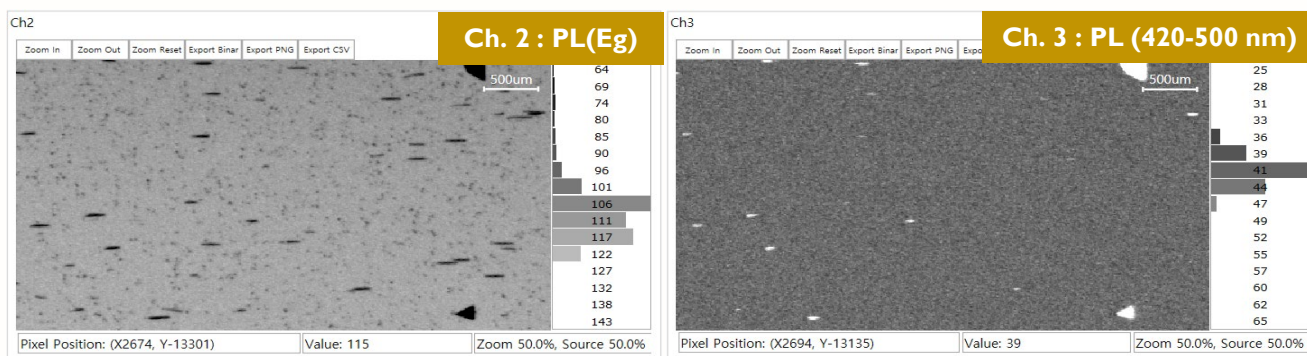
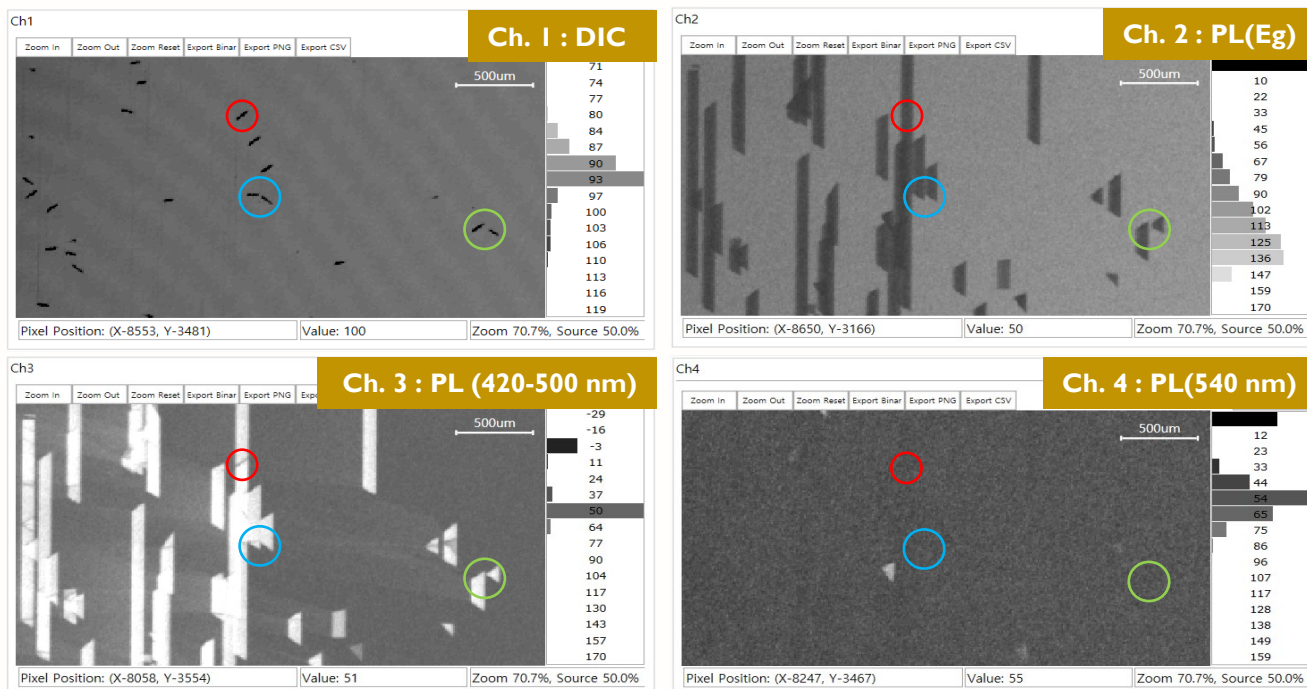


Image Example for Bar-Shaped SFs



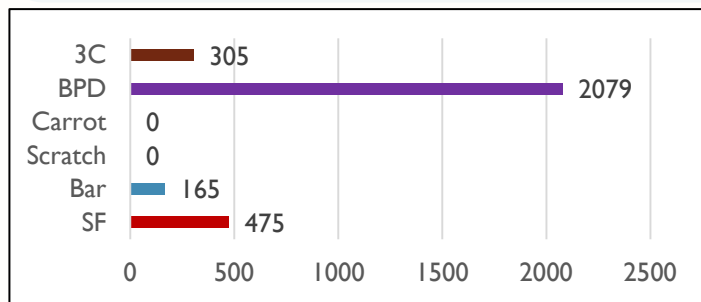
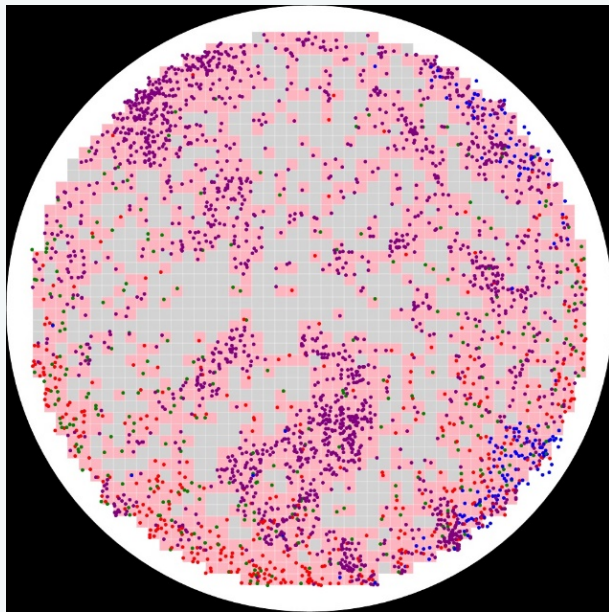
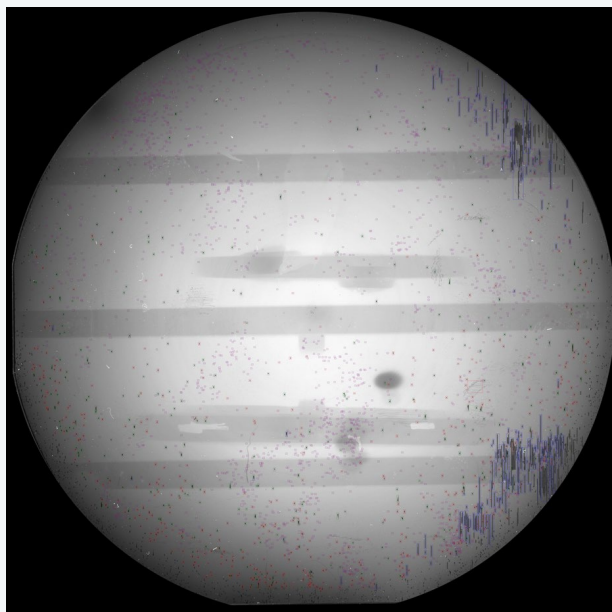
- Characteristic morphological features in DIC Image
- Clear Left side tails in Ch3 (stacking faults in the substrate) from bar-shaped stacking faults

MiPLATO-SiC

Image Processing / Contact

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4" Wafer, 2 mm Die Size, 2 mm Edge Exclusion



Die Size	1850 um
Total Dies	1832 ea
OK Dies	654 ea
Yield	35.70 %

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