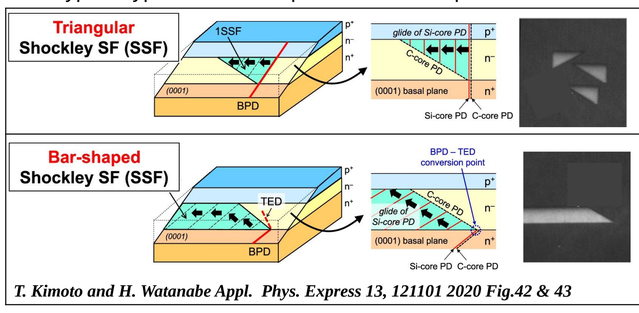
ITES
www.ites.co.jp
Passion for Truth

Bipolar Degradation Simulator for R&D

Concept

Two typical types of 1SSF expansion in a SiC pin diode.

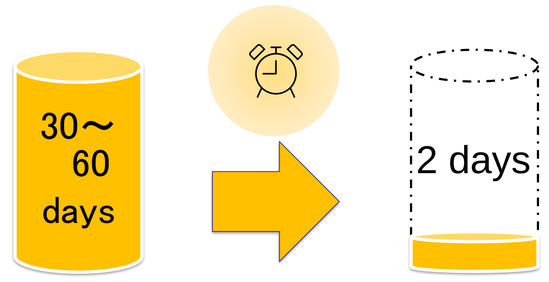
	Current inspection systems for mass production
Triangular Shockley SF (SSF)	○
Bar-shaped Shockley SF (SSF)	×



T. Kimoto and H. Watanabe Appl. Phys. Express 13, 121101 2020 Fig.42 & 43

Our apparatus is for Detecting **Bar-shaped** SSF.

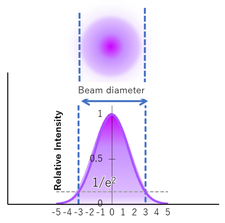
Two months to two days



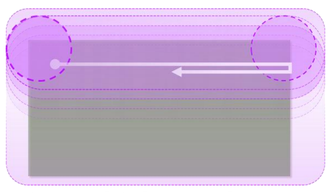
Quick evaluation of SiC wafer/chip
- No device fabrication
- Applied to evaluation in many processes

UV Technology

Uniformity

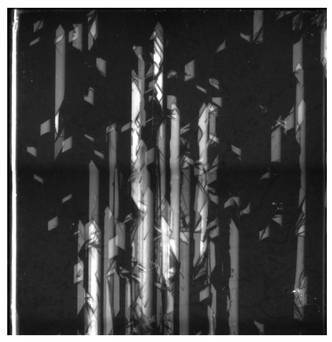


Beam shape at a single point is Gaussian distribution



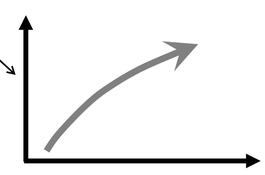
Scanning at high speed to ensure uniform intensity over the target area

Irradiation condition
- Intensity: 30W
- Scan speed: 300mm/s
- Scan pitch: 6um



High Power

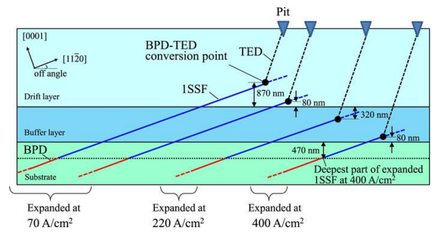
Max. depth of TED conv. point which expands into SSF



Max. current density of device application

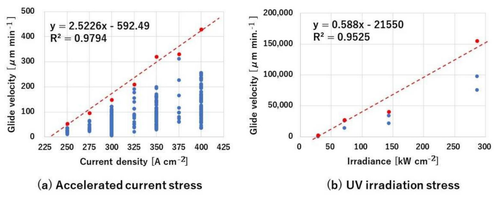
Irradiance equivalent to current density of

2000～
3000A/cm²

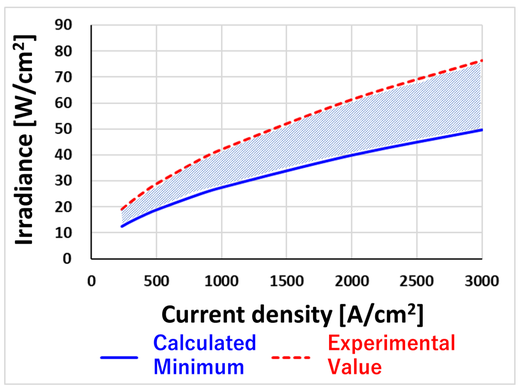


K. Konishi AIP Advances 12, 035310 (2022) Fig.10

Correlation



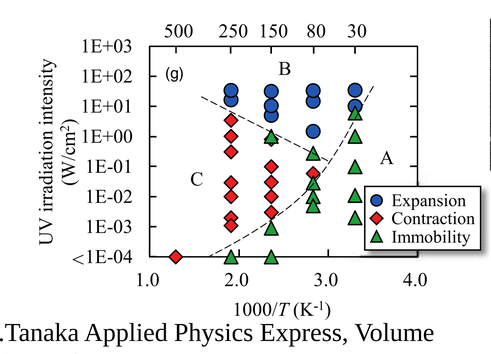
Si(g) core glide velocity VS. stress intensity (Current density (a) and Irradiation power (b))
Y.Igarashi ICSCRM2023 Fig.4



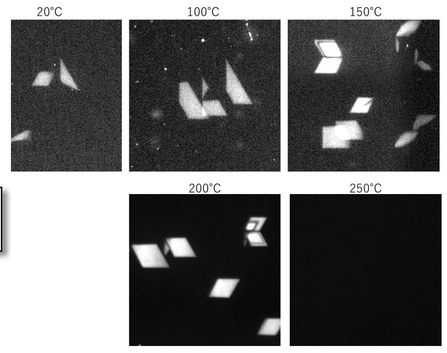
The correlation between irradiance and current density is likely to be in the shaded region.

Heater

- Simulate operating temperature environment
- Improve efficiency of detecting seeds of 1SSF expansion.



T.Tanaka Applied Physics Express, Volume 12, Number 4



1SSF Expansions by UV irradiation at the same level of intensity at different temperatures

PL Observation

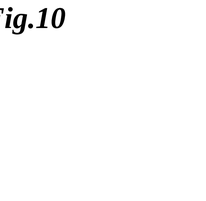
Detecting various Defects

magnification	Wavelengths
• 5x • 10x and more	• BPF420nm • LPF 710nm • BPF380nm

Early Detection of Bar-shaped SSF

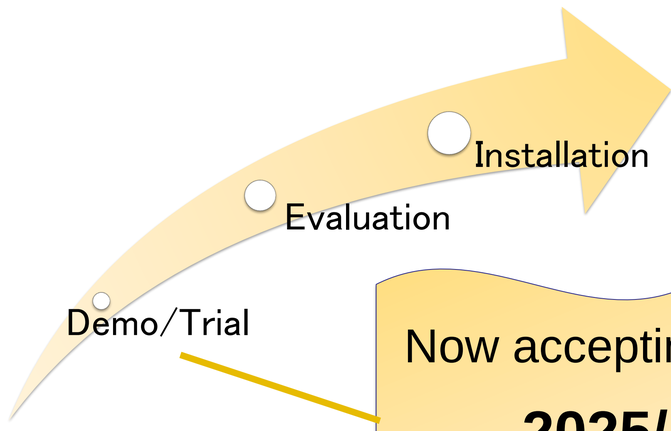
High-speed automatic defect detection using proprietary image processing technology

Processing time 3min/6” wafer



two half-rhombi as an early shape of bar-shaped 1SSF are surrounded by red rectangle.

Schedule





Now accepting reservation.

2025/April ～