mi2-factory

Oral Talk :
Session 15A, Extended Defects II
Room 305, **October 3, 10:10 am**

UNLOCKING RELIABILITY IN SiC MATERIAL

SUPPRESSION OF 1SSF EXPANSION IN 4H-SIC WITH ENERGY FILTERED ION IMPLANTATION - EFII

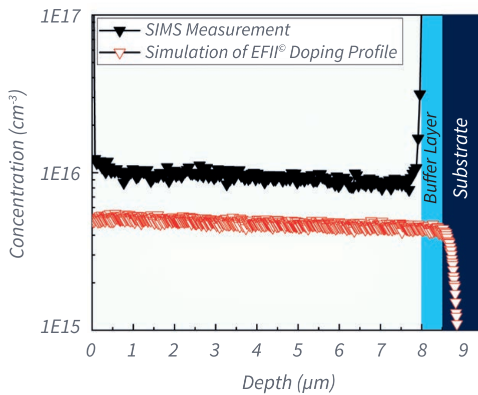
Many Problems:

- Bipolar Degradation?
- Stacking Fault Expansion?
- Doping Inhomogeneity?
- High Costs?

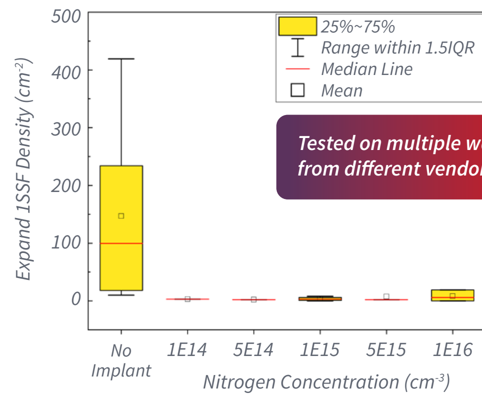
One Solution:

Energy Filtered Ion Implantation Technology

IMPLANTATION PROFILE AND RESULTS ON 1SSF EXPANSION



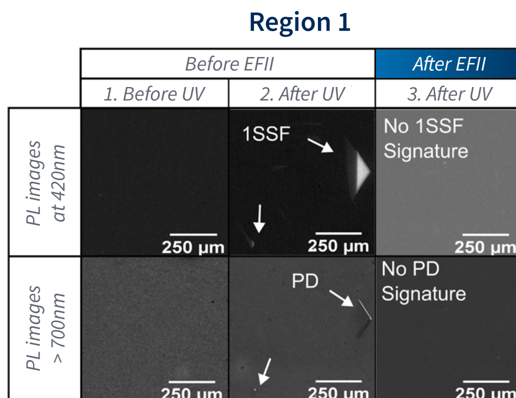
19MeV Nitrogen implant offering 1E16 cm^{-3} doping profiles on as grown Epi wafers.



EFII prevents Stacking fault expansion at all implant concentration.

INSIGHTS INTO DEFECT DYNAMICS WITH UV STRESSING

Region 1



Region 2

	Before EFII		After EFII
	1. Before UV	2. After UV	3. After UV
PL images at 420nm	limited 1SSF	expanded 1SSF	1SSF suppressed
PL images > 700nm	Cluster defects	PD	PD is pinned

Photoluminescence images showing supression of Single Shockley Stacking Fault (1SSF) and immobilizing Partial Dislocations (PD) at same location before and after EFII process with UV Stressing.

mi2-factory

YOUR NOTES:

CONTACT US!

mi2-factory GmbH
Moritz-von-Rohr-Str. 1a
07745 Jena - Germany
+49-(0)3641-2719321
info@mi2-factory.com
www.mi2-factory.com