

Project Title: Developing Processes for BPD-Free Room Temperature Al Implantation and Annealing for SiC MOSFETs and Lifetime Control for SiC IGBT

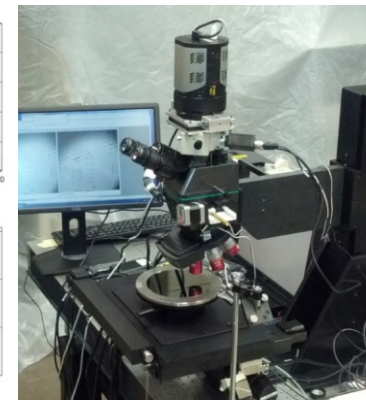
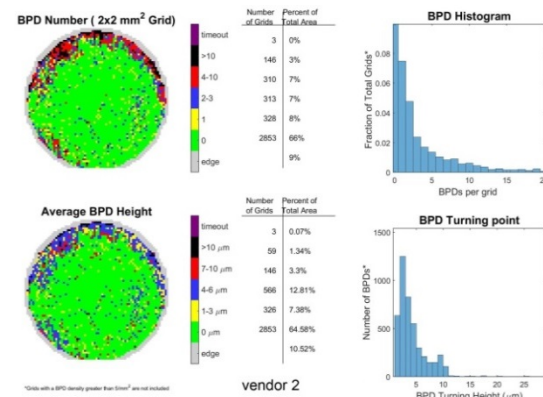
Objectives: Develop BPD-Free RT process for Al implantation and anneal process, and lifetime control for high voltage IGBTs.

Major Milestones:

- 1) Develop BPD-Free RT process for Al implantation.
- 2) Lifetime Control to optimize IGBTs

Significant Equipment Acquisition: none

Deliverables: Wafers analyzed



SOPO Task No.: 3.2a
 TPOC/PI: Robert Stahlbush
 Email: stahlbush@nrl.navy.mil
 Phone: 202-767-3357

WBG Technology Impact

1. Market segments impacted: All markets affected by lower cost, higher performance and higher voltage SiC power devices.
2. Timeframe for commercialization: N/A
3. For non-destructive detection and tracking of materials defects in SiC epi that adversely affect devices, the imaging systems that NRL has developed are the state-of-the-art. NRL will aid fab partners to cost effectively suppress materials defects and control drift lifetime.

More WBG Impact and Additional impacts

1. Cost effective screening of materials defects in SiC before and during processing will increase wafer yield and decrease die costs.
2. Job creation and economic impact comes by collaborating with X-Fab to develop a defect-free and more cost effective process for fabricating SiC power devices and by working with PA members to overcome IGBT carrier lifetime challenges.
3. TRL levels impacted for fabrication partners by UVPL imaging are 5-7.