



Advantages/Features

Able to provide epilayers with very low BPD levels ($<1 \text{ cm}^{-2}$) over large areas.

Applicable to any SiC substrate with off-cuts of approximately 8 degrees.

Method is compatible with conventional SiC epitaxy providing ease of insertion.

Method is more efficient than traditional BPD reduction methods providing low BPD epi at lower cost.

Applications

High-voltage power diodes

High-voltage power switches

High efficiency power electronic components and converters

For more information contact:

Rita Manak, Ph.D.
Head, Technology Transfer Office

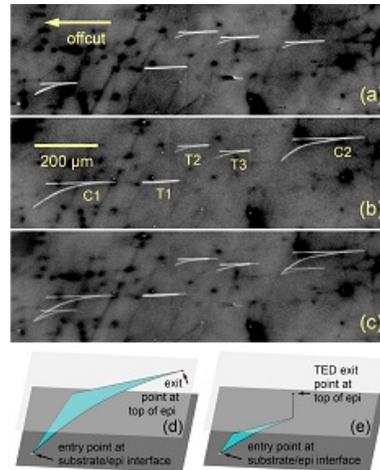
202 767-3083

rita.manak@nrl.navy.mil

Identification Number:

ELE09

SiC EPITAXIAL LAYERS WITH LOW BASAL PLANE DISLOCATION CONCENTRATIONS



The Naval Research Laboratory (NRL) has developed a process for manufacturing silicon carbide epiwafers with low basal plane dislocation (BPD) concentration that saves time and resources on the production line by relying on epitaxial growth interrupts. The reduction of BPDs relies on the conversion of BPDs to threading edge dislocations (TEDs) at each growth interrupt and the use of multiple interrupts to achieve a desired overall BPD reduction. The interrupted/modified epitaxial growth technique relies on straight forward *in situ* growth process that may be easy to implement with commercial epitaxial growth systems.

References

R.E. Stahlbush, B.L. VanMil, R.L. Myers-Ward, K.K. Lew, D.K. Gaskill and C.R. Eddy, Jr., "Basal Plane Dislocation Reduction in 4H-SiC Epitaxy by Growth Interrupts", *Applied Physics Letters* **94**, 041916(1-3) (2009).

B.L. VanMil, R.E. Stahlbush, R.L. Myers-Ward, Y.N. Picard, S.A. Kitt, J.M. McCrate, S.L. Katz, D.K. Gaskill and C.R. Eddy, Jr., "Basal Plane Dislocation Mitigation in 8 Degree Off-cut 4H-SiC Through *in situ* Growth Interrupts During Chemical Vapor Deposition", *Materials Science Forum* **615-617**, 61-66 (2009).

Available for License: US Patent Publication No. 2009-0114148.

