

Preface

This special edition is devoted to studying and analysing the appearance of defects in silicon carbide structures and their impact on the performance and reliability of power electronics devices.

The contributions examine a wide range of structural imperfections, including prismatic dislocations, basal plane dislocations, and epitaxial defectivity, as well as the effects of lattice damage on materials and end device properties.

Other key topics, such as defect inspection techniques, their density and role in bipolar degradation, and strategies for reducing their influence, are also highlighted.

By integrating technological features of crystal and epitaxial layer growth, physics of defect occurrence processes and procedures for eliminating their effects, and device engineering, this edition provides a comprehensive overview of the current state of research and existing approaches to mitigating defect-related limitations in SiC-based technologies.