

## Preface

This special edition addresses one of the most critical aspects of semiconductor technology: the presence and impact of defects within solid semiconductor materials. The performance and reliability of semiconductor devices are intricately linked to the quality of the materials from which they are made. Defects, whether they occur during material growth, wafers or substrates processing, or device fabrication, can significantly affect the electrical, optical, and mechanical properties of the final product.

Controlling defects is crucial for advancing semiconductor technology. This article collection also covers state-of-the-art techniques for detecting, characterising, and mitigating defects, providing insights into the challenges and opportunities overcoming their influence in the fabrication of high-performance electronic components.

The presented edition will be useful to researchers and engineers in semiconductor industry and will serve as an essential resource for those looking to deepen their understanding of the nature of defects in semiconductor structures and their influences on the efficiency and reliability of power electronic devices.