

Table of Contents

Preface

Chapter 1: Defects in Devices on Silicon Carbide

Implementation of Large Scale Deep Learning Non-Destructive Methods for Characterizing 4H-SiC Materials

R. Leonard, M. Conrad, E. Van Brunt, J. Witry and E. Balkas 3

Correlation of Extended Defects with Electrical Yield of SiC MOSFET Devices

D. Baierhofer, B. Thomas, F. Staiger, B. Marchetti, C. Förster and T. Erlbacher 11

Strain-Dependent Photoluminescence Line Shifts of the TS Color Center in 4H-SiC

J.A.F. Lehmeyer, A. Fuchs, T. Bornträger, M. Popp, H.B. Weber and M. Krieger 17

Minority Carrier Traps Induced by Neutron Reactions with 4H-SiC

M. Belanche, M.E. Bathen, P. Kumar, C. Dorfer, C. Martinella and U. Grossner 23

Stacking Faults Originating from Star-Defects in 4H-SiC

S. El Hageali, N. Mahadik, R. Stahlbush, H. Guthrey, S. Johnston, J. Soto, B. Odekirk, B. Gorman and M. Al-Jassim 29

P-Type Impurities in 4H-SiC Calculated Using Density Functional Theory

N. Smith, M. Weger, G. Pobegen and A.L. Shluger 35

The Optical Properties of the Carbon Di-Vacancy-Antisite Complex in the Light of the TS Photoluminescence Center

M. Schober, N. Jungwirth, T. Kobayashi, J.A.F. Lehmeyer, M. Krieger, H.B. Weber and M. Bockstedte 43

Chapter 2: Synchrotron X-ray Topography in Research of Silicone Carbide-Based Devices

Analysis of Strain in Ion Implanted 4H-SiC by Fringes Observed in Synchrotron X-Ray Topography

Z.Y. Chen, Y.F. Liu, H.Y. Peng, Q.Y. Cheng, S.S. Hu, B. Raghothamachar, M. Dudley, R. Ghandi, S. Kennerly and P. Thieberger 51

Effective Penetration Depth Investigation for Frank Type Dislocation (Deflected TSDs/TMDs) on Grazing Incidence Synchrotron X-Ray Topographs of 4H-SiC Wafers

Q.Y. Cheng, H.Y. Peng, Z.Y. Chen, S.S. Hu, Y.F. Liu, B. Raghothamachar and M. Dudley 57

Evaluation of Strain in 3C-SiC/Si Epiwafers from X-Ray Diffraction Measurements

M. Zielinski, M. Bussel, H. Mank, S. Monnoye, M. Portail, A. Michon, Y. Cordier, V. Scuderi and F. La Via 65

Analysis of Basal Plane Dislocation Motion Induced by p+ Ion Implantation Using Synchrotron X-Ray Topography

Z.Y. Chen, Y.F. Liu, H.Y. Peng, Q.Y. Cheng, S.S. Hu, B. Raghothamachar, M. Dudley, S.A. Mancini, S.Y. Jang and W. Sung 71

Chapter 3: Research and Designing of Machines and Equipment

A Study on Coldflame Propagation Characteristics Applying Amplified Ignition Source to Overcome Landfill gas's Flame Retardant Limit

K. Ryu and M. Choe 81

Thermal Effect of Bobbin Tool Friction Stir Welding on the Mechanical Behavior of High Density Polyethylene Sheets: Experimental Study

A. Kaou, D. Bouha, H.M. Meddah and E.B. Ould Chikh 93

Hydrodynamic Stability Analysis for MHD Casson Fluid Flow through a Restricted Channel

S.O. Adesanya, T.A. Yusuf, A.T. Adeosun and L. Rundora 115

