

# Preface

This book is the result of a dissertation work at the Helmholtz-Zentrum Dresden-Rossendorf based on a contract with the centrotherm AG at Blau-beuren/Germany. The background is the need to find out more sophisticated approaches for measuring temperatures in the time range below one second down to the millisecond range. The need for that results from the most advanced Silicon technology and other applications using modern lamp-based annealing techniques for thermal treatments of substrates where the activation of electrical, optical and other functions is needed at negligible impurity diffusion and/or thermal load to the substrate.

Denise Reichel guides the reader from an excellent review, also published in a renowned review journal, to sophisticated experiments based on ripple pyrometry. The final concept was proved for the case of flash lamp annealing of shallow Boron-dopants in Silicon. This well-selected example was over many years one of the key technology drivers of advanced silicon technology. Moreover, this annealing technology gets more and more attention from the side of low-cost large area electronics where functional layers on temperature-sensitive substrate material have to be treated. The development of temperature measurement on the millisecond scale as described here will have an important impact on the further development of advanced thermal processing of modern materials.

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Temperature Measurement during Millisecond  
Annealing

Ripple Pyrometry for Flash Lamp Annealers

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