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978-1-107-40798-5 - Materials and Devices for End-of-Roadmap and Beyond CMOS  
Scaling: Materials Research Society Symposium Proceedings: Volume 1252

Editors: Shriram Ramanathan, Supratik Guha, Jochen Mannhart, Andrew C. Kummel,  
Heiji Watanabe, Iain Thayne and Prashant Majhi

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**MATERIALS RESEARCH SOCIETY  
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**Materials and Devices  
for End-of-Roadmap  
and Beyond CMOS Scaling**

Symposium held April 5–9, 2010, San Francisco, California

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Warrendale, Pennsylvania

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## PREFACE

This proceedings volume contains papers presented at Symposium I, “Materials for End-of-Roadmap Scaling of CMOS Devices,” and Symposium J, “Materials and Devices for Beyond CMOS Scaling,” held April 5–9 at the 2010 MRS Spring Meeting in San Francisco, California. These symposia attracted 106 presentations, of which 22 were invited.

Historically, scaling in Si CMOS was primarily led by lithography. In the last decade, this situation has been completely revolutionized with the introduction of the likes of copper interconnects, high-k gate dielectrics, metal gates, and strained silicon to meet the demands of the International Technology Roadmap for Semiconductors as the technology generations were reduced beyond 45 nm. As we look towards the end of the roadmap and beyond, the proliferation of potential solutions to meet the necessary performance challenges becomes truly staggering, and has motivated an exponential increase in research in a wide range of emerging materials and devices architectures.

This volume contains the refereed versions of numerous papers presented in the symposia which collectively capture the diversity of research activity being actively pursued around the world to address the very significant challenges faced at the end of the CMOS Roadmap and beyond. We believe the papers in this volume are a very revealing “snapshot in time” of the state of research in this dynamic field, and that this collection will be of significant benefit to researchers in the area, both now and in future, as a valuable reference.

The organizers are indebted to the speakers for their interest and support of the symposia by submitting such high quality abstracts and excellent, captivating presentations and posters.

We are very grateful to the staff of the Materials Research Society, who was of enormous assistance at all stages before, during, and after the symposia and during the publication period.

Andrew Kummel  
Heiji Watanabe  
Iain Thayne  
Prashant Majhi  
Supratik Guha  
Jochen Mannhart  
Shiram Ramanathan

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