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Ferroelectric Random Access Memories

Fundamentals and Applications

With 125 Figures
and 12 Tables

Springer

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Preface

As modern portable electronic devices such as mobile phones and notebook computers become more and more popular, there is a confirmed increase in the demand for nonvolatile memories. The ferroelectric random access memory (FeRAM) is one of the most promising candidates for satisfying this demand, because its power consumption is the lowest among the various semiconductor memories, and it also possesses nonvolatile and random access characteristics. Thus, research and development for this memory are being conducted actively in many semiconductor companies, and FeRAMs up to 256 kb have already been mass-produced for RF tag and computer game applications. Furthermore, production of Mb-scale FeRAMs is also being prepared.

On the basis of this background, the 1st International Meeting on Ferroelectric Memories was held in Gotemba City, Japan, in November 2001. At this meeting, the publication of a new book on FeRAM was discussed and the outline of the book was determined. After the meeting, the individual chapters were written, mainly by the attendees of the meeting. Thus, I believe that each chapter in this book has been written by one of the best authors, who knows the specific field very well. The book consists of five parts – (I) ferroelectric thin films, (II) deposition and characterization methods, (III) the fabrication process and circuit design, (IV) advanced-type memories, and (V) applications and future prospects – and each part is further divided into several chapters. I hope that this book will contribute to the research and development of future FeRAMs.

Finally, I am grateful to Dr. C. E. Ascheron of Springer-Verlag for his encouragement and patience during the chapter collection and reviewing periods. I am also grateful to Dr. S. Yamamoto (Research Associate) and Ms. I. Sugita (Secretary) for their advice and efforts in converting almost all of the manuscripts into LaTeX style.

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