Materials and Physics of Emerging Nonvolatile Memories

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Materials and Physics of Emerging Nonvolatile Memories

Symposium held April 9–13, 2012, San Francisco, California, U.S.A.

EDITORS

Yoshihisa Fujisaki
Hitachi Ltd.
Tokyo, Japan

Panagiotis Dimitrakis
NCSR "Demokritos"
Aghia Paraskevi, Greece

Eisuke Tokumitsu
Japan Advanced Institute of Science and Technology
Nomi, Japan

Michael N. Kozicki
Arizona State University
Tempe, Arizona, U.S.A.

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PREFACE

Symposium E, "Materials and Physics of Emerging Nonvolatile Memories" was held April 9–13 at the 2012 MRS Spring Meeting in San Francisco, California, which was a follow up of previous symposia on nonvolatile memories. The first symposium on nonvolatile memories was organized in 2004 at the MRS Fall Meeting in Boston, entitled "Materials and Processes for Nonvolatile Memories". Since then, a series of symposia on nonvolatile memories were held during the MRS Spring Meetings in San Francisco:

- "Science and Technology of Nonvolatile Memories" in 2006;
- "Materials and Processes for Nonvolatile Memories" in 2007;
- "Materials Science and Technology of Nonvolatile Memories" in 2008;
- "Materials and Physics for Nonvolatile Memories" in 2009 and 2010;
- "New Functional Materials and Emerging Device Architectures for Nonvolatile Memories" in 2011

In this year's symposium, 127 papers were presented in 11 sessions, including 17 invited talks, 53 oral and 57 poster contributions. Such a large number of paper submissions and high attendance in the symposium indicate continuous strong interest and worldwide research efforts in the field of nonvolatile memories. Main research areas featured in Symposium E were advanced flash and nanofloating gate memories, ferroelectric and magnetoresistive memories, organic and molecular memories, memristors and resistive switching memories, and phase–change memories. In particular, a large number of contributions were presented on resistive switching memories. The selected papers in the Proceedings volume have been categorized in these areas. In addition, a highly successful one-day tutorial session "Fundamentals of Emerging Nonvolatile Memories" was conducted.

The editors would like to thank the authors of the manuscripts, all of the speakers and participants for their valuable contributions toward making this symposium successful. We gratefully acknowledge the financial support of the Japan Society of Applied Physics and Annealsys.

Yoshihisa Fujisaki
Panagiotis Dimitrakis
Eisuke Tokumitsu
Michael N. Kozicki

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