Hiroshima University
21th Century COE Program

Proceedings of
First Hiroshima International Workshop on Nanoelectronics for Terra-Bit Information Processing

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Hiroshima University
Faculty Club

Preface

Recently, the Japanese Ministry of Education, Culture, Sports, Science and Technology has elected Hiroshima University as a Center of Excellence (COE) on "Nanoelectronics for Terra-Bit Information Processing" in its 21st Century COE Program. The scientific core of this COE is formed by the Research Center for Nanodevices and Systems (RCNS) and cooperating members from the Graduate School for Advanced Sciences of Matter.

The purpose of this workshop is to offer the forum for discussing future prospects of silicon nanoelectronics and nanodevice technologies with the experts in the related fields.

Our main goals are:

* Unification of silicon-based system, circuit, device-modeling and device-fabrication research
* Solution of the persistent 3-diminsional-integration problems by a wireless integration methodology
* Realization of integrated systems with high-level recognition and learning capabilities by innovative circuits and architectures

Our research fields and present research subjects are summarized as follows:

I. Electronic circuits and system architecture

I-1. High frequency analog circuits
Prof. A. Iwata & Assoc. Prof. M. Sasaki

I-2. Associative-memory-based systems with recognition and learning capability
Prof. H. J. Mattausch & Assoc. Prof. T. Koide

I-3. Processing system with highly cognitive level
Prof. A. Iwata

II. Device Modeling

II-1. Integration of electronic and optical devices
Prof. M. Miura-Mattausch & Res. Assoc. Dr. H. Ueno

II-2. Three-dimensional SOI-MOS device integration
Prof. M. Miura-Mattausch & Res. Assoc. Dr. H. Ueno

III. Nanodevices and Processes

III-1. Fundamental miniaturization techniques for Si-MOS transistors
Assoc. Prof. K. Shibahara

III-2. Three-dimensional ultra-small SOI-MOS transistors
Prof. H. Sunami & Prof. M. Miura-Mattausch

III-3. Functional devices with nanostructure
Prof. S. Miyazaki & Res. Assoc. H. Murakami

III-4. Integration technologies for wireless interconnect systems
Prof. T. Kikkawa & Assoc. Prof. M. Sasaki

III-5. Optoelectronic integrated systems using optical interconnection on a Si chip
Prof. S. Yokoyama & Assoc. Prof. A. Nakajima

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