Preface

On behalf of Hiroshima University 21st century COE program committee on "Nanoelectronics for Terra-Bit Information Processing", I would like to welcome you to the Third Hiroshima International Workshop on Nanoelectronics for Tera-bit Information Processing.

The 21st century COE program "Nanoelectronics for Terra-Bit Information Processing" aims at the fusion of silicon-based nanodevices, circuits and integrated circuit-architectures. Silicon technology has emerged over the last decades as the predominant technology of the industry. The concept of MOS device scaling has consistently applied over many technology generations, resulting in the nanometer regime. This nanotechnology leads to develop the high speed computer, communication network, robots, medical diagnosis technique, etc.

Our main goals are as follows.

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

A great deal of research work have been carried out under the COE program and achieved a remarkable results which are being to be focused in this workshop. The first workshop was held on March 17, 2003. The second workshop was held on January 30, 2004, in which modeling and simulation tasks of the COE were focused. The third workshop focuses on wireless interconnection in ULSI.

Although the scaling of MOS devices has been successful to improve the performance of LSI, nanometer-scale MOS technology is nearing some fundamental physical limits due to the bottleneck of communication capability within and between ULSI chips. Revolutionary radio frequency interconnection techniques have been developed for high speed data and global clock distribution. The achievement of the developed RF interconnect technology will be demonstrated in this workshop. Besides focusing of the COE achievement, four distinguished professors from abroad are invited and will review the state of the art technologies. We also invite a distinguished professor from our medical school to talk about recent advances in the practical medicine, which would help us to think about the application of nanoelectronics to medical and bio sciences.

I hope the Third Hiroshima International Workshop on Nanoelectronics for Terra-Bit Information Processing will be a fruitful one for all attendees.

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