FOREWORD

Special Section on Leading-Edge Technology of Superconductor Large-Scale Integrated Circuits

Having passed 100 years in last year since the discovery of superconductivity and more than 50 years since the proposal of Josephson effect, the quantum phenomena are going close to our daily lives. Many applications based on single flux quanta were presented and superconducting VLSIs, which have more than 10,000 junctions, have been fabricated for various signal processing circuits. However, we need a few steps for practical use and believe the high possibility in making practical use of superconducting VLSIs when the performance of present silicon devices is going to a saturation state. This special section on "Leading-Edge Technology of Superconductor Large-Scale Integrated Circuits" was planned to further promote the superconducting VLSI and its related researches. It will open the latest results in superconducting VLSI to the public.

The special section includes the following topics related with superconducting integrated circuit: superconducting digital circuit and system (five papers), fabrication technologies for superconducting thin films and Josephson junctions (two papers), design methodologies for superconducting digital and analog circuits (two papers), and analog signal processing for superconducting detectors and SQUID (one paper).

Finally, I would like to thank all the editorial committee members listed below for their devoted efforts to this editorial work.

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Koji Nakajima (*Fellow*) received his B.E., M.E., and Dr. Eng. from Tohoku University, Sendai, Japan, in 1972, 1975, and 1978, respectively. Since 1978 he has been working at the Research Institute of Electrical Communication, Tohoku University, except for a ten month period in 1983 when he was a Visiting Assistant Research Engineer at University of California, Berkeley. He is a professor at the Research Institute of Electrical Communication and is currently engaged in the study of VLSI implementation of neural networks and Josephson junction devices for digital applications. Dr. Nakajima is an IEICE fellow, and he is a member of the Japan Society of Applied Physics, the Institute of Electrical Engineers of Japan, and Japanese Neural Network Society.