FOREWORD

Special Section on Recent Development of Electro-Mechanical Devices —— Papers selected from International Session on Electro-Mechanical Devices 2012 (IS-EMD2012) and other recent research results ——

This special session mainly focuses on the recent development of Electro-Mechanical Devices, which were presented in the International Session on Electro-Mechanical Devices in 2012 (IS-EMD2012). The 12th International Session on Electro-Mechanical Devices which is supported by the technical committee of EMD was held in Chiba Institute of Technology from November 30th to December 1st, 2012.

Twelve years ago, International session on EMD was established as a meeting to open the discussion for the research results in IEICE with foreign researchers. One of the results of meeting has been published as the special section in the transaction of IEICE for 10 years. The special issue has been well-known amang the worldwide EMD people.

Basically, the committee of Electromechanical Devices is established as a research meeting to resolve a lot of problems which support a new concept on the subject of mechanical components including all of the related electrical and mechanical issues. Around 20 years ago, the mechanical means have been expanded on the research fields such as mechanical contact of the optical components and other fields.

Now a day, the issues in EMD include basic contact phenomena, theoretical analysis, arc discharge and related phenomena, sliding contacts, relays, connectors, contactors and circuit breakers, optical interconnection, sensing devices, automotive applications, signal transmission, lead free soldering, reduce-reuse-and-recycle techniques, testing and evaluation, and others. These fields have been well-known subjects from early research fields on electrical and electronic engineering, but there are lots of still unresolved problems not only for available traditional matters but for newly developed applications.

In this section, one invited paper which is new application of carbon-nanotube material was prepared. 9 papers and 3 brief papers are selected from 18 submitted papers. These papers include wide basic research fields which are interesting for the readers who have basic electrical engineering research issues.

Lastly, I would like to express great appreciation to the Editorial Committee, especially Prof. Nobuhiro Kuga, Guest Editor, for the remarkable contribution to editorial task of this special section.

Hiroshi Inoue (The Open University of Japan, Akita Study Center), Guest Editor-in-Chief

Hiroshi Inoue *(Fellow)* received B.S., M.S. and Ph.D. degrees from Tohoku University, 1969, 1971 and 1978, respectively. In 1975, he was an assistant of Tohoku University. In 1980, he moved to Faculty of Mining College, Akita University, as a lecturer. He was, successively, an associate professor and a professor of Faculty of Engineering and Resource Science, formerly Mining College, Akita University. From 2009 to 2011, he had been an executive director and vice president of Akita University. From 2012, he is a professor emeritus of Akita University. In 2012, he was a vice director of Akita Prefectural Resources Technology Development Organization. Currently, He is a Director of Akita Study Center, The Open University of Japan. He is a senior member of IEEE, a distinguished member of JSUM, and a member of SICE, ASA, ASJ and JSMBE.