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December 22-25, 2015

Nakamura Centenary Memorial Hall

Kyushu Institute of Technology

***India-Japan Expert Group Meeting on Biomolecular Electronics & Organic
Nanotechnology for Environment Preservation
(IJEGBE)***

FOREWORD

There is increased interest in organic nanotechnology and biomolecular electronics for environmental preservation, and in their anticipated impact on the economics of both the developing and the developed world. Keeping this in mind, the Department of Biological Functions, Graduate School of Life Sciences and Systems Engineering, Kyushu Institute of Technology (KIT), Kitakyushu, Japan, and the Department of Science & Technology Centre on Biomolecular Electronics (DSTCBE), National Physical Laboratory (NPL) jointly organized the India-Japan Workshop on Biomolecular Electronics and Organic Nanotechnology for Environmental Preservation (IJWBME 2009) at NPL, New Delhi from 17th – 19th December 2009, IJWBME 2011 at EGRET Himeji, Himeji, from 7th – 10th December, Japan, and IJWBME 2013 at Delhi Technological University, New Delhi, from 13th – 15th December. The India-Japan Expert Group Meeting on Biomolecular Electronics & Organic Nanotechnology for Environment Preservation (IJEGBE) will be held from 22th – 25th, December, 2015, at Nakamura Centenary Memorial Hall, Kyushu Institute of Technology, Kitakyushu, Japan in association with Delhi Technological University, Delhi, India.

Recent years have seen rapid growth in the area of Biomolecular Electronics involving the association and expertise of physicists, biologists, chemists, electronics engineers and information technologists. There is increasing interest in the development of nanotechnology and biomolecular electronic devices for the preservation of our precious environment. In this context, the world of the electronics, which developed on Si semiconductors, is going to change drastically. A paradigm shift towards organic or printed electronics is more likely in the future. The field of organic electronics promises exciting new technologies based on inexpensive and mechanically flexible electronic devices, and is now starting to see commercial success. On the sidelines of this increasingly well-established field are several emerging technologies with innovative mechanisms and functions that utilize the mixed ionic/electronic conducting character of conjugated organic materials. These techniques are based around flexible or printed electronics. Ionic functionalization influences many of the key properties of conductive polymers through its impacts on molecular order, the injection and transport of charge, optical excitations, and interactions with other molecules. Consequently, it is an important tool in the development of electronic and photonic devices based on conductive polymers. We have considered that to focus exclusively on the iontronics, ionic carriers in organic electronic materials and devices in organic electronic materials seems timely. Therefore, this report reviews



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the scientific understanding and important scientific discoveries made in the electrochemistry of conductive polymers based on our experience.

The main purpose of *IJEGMBE* is to provide an opportunity for researchers, who are interested in biomolecular electronics and organic nanotechnology for environmental preservation, to come together in an informal and friendly atmosphere and exchange their technical information and experience. We are sure that this meeting will be very useful and fruitful for all participants to summarize the recent progress in biomolecular electronics and organic nanotechnology for environmental preservation and prepare the next step for future generations.

Many papers have been submitted from India and Japan and **more than 20 papers** have been accepted for presentation. All the papers accepted will be presented.

The main topics of interest are as follows;

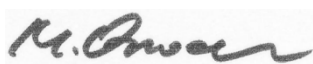
- Bioelectronics
- Biomolecular Electronics
- Fabrication Techniques
- Self-assembled monolayers
- Nano sensors
- Environmental monitoring
- Organic devices
- Organic Functional Materials
- Others

The program of this meeting consists of Invited Lectures and oral presentations. We hope all participants benefited from this meeting. We would like to express our sincere thanks to the organizing committee members of this workshop and thank organizations such as by Japan Society for the Promotion of Science (JSPS), Japan, Department of Science & Technology (DST), Govt of India, Delhi Technological University (DTU), India, Kitakyushu City, and West Japan Industry and Trade Convention Association for their financial support. Thanks are also given to University of Hyogo and the Kyushu Institute of Technology. Many people have made efforts so as to make this meeting possible and valuable, and we would like to express our thanks to Prof. Wataru Takashima, Prof. Shuichi Nagamatsu, Prof. Shyam S. Pandey, and Ms. Megumi Furuta of Kyushu Institute of Technology, Prof. Ashutosh Sharma (DST, India), Dr Navin Vasishta (DST, India), Prof. Yogesh Singh (DTU, India), Prof. Akihiko Fujii and Dr. Hirotake Kajii from Osaka University for their efforts in planning and arranging this expert group meeting.

Finally, we hope that many young and active researchers who are participating will enjoy stimulating discussions and exchanging their ideas with each other at the IJEGMBE being organized at Kitakyushu in Japan.

December 22, 2015

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*India-Japan Expert Group Meeting on Biomolecular Electronics & Organic
Nanotechnology for Environment Preservation (IJEGMBE)
December 22-25, 2015
Nakamura Centenary Memorial Hall, Kyushu Institute of Technology*

2015 IJEGMBE Attendees

Journal of Physics: Conference Series, IOP Publishing

Special Issue of IJEGMBE

Preface

This special issue contains a selection of papers presented at India-Japan Expert Group Meeting on Biomolecular Electronics & Organic Nanotechnology for Environment Preservation (IJEGMBE), which was held at the Kyushu Institute of Technology, Fukuoka, from December 22 to 25, 2015. The purpose of the meeting was to discuss the recent progress in organic nanotechnology and biomolecular electronics for environmental preservation. The total of 24 papers were presented, which included 5 invited talks and 19 oral presentations.

The 22 papers were selected for publication in the Journal of Physics: Conference Series. The selection was carried out by the editorial judgement based on the peer review process. The aim of this special issue is to circulate the information presented at the meeting to readers interested in biomolecular electronics and organic nanotechnology.

The editorial board for the special issue of the IJEGMBE would like to appreciate all the reviewers for their excellent work and efforts with the kind commitment of time and expertise. Their judgments and suggestions for the submitted papers were most valuable for maintaining the highest quality and standard for this journal. Finally, we would like to thank all authors for preparing their manuscripts and for their perseverance during the peer review process. We sincerely hope that readers appreciate the significance and distinguished potential of these fields, which will be a scientific foundation and pioneer technology in the 21st century.

March 25, 2016

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Special Issue of IJEGBE (Journal of Physics: Conference Series, IOP Publishing)

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