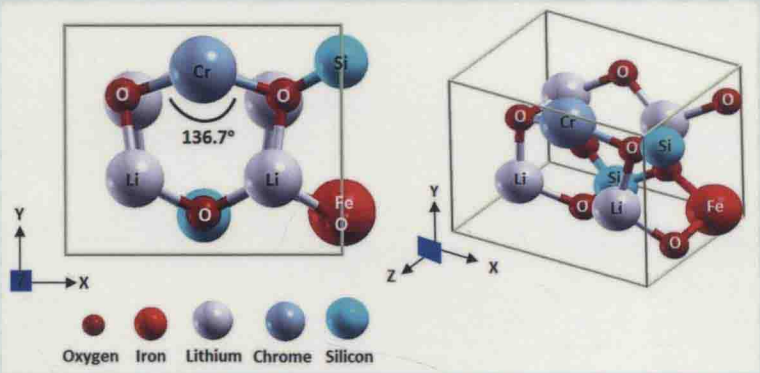
Advanced Materials Research and Production



Edited by
Ferry Iskandar, Satria Zulkarnaen Bisri,
Mikrajuddin Abdullah,
Khairurrijal and Kikuo Okuyama

TRANS TECH PUBLICATIONS

Advanced Materials Research and Production

Selected, peer reviewed papers from the
Materials Research Society of Indonesia
(MRS-id) Meeting 2014,
September 26-28, 2014, Bali, Indonesia

Edited by

Ferry Iskandar, Satria Zulkarnaen Bisri, Mikrajuddin Abdullah, Khairurrijal and Kikuo Okuyama

TTP

Trans Tech Publications Ltd
Churerstrasse 20
CH-8808 Pfaffikon
Switzerland
http://www.ttp.net

Volume 1112 of
Advanced Materials Research
ISSN print 1022-6680
ISSN cd 1022-6680
ISSN web 1662-8985

Full text available online at *http://www.scientific.net*

***Distributed** worldwide by*

Trans Tech Publications Ltd
Churerstrasse 20
CH-8808 Pfaffikon
Switzerland

Fax: +41 (44) 922 10 33
e-mail: sales@ttp.net

and in the Americas by

Trans Tech Publications Inc.
PO Box 699, May Street
Enfield, NH 03748
USA

Phone: +1 (603) 632-7377
Fax: +1 (603) 632-5611
e-mail: sales-usa@ttp.net

printed in Germany

Advanced Materials Research

ISSN: 1022-6680, ISSN/ISO: Adv. Mater. Res.

Aims and Scope:

Advanced Materials Research specializes in the very rapid publication of international conference proceedings and stand-alone volumes on topics of current interest in all areas of materials research and related topics.

Internet:

The periodical is available in full text via www.scientifc.net

Subscription Information:

Irregular: approx. 100-150 volumes per year. First volume in 2015: Vol. 1060

The subscription rate for web access is EUR 1177.00 per year. Standing order price for print copies: 20% discount off list price plus postage charges.

ISSN print 1022-6680 ISSN cd 1022-6680 ISSN web 1662-8985

Trans Tech Publications Ltd

Churerstrasse 20 • 8808 Pfaffikon • Switzerland

Fax +41 (44) 922 10 33 • e-mail: ttp@ttp.net

http://www.ttp.net

http://www.scientific.net

Advanced Materials Research and Production

Edited by
Ferry Iskandar
Satria Zulkarnaen Bisri
Mikrajuddin Abdullah
Khairurrijal
Kikuo Okuyama

Preface

It is a pleasure to conclude The 1st International Conference of The Materials Research Society of Indonesia (MRS-Id Meeting) 2014 with a great success. MRS-Id Meeting is a bi-annual society meeting of The Materials Research Society of Indonesia/Himpunan Riset Material Indonesia (MRS-Id/HRMI). The 1st MRS-Id meetings was successfully held in Denpasar, Bali, Indonesia on September 26th-28th, 2014. It was also co-organized by The Physics of Electronic Materials Research Division, Faculty of Mathematics and Natural Science of Institut Teknologi Bandung (ITB).

The MRS-Id meetings provides excellent opportunities for scientists, researchers and engineers to share their newest scientific works and discoveries in the field related to the broad scope of Material Science & Engineering. This event also become the melting pot where Indonesian and regional communities of materials scientists, physicists, chemists, engineers, as well as material-related business practitioners convene and exchange ideas. The aims of this event is to deliver the focus of MRS Indonesia which is to promote materials related science and technology in Indonesia, regional area (such as ASEAN and Asia) and global. We hope by this event, we can also issue a collection of scientific articles by researches in Material science fields.

In this 1st MRS-Id meetings, there were more than 250 participants not only from Indonesia, but also from Malaysia, Japan, The Netherlands, Australia, France, Germany, India, Singapore, and South Korea. There were more than 200 (oral and poster) presentations, including 6 plenary lectures, 23 invited talks, and 2 tutorial workshops. The meetings consisted of 9 independent parallel symposia that thoroughly discuss the wide spectrum of materials science and technology. Those symposia are: (a) Optics, Magnetic and Strongly Correlated Electron Materials; (b) Catalysts, Adsorbents and related materials: Fundamentals & Applications; (c) Photovoltaics and Batteries: Emerging Materials and Devices; (d) "Tear and Wear": Materials for Industries and Strong Materials; (e) Biomaterials, Medicinal Materials and Drug Delivery; (f) Advanced Materials: Green Synthesis and Nanostructured Materials; (g) Organic and Hybrids: Materials, Devices and Physics; (h) Computational Methods and Advanced Characterizations of Materials; (i) Mining and Metallurgy: "Bringing up the added value". This number of symposia reflects the emerging research field of material science and technology in Indonesia, and it is expected to be increased in the coming MRS-Id Meetings.

This special issue consists of full paper submitted from authors of the 1st MRS-Id Meetings. There were 130 full manuscripts submitted for this meetings. After scrutinized by thoroughly editorial and peer-review processes involving 74 experts worldwide, The experts were chosen not only because of their scientific expertise in the related field, but also due to their willingness to provide meticulous feedbacks that would improve both the scientific quality of the manuscript content and the writing process beyond the preparation of the manuscript. 124 papers were accepted for publications in this special issue.

For the success of the 1st MRS-Id meetings, The Materials Research Society of Indonesia would like to acknowledge all members of The Advisory Board, all members of The Organizing Committee, and The Faculty of Mathematics and Natural Sciences of Institut Teknologi Bandung, for the numerous supports. High gratitude is also conveyed to institutions and companies that support the funding of this meeting,

which are Institut Teknologi Bandung, PT. HORIBA Indonesia, Lab. Sistematika Indonesia.and Aston Hotel International Denpasar.

The next MRS-Id Meetings will be held in October 2016. **We are looking forward to welcoming you in the 2nd MRS-Id Meetings!**

Prof. Mikrajuddin Abdullah
Chairman of MRS-Id Meeting 2014 / current President of MRS-Id

Ferry Iskandar
Co-Chairman of MRS-Id Meeting 2014

Ferry Iskandar, Satria Zulkarnaen Bisri, Prof. Mikrajuddin Abdullah, Prof. Khairurrijal and Prof. Kikuo Okuyama
Editorial Board

Table of Contents

Chapter 3: Catalysts, Adsorbents and Related Materials: Fundamentals and Applications

Chapter 4: Photovoltaics, Batteries and Fuel Cells: Emerging Materials and Devices

Chapter 5: Surfaces, Coatings and Hardening of Materials for Industrial Application

Chapter 6: Polymers and Composites: Synthesis and Properties

Chapter 7: Biomaterials and Biomedical Engineering

Chapter 8: Mining, Metallurgy and Chemical Engineering