



Editor
Aida Bulucea



Recent Advances in Renewable Energy Sources

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*Proceedings of the 9th International Conference on
Renewable Energy Sources (RES '15)*

Kuala Lumpur, Malaysia, April 23-25, 2015

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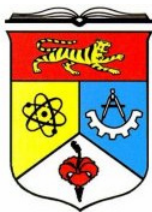


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Published by WSEAS Press
www.wseas.org

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All papers of the present volume were peer reviewed by no less than two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.

ISSN: 2227-4359
ISBN: 978-1-61804-303-0

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Preface

This year the 9th International Conference on Renewable Energy Sources (RES '15) was held in Kuala Lumpur, Malaysia, April 23-25, 2015. The conference provided a platform to discuss wind energy, hydrogen energy, biomass, solar energy, geothermal energy, hydroelectric energy, ocean renewable energy etc. with participants from all over the world, both from academia and from industry.

Its success is reflected in the papers received, with participants coming from several countries, allowing a real multinational multicultural exchange of experiences and ideas.

The accepted papers of this conferences are published in this Book that will be sent to international indexes. They will be also available in the E-Library of the WSEAS. Extended versions of the best papers will be promoted to many Journals for further evaluation.

Conferences such as this can only succeed as a team effort, so the Editors want to thank the International Scientific Committee and the Reviewers for their excellent work in reviewing the papers as well as their invaluable input and advice.

The Editors

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Plenary Lecture 1

Solution Processed Organic Photovoltaic Cells by Electrospray Deposition Method



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Abstract: Since solution-processed organic photovoltaic cells (OPVs) have been required for renewable energy source in a near future, several solution processes have been investigated by many researchers. In this presentation, I will introduce a novel solution process, called as an electrospray deposition (ESD), which is a unique tool for fabricating organic thin film devices. Nowadays, our research group already demonstrated high efficiency OPVs and organic light-emitting diodes using an additive solvent technique, which solves problems of rough surface roughness and narrow deposition area. In this spray method, the evaporation speed of solvent can be controlled by changing the droplet size and the vapor pressure of solvent, and the crystallinity and stacking structure can be controlled. Finally, inorganic nanofiber can also fabricated by the ESD, and inverted OPVs were already demonstrated.

Brief Biography of the Speaker: Takeshi Fukuda received B.E. and M.E. from Waseda University, Tokyo, Japan, in 1999 and 2001, respectively. In 2001, he joined Fujikura Ltd. He received Ph.D. degree from Shinshu University, Nagano, Japan, 2008. Since 2008, he has been the assistant professor with the department of functional materials science, Saitama University, Saitama, Japan. His research interests are organic thin film devices (organic photovoltaic cells, organic light-emitting diodes, and wavelength selective organic photoconductive devices), electrospray deposition method, and semiconductor quantum dots and related sensing materials.

Plenary Lecture 2

Malaysia: Wind Energy Recent Development



Professor Azami Zaharim

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Abstract: Awareness on environment adversity such as drastic climate change, greenhouse effect and fossil depletion has leads a major changes on human consideration. From daily activities such as recycle and reuse up to renewable energy sources such as solar, biomass and wind has taken into account. The aim of this study is to review on wind energy recent development in Malaysia. It comprises trend, research, discovery and development of the wind energy. The result found that research on wind energy has increase in Malaysia. From the policy and act studies to the wind energy capture. This trend shows that Malaysia is ready for wind as a substance to fossil dependence. More researches need to be done to realize wind energy as one of the energy contributor in Malaysia.

Brief Biography of the Speaker: Azami Zaharim is a Professor at the Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, and previously served as Head of Centre for Engineering Education Research, Faculty of Engineering & Built Environment, UKM starting 2009 until 2014. He obtained his BSc with Honours in Statistics and Computing from North London University, UK in 1988. In 1996, he completed his PhD at University of Newcastle Upon Tyne, UK in the area of Statistics. His research interest is on renewable energy, engineering education and engineering mathematics. He is currently an Associate Principal Research Fellow in Solar Energy Research Institute, a center of excellence for the research and development in solar energy technology as a head of Renewable Energy Resources and Social Impact Research Group. At the national level, he was invited by INTAN to conduct a workshop on research methodology for government scholarship holders at the post-graduate level. In addition, the Food Quality Division of the Health Ministry also invited him to lecture on the topic of optimization using surface methodology. He has until now published over 250 research papers in journals and conferences, conducted more than 20 public opinion consultancies and delivered more than 15 keynotes/invited speeches at national and international meetings on engineering education and renewable energy.

Plenary Lecture 3

Effect of Using Nanofluids in Solar Collector: A Review



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Abstract: The use of nanofluids for cooling is attracting considerable attention in various industrial applications. Compared with conventional fluids, nanofluids improve the heat transfer rate, as well as the optical properties, thermal properties, efficiency, and transmission and extinction coefficients of solar systems. The effects of different nanofluids on the cooling rate and hence the efficiency of solar systems have been gain a lot of interest recently. A review of the effects of nanofluids on the performance of solar collectors from the considerations of efficiency and environmental benefits will be presented. A review of literature shows that many studies have evaluated the potential of nanofluids for cooling different solar collectors. An overview of studies regarding the performance of solar collector, such as flat-plate and direct solar-absorption collectors with the use of nanofluids as working fluid will and the effect of surface-to-volume ratio on thermal conductivity is more than the effect of the surface size of nanoparticles will also be presented.

Brief Biography of the Speaker: Prof Kamaruzzaman Sopian graduated with the PhD in Mechanical Engineering from the Dorgan Solar Laboratory, University of Miami at Coral Gables in 1997. He is presently the Professor of Renewable Energy in the Department of Mechanical and Material Engineering, at the National University of Malaysia and currently is the Director of the Solar Energy Research Institute in the same university. He has been involved in the field of renewable energy for more than 25-years. His main contributions are in solar radiation modeling and resource assessment, advanced solar photovoltaic systems (grid-connected photovoltaic, solar powered regenerative fuel cell, solar hydrogen production, thin film silicon solar cell) and advanced solar thermal systems (solar cooling, solar heat pump, solar assisted drying, combined photovoltaic thermal or hybrid collector). He won several international awards for his academic contribution in renewable energy including the IDB (Islamic Development Bank) S&T Prize 2013, World Renewable Energy Network Pioneer Award 2012, Malaysia Green Technology Award 2012, and the ASEAN Energy Awards (2005, 2007, 2013 and 2014). He has 4 patents, 20 patents pending, 6 copyrights, and 1 trademark for his innovation in renewable energy technology.