Editorial

Solar Energy: Materials, Devices, and Applications

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As “a low-carbon society and CO₂-free energy” have been the global issues, so have the opportunities and challenges for renewable energy technologies, like photovoltaic solar cells. Solar energy is an alternative of fossil fuels. Dye-sensitized solar cells (DSSCs), organic thin-film solar cells, quantum dot solar cells, Schottky solar cells, inorganic-organic heterojunction solar cells, and many others have been developed with the promise of further improvements to both performance and affordability expected during the last years.

The aim of this special issue has been to present the latest and generalized coverage of the fundamental and constructive ideas, concepts, and important issues in the accepted original research articles stimulating the continuing efforts to solar energy. We received 12 research papers in the research fields. This special issue includes 8 high-quality peer-reviewed papers. We hope that this collection of papers will be a source of ideas and motivation for scientists across different fields in academia and industry to continue further research on solar energy including topics about materials, devices, and applications.

In the fascinating paper by A. M. Abdel-Ghany and I. M. Al-Helal, under solar radiation conditions, the modeling approach has been used to determine equivalent optical constants of plastic shading nets. W.-s. Kuo and C.-I. Wu provide a treatment of color filter wastewater using solar photo-Fenton process enhanced by high-concentrating Fresnel lens. Series resistance analysis is presented by M. Lenio et al. for passivated emitter rear contact cells patterned using inkjet printing. In the nonvacuum processes for solar cell materials, S. Ito and T. Ryo are working successfully

on finding segregation of Cu-In-S elements in the spray-pyrolysis-deposited layer of solar cells. In the interesting paper by H. Zhao et al., the experimental study on solar cooling tube has been built using thermal/vacuum emptying method. These wonderful results in the studies of ruthenium complex sensitizer and gold nanoparticles doped flexible organic solar cells are given by L.-C. Chen and C.-C. Chen. Organic compounds effect on microstructure, optical, and electrical properties of ITO thin films prepared by dip coating method has been investigated by Y.-M. Peng et al. Finally, the other published paper has good studies on providing the phenomenon of performance degradation induced by electrolytes for dye-sensitized solar cells by H.-Y. Chen et al.

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