SPECIAL TOPIC — New generation solar cells DOI: 10.1088/1674-1056/27/1/018811

Editorial

Large-scale utilization of solar energy is the best choice for the sustainable and healthy development of human society. The conversion of solar energy into electrical energy is one of the most important ways of harnessing solar energy. At present, the photovoltaic market is dominated by products based on silicon wafers; however, silicon-based technology still cannot compete with traditional fossil energy due to high associated costs and its lack of flexibility and portability. In this regard, a variety of new thin film solar cells has been developed, and some remarkable research progress has been achieved; besides, the efficiency and stability of the devices have been greatly improved while maintaining low price and flexibility.

The development of new solar cells is an interdisciplinary research field involving physics, chemistry, material science, and engineering, and is therefore full of opportunities and challenges. With the financial support of the National Natural Science Foundation of China, the Ministry of Science and Technology and the Chinese Academy of Sciences, the development of new solar cells in China has been progressing rapidly. In order to recognize and understand the nation's research status on new solar cells, strengthen academic exchanges and promote cooperation and development in this field, we organized a special issue on "New generation solar cells" in cooperation with Chinese Physics B. This issue invited 15 experts to present their perspective of the trends in the development of new thin film solar cells, as well as their latest research work. It includes 4 review papers and 11 original essays covering the latest research achievements in dye-sensitized nanocrystalline solar cells, quantum dot solar cells, perovskite solar cells, copper zinc tin sulfide (selenide) thin film solar cells, among others.

I do hope this special issue will bring wider attention and further interest in new solar cells and help readers understand the research status of this field in China. In the meantime, we welcome the readers to provide positive suggestions.

Together with the efforts from all our authors, reviewers and editors, this special issue has finally been published. I would like to express my sincere appreciation to all of you.

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