Editorial note

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Energy is one of the most important and challenging global issues faced by our society over the next 50–100 years. It is of urgent need to develop reliable technologies to meet the world's future energy demands efficiently and sustainably. As enabling components of the energy supply technologies, advanced materials hold the key for a new generation of renewable energy conversion and storage systems. This special issue aims to provide a state-of-the-art coverage of the experimental and advanced computation progresses from leading researchers in the field of energy materials. As mentioned by Prof Lu in the Preface, initially planned at *3rd International Colloids and Conference-Colloids & Energy*, the 14 reviews/articles in this special issue cover many materials advances for clean energy harvesting, conversion, storage and utilisation. In the energy harvesting and conversion area, there are reviews and articles concerning solar energy conversion through artificial photosynthesis, dye-sensitized solar cells and new generation perovskite solid-state solar cells; in energy storage, new materials for both electrochemical supercapacitors and rechargeable Li-ion/Sodium ion batteries are presented; for energy utilization, fuel cells and waste heat utilisation through thermoelectric materials will provide readers a up-to-date overview of the field.

This collection of excellent papers on the above topics will no doubt contribute to the understanding and knowledge in the chemistry, physics, and engineering of energy materials. We hope this special issue is of interest and useful to a range of readers in renewable energy supply and storage technologies. It is also our hope that the contributions will lead to economic and social benefits for China and the world.

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SPECIAL ISSUE: Advanced Materials for Clean Energy

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