

Editorial

Advancing Energy Storage and Catalysis with Novel Nanomaterials

Zhenyu Yang ^{1,*} and Jinsheng Zhao ² 

¹ School of Chemistry and Chemical Engineering, Nanchang University, Nanchang 330031, China

² School of Chemistry and Chemical Engineering, Liaocheng University, Liaocheng 252059, China; j.s.zhao@163.com

* Correspondence: zyyang@ncu.edu.cn

In the dynamic realm of materials science, novel nanomaterials possess the transformative potential to reshape various industries, ranging from energy storage to catalysis. The objective of this Special Issue, titled “Innovative Nanomaterials for Energy Storage and Catalysis”, is to facilitate the exchange of groundbreaking research and ideas related to the synthesis, characterization, and application of innovative nanomaterials.

The articles featured in this Special Issue encompass a diverse spectrum of topics, thereby showcasing the multifaceted capabilities of nanomaterials in addressing challenges within the domains of energy storage and catalysis. Noteworthy breakthroughs include the utilization of three-dimensional flower-like MoS₂ nanosheets and TiO₂ nanorod-coated polyethylene separators, both of which mark significant advancements in the creation of high-performance materials designed for rapid-charging lithium-ion batteries. Furthermore, a comprehensive review delves into the realm of new materials tailored for anion-selective electrodes, offering insights into a multitude of potential applications. Our Special Issue also highlights the innovative POP-Ni catalyst for CO₂ fixation, derived from PBTP, which offers a groundbreaking approach for the ambient fixation of CO₂ into cyclic carbonates—a notable contribution to the ongoing endeavors related to carbon capture and utilization. Additionally, we delve into the realm of CO₂-switchable hierarchically porous zirconium-based MOF-stabilized Pickering emulsions, elucidating the prospects of recyclable and efficient interfacial catalysis through the use of advanced materials.

These contributions highlight the diverse nature of nanomaterial research, covering various aspects such as material synthesis, hierarchical organization, device fabrication, and characterization. As readers explore this Special Issue, we encourage them to discover the incredible potential inherent in nanomaterials and their pivotal role in shaping the future of energy storage and catalysis. It is our sincere hope that the articles presented here will serve as a source of inspiration, encouraging further exploration and innovation in the field of nanomaterials. Ultimately, these efforts have the potential to bring about transformative advancements in energy storage and catalysis.

Funding: This work was supported by the Natural Science Research Programs of Jiangxi Province (20202ACB202004, 20212BBE53051, 20213BCJ22024).

Conflicts of Interest: The authors declare no conflict of interest.



Citation: Yang, Z.; Zhao, J. Advancing Energy Storage and Catalysis with Novel Nanomaterials. *Materials* **2023**, *16*, 6425. <https://doi.org/10.3390/ma16196425>

Received: 22 September 2023
Accepted: 26 September 2023
Published: 27 September 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Short Biography of Authors

Zhenyu Yang is a professor at the School of Chemistry and Chemical Engineering, Nanchang University, China. He received his PhD degree at the Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, in 2005. He used to work as a visiting research fellow at Rensselaer Polytechnic Institute in the USA from 2012 to 2013 and at Nanyang Technological University in Singapore in 2019, respectively. Currently, his main research focuses on energy storage materials for power sources, including Li-ion batteries, Li-S batteries, and supercapacitors.

Jinsheng Zhao is a professor at the School of Chemistry and Chemical Engineering, Liaocheng University, China. He received his PhD degree at the Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, in 2005. Currently, his main research focuses on the preparation and application of organic conjugated polymer materials, including electrochromic materials and devices, Li-ion batteries, and photocatalysis.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.