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Battery Management Processes, Modeling, and Optimization

Guest Editors:

Dr. Son Ich Ngo
1. Center of Sustainable Process Engineering (CoSPE), Department of Chemical Engineering, Hankyong National University, Gyeonggi-do, Anseong-si 17579, Jungang-ro 327, Republic of Korea
2. CFDWAYS LLC, 6th Floor, 53 Nguyen Xien Street, Thanh Xuan District, Hanoi, Vietnam

Dr. Hoang Long Ngo
NTT Hi-Tech Institute, Nguyen Tat Thanh University, 300A Nguyen Tat Thanh, Ward 13, District 4, Ho Chi Minh City, Vietnam

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Message from the Guest Editors

The model-based engineering solution framework for electric vehicle battery packs encompasses three crucial components: battery management, battery modeling, and battery optimization.

Battery management processes (BMPs) encompass a diverse set of techniques and procedures meticulously designed to enhance battery performance, efficiency, and overall lifespan.

Battery modeling, a fundamental aspect of the framework, encompasses a variety of approaches such as computational fluid dynamics (CFD), electro-thermal models, circuit models, and surrogate or neural network models.

In parallel, battery optimization aims to achieve real-time adaptivity, cost analysis, model predictive control, and multi-objective optimization.

By synergizing battery management, modeling, and optimization, this comprehensive framework serves as a sophisticated foundation for advancing electric vehicle battery technology. It enables manufacturers and researchers to create cutting-edge battery solutions, ensuring electric vehicles are safer, more efficient, and more reliable, thus propelling the widespread adoption of sustainable transportation.

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Editor-in-Chief

Prof. Dr. Giancarlo Cravotto
Department of Drug Science and Technology, University of Turin, Via P. Giuria 9, 10125 Turin, Italy

Message from the Editor-in-Chief

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Processes Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

Tel: +41 61 683 77 34
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