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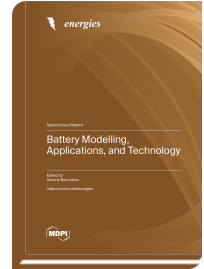
Battery Modelling, Applications, and Technology

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Batteries, among the various energy storage systems, are electrochemical storage devices that have always been attractive for both stationary and mobile applications. Different kinds of technology have been developed through the years (lead–acid, nickel–cadmium, nickel–metal hydride, lithium ion, etc.), and other novel technologies (metal–air, quasi–solid state battery, all–solid state battery, etc.) are still being studied. The most important features for these devices to have include high power, energy density, and efficiency, in addition to a long lifecycle. In particular, the latter can be increased by developing novel technologies in the construction of the batteries themselves and/or in controlling them to operate in their optimal working conditions. To achieve this, the modeling of batteries and the estimation of their parameters becomes a very important challenge. Indeed, through the latter, it is possible to study, analyze, and predict the behavior of single battery cells or whole battery packs with different aims. On the one hand, battery models can be used for analyses of the batteries themselves to improve their efficiency and lifecycle, to build battery management systems, or for sizing battery packs. On the other hand, the same models can be used to analyze the behavior of entire systems in which the battery is one part. This Special Issue collected many articles on battery chemical, electric, thermal, and aging models, integrated battery models and their composition, battery parameter estimation methods, and novel applications and technologies of batteries.



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