

Special Issue on  
**Advanced Nanostructured Materials for “Beyond”  
Lithium Ion Batteries**

# CALL FOR PAPERS

Electrochemical systems represent one of the most efficient ways to reversibly store energy, which is fundamental for the successful transition to renewable energy generation and the realization of a completely electric transportation system. Lithium-ion batteries, currently the power sources of choice for portable electronic devices, are the most mature technology. Nevertheless, their relatively high cost and concerns regarding potentially limited resources have recently triggered the search for alternative technologies, particularly, for large-scale applications like stationary storage. Several other systems such as Na-ion, K-ion, Ca-ion, Mg-ion, and Al-ion, employing more abundant elements in respect to lithium, are presently considered as suitable alternative candidates for the realization of sustainable electrochemical energy storage devices.

The increasing ability to develop tailored nanostructured materials is considered to greatly contribute to the performance improvement of these electrochemical storage systems regarding their energy density, efficiency, and calendar life. Various synthesis, manipulation, and functionalization methods for nanostructured materials have been explored within recent years. However, further improvement regarding these methods and their eventual performance as electrode materials is required to fulfill the requirements for high energy, low cost, and sustainable battery technologies. The key is to exploit appropriate nanostructured materials as an active material or supplementary materials for the development of efficient electrochemical energy conversion and storage devices. This special issue will highlight this recent development of advanced “Beyond” Li-ion batteries, that is, Na-ion, K-ion, Ca-ion, Mg-ion, and Al-ion, in particular focusing the attention on how the “Going-Nano” approach allow the realization of sustainable electrochemical storage systems alternative to Li-ion.

Potential topics include but are not limited to the following:

- ▶ Design and synthesis of nanostructured material
- ▶ Hybrid nanostructured materials
- ▶ Characterization of nanostructured materials
- ▶ Nanostructured material as electrode material in novel electrochemical storage systems

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