

**Sodium-ion battery technology:
a look on the state-of-art and main ENEA achievements**

Giovanni Battista APPETECCHI - *ENEA*

The increasing worldwide energy demand has naturally driven the current lithium-ion batteries (LIBs) to next-generation energy storage systems, which should satisfy the following requirements, such as low costs, long service life, and high energy efficiency. However, the large-scale production of LIBs is limited by the restricted abundance of the raw materials, high costs, etc. and, for these reasons, has seen the emergence of new technologies among which the sodium-ion batteries (SIBs). For instance, in the field of large-scale energy storage production, SIB systems have been increasingly studied as promising alternative systems to LIBs, because of the natural abundance of sodium resources and the lower cost. Sodium is the most promising alternative to the LIB technology for its quite similar physical and electrochemical characteristics with respect to lithium-ion one, which would benefit the already existing LIB manufactory facilities.

In the present contribution, an overview of the most promising electrode/electrolyte technologies for sodium-ion battery systems will be presented and discussed. In addition, a short summary of the main achievements, obtained at ENEA in the field of SIB technology, will be offered.