

A SODIUM CERAMIC ELECTROLYTE BATTERY

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Researchers at CIC energigUNE have designed and developed a new sodium-based cell that operates below sodium melting point (< 98 °C).

This cell aims to replace molten sodium batteries, such as the ZEBRA battery avoiding the use of molten sodium, which can have dramatic consequences in terms of leaks and electrolyte stability, leading to uncontrollable fires. While the presence of a ceramic electrolyte enables the safe operation of the battery along its lifetime, innovative assembly of the cell preserves low internal resistance and long-lasting performances.

The chemical contact between the ceramic electrolyte and the sodium metal is made so intimate that a total transfer of sodium ions from the electrode to the electrolyte is fast.

The invention is versatile as multiple types of cathode materials can be used in the cell. The inventors tested several full cell systems with layered oxides containing different transition metals. For specific applications in which safety is essential, the inventors have developed a catholyte compartment enabling the use of metallic salts and ionic liquid solvents, enhancing both security and cell performance.

ADDED VALUE

- > Works below 98 °C.
- > Long term cycling stability.
- > No risks of leakage.

APPLICATION OF THE TECHNOLOGY

- > Stationary energy storage applications

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