



Indigenous Zn-ion Battery Technologies

Source: PIB

Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), an autonomous institute of the Department of Science and Technology (DST) has signed a MoU with **Hindustan Zinc Limited (HZL)**.

- The MoU aims to develop **new variants of zinc** materials and propel the **commercialization** of [zinc-based batteries](#).

Zinc-Ion Battery: A Zinc-Ion Battery is a type of **rechargeable battery** that uses **zinc ions** as the **charge carrier** instead of lithium and sodium ions.

- Zinc is a **blue-grey, metallic element**, and a **good conductor of electricity**.
 - **Sphalerite, Smithsonite, Willemite** etc are ores of Zinc.
 - The most common alloy is **brass**, which is a mixture of **zinc and copper**.
- **Importance of Zinc-Ion Batteries:**
 - **Cost Efficiency:** It is a **low-cost alternative** to expensive lithium-ion batteries.
 - **Abundant Materials:** It is **abundantly** available on Earth.
 - **Safety and Performance:** Zinc-ion batteries are considered **safer** and offer **stable** performance across temperature ranges.
- **Modifications Required for Commercialization of Zinc:** Zinc is **thermodynamically unstable** with water-based solutions and therefore requires suitable modifications at the [electrode, electrolyte and interfaces](#).
- **Expected Outcomes:** Researchers will explore developing new [Zinc alloys](#) for use as anodes in Zn-ion batteries and electrolytes for their application in rechargeable batteries.
- **Production and uses of Zinc-Ion Batteries are aligned with Sustainable Development Goals (SDGs) like [SDG7](#) and [SDG13](#).**

Read More: [Lithium-ion Technology](#), [Minerals](#)

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