

AFFORDABLE AND SUSTAINABLE SODIUM-ION BATTERY TECHNOLOGY FOR ENERGY STORAGE



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Problem Statement

The rapid growth of renewable energy and electric mobility has created a strong demand for reliable and affordable energy storage solutions. However, most existing battery technologies rely on expensive materials and complex manufacturing processes, which increase costs and limit large-scale adoption. Therefore, there is a need for safe, sustainable, and cost-effective battery technologies that can enable wider access to energy storage.



Akash Yaduvanshi

Technology

This project focuses on developing next-generation sodium-ion battery technology using cost-effective and sustainable materials. The battery system utilizes a layered oxide cathode and a high-capacity alloy-based anode, along with water-based electrode processing. This approach reduces manufacturing costs, improves operational safety, and supports scalable production for stationary energy storage and electric mobility applications.



Prof. Amartya Mukhopadhyay

Highlights

The proposed technology can be applied in stationary energy storage systems, renewable energy integration, backup power solutions, and electric mobility. It offers advantages such as lower material and manufacturing costs, enhanced safety, and environmentally friendly processing methods. These benefits enable affordable and reliable energy storage solutions, supporting the broader adoption of clean energy and sustainable electrification.



Adrija Goswami