International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI)

Balapur P.O., Hyderabad – 500005, Telangana, India

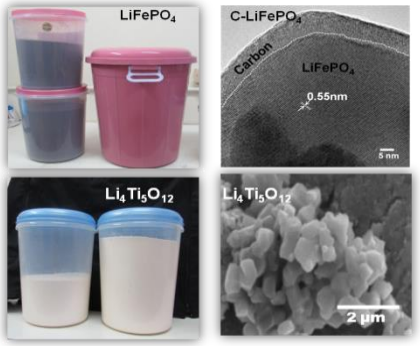
Large Scale Production of Cathode and Anode Electrode Materials by Cost-effective Process

Overview

Lithium ion batteries play an important role in the field of electric vehicle (EV) industries due to their high energy density and power density in comparison to other secondary batteries. As there is a great demand for large quantities of electrode materials for EV application, ARCI is working on development of nano-structured electrode materials in large scale by cost-effective processes. Amongst the electrode materials, $LiFePO_4$ (cathode) and $Li_4Ti_5O_{12}$ (anode) have promising chemistry for electric vehicle batteries due to their high energy density, structural and thermal stability. Both these materials have been successfully synthesized in large quantities and exhibit promising electrochemical performance compared to commercial electrode materials.

Key Features

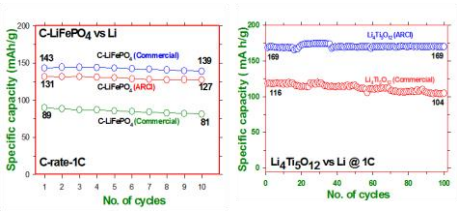
- Large scale production of both anode and cathode materials.
- Simple, economic and scalable processing method.
- Performance of these materials as LIB electrodes are better than the commercial ones



Large scale synthesized cathode ($LiFePO_4$) and anode ($Li_4Ti_5O_{12}$) and their morphologies.

Potential Applications

- High energy density cathode for electric vehicles
- High energy density and thermally stable anode for electric vehicles
- Other portable devices where LIB s are used.



Benchmark studies of $LiFePO_4$ and $Li_4Ti_5O_{12}$ with commercial cathode and anode at 1C

Intellectual Property Development Indices (IPDI)

- Performance and stability are validated at laboratory scale
- Scale-up has been carried out successfully
- Prototype testing is under process using pilot plant facility.

Status	1	2	3	4	5	6	7	8	9	10

Centre For Nano materials

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