

## eCAIMAN

# Electrolyte, Cathode and Anode Improvements for Market-near Next-generation Lithium Ion Batteries



### MOTIVATION AND OBJECTIVES

The objective of eCAIMAN is to bring European expertise together to develop a battery cell that can be produced in Europe and meet the following demands:

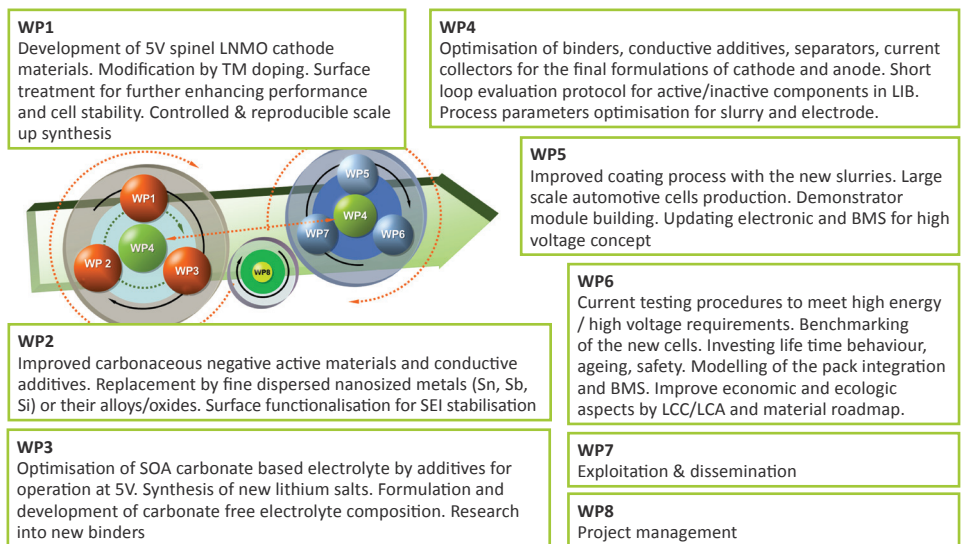
- Energy density of Lithium-ion batteries (LIB) of ~270 Wh/kg.
- Cost 200 €/kWh.

The project will also:

- Investigate the integration in light, passenger, and heavy duty vehicles.
- Validate safety and reliability of the cells.
- Support the development processes with advanced multiphysical modelling.

### PROJECT PLAN, MILESTONES AND DELIVERABLES

The work flow in eCAIMAN is divided into two major parts: “Materials Development & Improvement”, and “Proof of Concept & Prototyping”. The tasks are combined in eight work packages with a synergetic balance between R&D, end user (OEM) demands, and prototyping as depicted in the figure below.



### TECHNICAL APPROACH

The objectives will be achieved by:

- Industrialising a 5V high-voltage spinel cathode material.
- Industrialising a high-capacity composite anode material.
- Industrialising a stable high-voltage electrolyte.
- Producing Technical Readiness Level 6 (TRL) large-scale automotive cells applying above materials and technology.

### ACHIEVEMENTS

- Reduced battery system cost by applying a scalable modular concept for use in light vehicles, passenger vehicles and heavy duty vehicles and buses
- Slurry engineering: general and highly efficient method to maximise the electrochemical performance for a given active material and minimise the side effects on electrochemical properties
- Reduction of processing cost for electrode preparation will be achieved via aqueous processing
- A new test procedure considering both the approaching high voltage cells as well as the demands from various vehicle concepts (light, passenger, and heavy duty) will be developed. This in a later stage can be used for dissemination and update of current test procedures.

**Budget** 6.1 M€

**Duration** 36 months

**DG** INEA

**Coordinator** Boschidar Ganev, AIT

**Partners** Fiat, Volvo, Piaggio, CEA, Arkema, CERTH, SP, IMERYS, LITHOPS, POLITO, AIT

**Website** www.ecaiman.eu

**Funding** 5.8 M€

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