

## EUROLIS

### Advanced European lithium sulphur cells for automotive applications



#### MOTIVATION AND OBJECTIVES

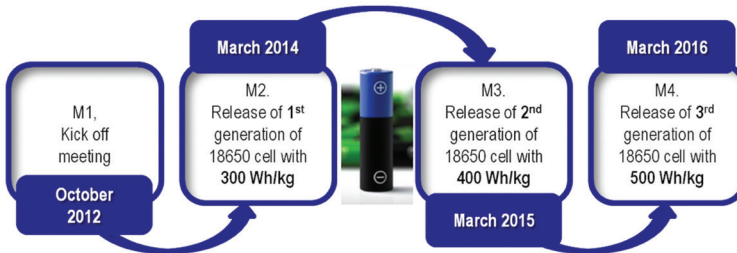
EUROLIS is a project which includes basic research on various levels with a focus on the understanding of Li-S battery behaviour in different chemical environments. This will be used for the optimisation and integration of materials into 18650 cells. Three different generations of 18650 cells are applied to be tested for their appropriateness in automotive applications.

The objectives of the project are:

- 18650 Li-S cell configuration with energy density of 500 Wh/kg and power density of 1000 W/kg.
- High cycle efficiency in the entire life cycle in a wide temperature range.
- Durability reflected by a life time required in automotive industry.
- Low cost with sustainable and environmentally friendly approach.

#### PROJECT PLAN, MILESTONES AND DELIVERABLES

The figure summarises the major project milestones and outcomes:



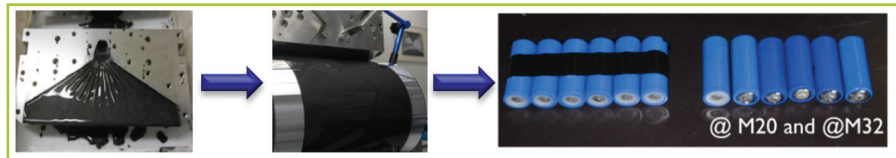
#### TECHNICAL APPROACH

The project is focused on the tailoring of Li-S battery components (cathode composite, electrolyte and separator) by using modelling and analytical approach. It includes:

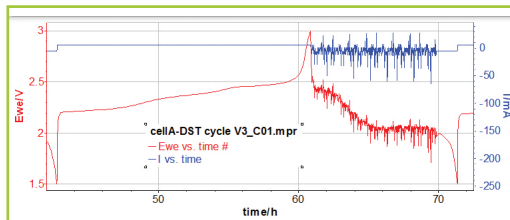
- Development of the cathode composite, by use of mesoporous host structures.
- Modelling of electrolyte (organic solvents and ionic liquids).
- Analytical approach with different post-mortem and in-operando measurements based on the spectroscopic (XPS, XAS, UV-Vis) and electrochemical techniques (4 electrode cell, EIS).
- Benchmarking of other technologies (redox flow, all solid state and Si-Li<sub>2</sub>S).
- Integration, scale up, testing, life cycle assessment (LCA) and benchmarking of Li-S batteries.

#### ACHIEVEMENTS

**Prototype cells with configuration 18650.** Two generations of prototype cells were assembled by SAFT based on the components prepared by different partners and a double side coated cathode prepared by Fraunhofer.



Prototype cells assembled @ SAFT and tested at SAFT and Renault



Cells can be charged by using constant current charge and discharged in different conditions and temperatures including DST macro-cycle as tested by Renault.

<b>Budget</b>	3.8 M€	<b>Funding</b>	2.9 M€
<b>Duration</b>	48 months	<b>Start</b>	October 2012
<b>DG</b>	Research & Innovation	<b>Contract n°</b>	314515
<b>Coordinator</b>	Robert Dominko, NIC, Ljubljana	<b>Contact</b>	robert.dominko@ki.si
<b>Partners</b>	Renault, Volvo, SAFT, Solvionic, NIC, CNRS, MPG, Chalmers, Elettra, Fraunhofer		
<b>Website</b>	www.eurolis.eu		

