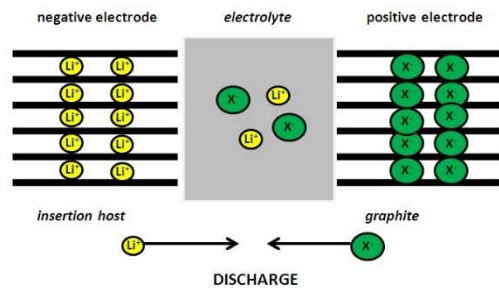


Dual intercalation secondary

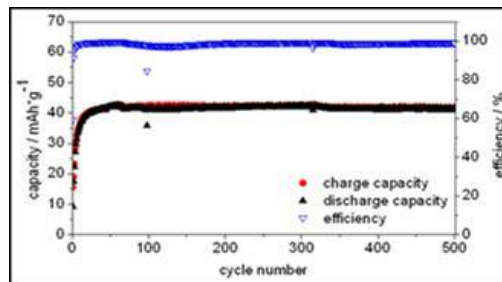
Using intercalation of ions into both electrodes simultaneously

Invention

The here presented technology offers electrochemical energy storage cells, in which positive and negative ions can be intercalated into both anode and cathode respectively. The electrodes both can consist of graphite or the anode can be made of $\text{Li}_4\text{Ti}_5\text{O}_{12}$. Ionic liquids are used as electrolyte to solve the lithium salt and the anions are formed by BOB- or TFSI-.



Schematic drawing of the working principle



Stable performance beyond 500 cycles is already proven

Current Status

Two international patent applications for this invention have been filed. They are published as WO2013/045561 and WO2013/045567. First prototype cells have been realized and tested in the laboratory and several results are available. PROVendis is offering licenses for this invention to interested companies on behalf of the University of Münster.

An invention of MEET (University of Münster).

Commercial Opportunities

With this new concept, cost effective and environmentally friendly electrochemical energy storage devices can be realized. The use of transition metals and fluoride compounds can be avoided. Compared to existing solutions with similar requirements a higher specific capacitance can be reached and an extended temperature range is accessible. By use of LTO as anode material a cell voltage of 3.5 V can be reached. Suitable applications can be found in local energy storage systems in smart grid scenarios. Due to the increasing energy production from renewable sources like sun and wind, a compensation of peak power fluctuations becomes necessary. This can be realised with the presented battery technology.

Competitive Advantages

- Cost-effective battery technology
- Environmentally friendly materials
- Proven cycle stability
- High capacity and cell voltage
- Prototype and test results available

Technology Readiness Level

12345678

Technology validated in lab

Industries

- Automotive Industry
- Battery Industry
- Chemical Industry

Ref. No.

3019

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