Advanced Technologies & Materials

MagnumBat

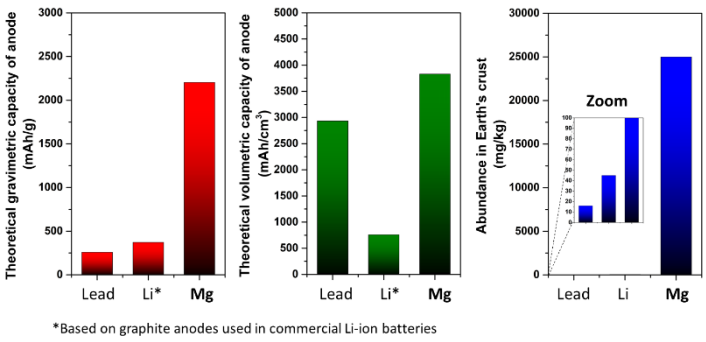
Safer, better, and more affordable batteries

Safe, high energy density batteries

The demand for batteries, for both small and large scale applications, is expected to increase exponentially in the coming years. We develop new solid-state batteries based on inexpensive, abundant, and non-toxic elements, such as magnesium.

Compared to the current market standard, Li-ion batteries, Mg-based solid state batteries promise higher safety, better performance, and easier manufacturing at a lower cost. However, so far the lack of a sufficiently conducting electrolyte has inhibited the realisation of such batteries; here, we present a new highly conducting electrolyte material which could finally allow for the commercialisation of the battery of tomorrow.

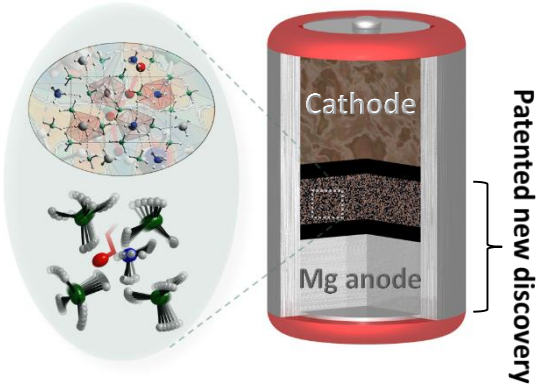
Advantages of Mg-based batteries



*Based on graphite anodes used in commercial Li-ion batteries

Our invention –

A highly conductive electrolyte



Technology Description

We have developed a new type of solid electrolyte which is compatible with the abundant and widely available metal, Mg, potentially providing an unprecedented energy density and exceptional performance. The material shows high ionic conductivity in a practically achievable temperature range and does not suffer from the same safety issues observed in commercial Li-ion batteries. Investigations of the electrochemical stability suggests that a battery using this material with a Mg-anode can be operated at 1.2 V using affordable cathode materials.

Intellectual Property Rights

PCT Application filed 2019-09-13.

Team

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Current State

We have characterized the properties of the electrolyte on its own, in conjunction with a Mg-anode and in full batteries with promising results. Current efforts are directed at optimising materials and battery assembly in order to produce a competitive product.

Business opportunity and Call to action

We are working towards establishing a spin-out company to mature the technology into a working prototype. We seek a commercial manager and investors to join us.

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