

Picture of the Ferric Chloride Battery Device

Could ferric chloride be a new cathode material for solid-state batteries?

Researchers at the Georgia Institute of Technology in Atlanta, USA, see massive potential reductions in both cost and use of critical raw materials by using ferric chloride (FeCl_3) as a new cathode material for solid-state batteries. In initial tests, they found that FeCl_3 works just as well or even better...

Is FeCl_3 a low-cost cathode for all-solid-state lithium-ion batteries?

FeCl_3 uses affordable iron and chlorine, unlike costly nickel and cobalt, and operates at a higher voltage than lithium iron phosphate in EVs. Researchers present the new, low-cost cathode for all-solid-state lithium-ion batteries. Georgia Tech Researchers have created a low-cost iron chloride cathode for lithium-ion batteries (LIBs).

What is a low-cost iron chloride cathode for lithium-ion batteries?

Georgia Tech Researchers have created a low-cost iron chloride cathode for lithium-ion batteries (LIBs). This innovation, developed by a team at Georgia Tech, promises to lower costs and enhance performance for electric vehicles (EVs) and large-scale energy storage systems.

What is iron chloride (FeCl_3)?

The innovative iron chloride (FeCl_3) material costs just 1-2 percent of conventional cathode materials while storing the same amount of electricity. Cathode materials are key to determining a battery's capacity, energy, efficiency, and overall performance, which in turn directly impacts its lifespan and affordability.

Can FeCl_3 be used as cathode materials in solid-state batteries?

Correspondence to Hailong Chen. Z.L. and H.C. have filed a US provisional patent application (63/363,875) covering the application of FeCl_3 and related compounds as cathode materials in solid-state batteries as described in this paper. The remaining authors declare no competing interests.

Is FeCl_3 a good cathode?

The chemistry used in the newly developed cathode - called FeCl_3 - uses abundant materials iron (Fe) and chlorine (Cl), avoiding the use of nickel and cobalt. The team's initial tests showed FeCl_3 performed as well or better than other more expensive cathodes, with a higher operational voltage as LFP batteries now flooding the market.

Image represents the schematic diagram of all-iron redox flow battery where electrolyte is a mixture of both ferrous and ferric chloride and catholyte is the ferrous chloride alone. Graphite felt is used as electrode on both sides. Redox reaction occurs at anode (Eq.

Researchers at the Georgia Institute of Technology in Atlanta, USA, see massive potential reductions in both

Picture of the Ferric Chloride Battery Device

cost and use of critical raw materials by using ferric chloride (FeCl_3) as a new cathode material for solid ...

We describe a design for an energy storage battery with an iron-based anode and cathode. The overall strategy is shown in Fig. 1. Iron metal is oxidized to ferrous iron at the ...

We describe a design for an energy storage battery with an iron-based anode and cathode. The overall strategy is shown in Fig. 1. Iron metal is oxidized to ferrous iron at the anode while ferric iron is reduced to ferrous iron at the cathode allowing electrons to flow.

Researchers at the Georgia Institute of Technology have developed a low-cost cathode material for lithium-ion batteries. It is iron chloride (FeCl_3), which according to the researchers costs only one to two per cent of typical cathode materials and is just as efficient.

Researchers have created a low-cost iron chloride cathode for lithium-ion batteries (LIBs). This innovation, developed by a team at Georgia Tech, promises to lower ...

Researchers have created a low-cost iron chloride cathode for lithium-ion batteries (LIBs). This innovation, developed by a team at Georgia Tech, promises to lower costs and enhance performance...

A research team led by Georgia Tech's Hailong Chen has developed a low-cost iron chloride cathode for all-solid-state lithium-ion batteries, which could significantly reduce ...

A multi-institutional research team led by Georgia Tech's Hailong Chen has developed a new, low-cost cathode that could radically improve lithium-ion batteries (LIBs) -- potentially transforming the electric vehicle (EV) market and large-scale energy storage systems.

A multi-institutional research team led by Georgia Tech's Hailong Chen has developed a new, low-cost cathode that could radically improve lithium-ion batteries (LIBs) -- ...

A research team led by Georgia Tech's Hailong Chen has developed a low-cost iron chloride cathode for all-solid-state lithium-ion batteries, which could significantly reduce costs and improve...

Researchers at the Georgia Institute of Technology in Atlanta, USA, see massive potential reductions in both cost and use of critical raw materials by using ferric chloride (FeCl_3) as a new cathode material for solid-state batteries. In initial tests, they found that FeCl_3 works just as well or even better than the established ...

We present here a rechargeable all-iron battery with an iron metal anode and an iron (III) sulfate cathode. It is based on aqueous chemistry and so is not flammable. The ...

We present here a rechargeable all-iron battery with an iron metal anode and an iron (III) sulfate cathode. It is

Picture of the Ferric Chloride Battery Device

based on aqueous chemistry and so is not flammable. The chemical and hardware components are inexpensive and are simpler to ...

The authors present a FeCl_3 cathode design that enables all-solid-state lithium-ion batteries with a favourable combination of low cost, improved safety and good performance.

Ferrous chloride exhibits a capacity beyond 500 mAh/g, while Cl-rich iron oxide demonstrates a capacity beyond 300 mAh/g. After adding a binder to ferrous chloride, the cycle life also is improved significantly, allowing for continuous ...

Web: <https://nakhsolarandelectric.co.za>

