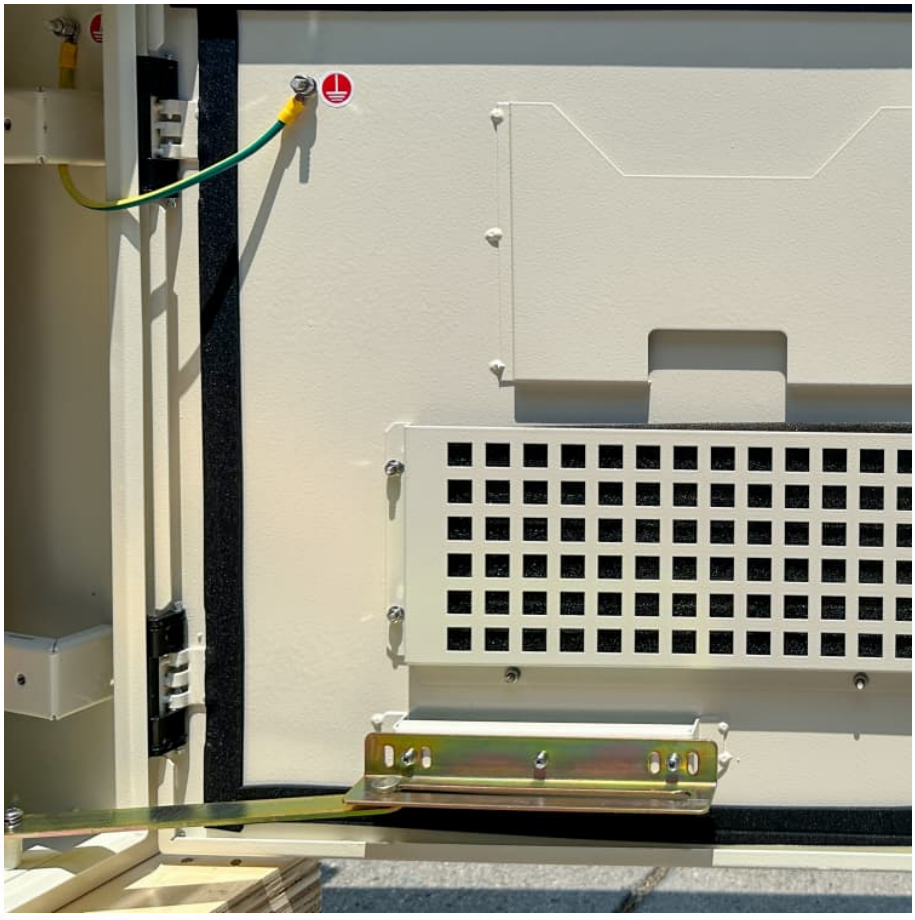
HJ Solar Energy

Solid state battery goodenough



Overview

In 2009, Nippon Electric Glass and Iwate University developed the first thin-film lithium-ion battery on ultra-thin glass substrate with a thickness of 30 micrometres (μm). In 2016, a glass battery was developed by John B. Goodenough, inventor of the lithium cobalt oxide and lithium iron phosphate electrode materials.

The battery, as reported in the original publication, is constructed using an alkali metal (or foil) as the negative electrode.

Braga and Goodenough stated they expect the battery to have an energy density many times higher than current lithium-ion batteries, as well as an operating temperature.

A team of engineers led by 94-year-old John Goodenough, professor in the Cockrell School of Engineering at The University of Texas at Austin and co-inventor of the lithium-ion battery, has developed the first all-solid-state battery cells that could lead to safer.

A team of engineers led by 94-year-old John Goodenough, professor in the Cockrell School of Engineering at The University of Texas at Austin and co-inventor of the lithium-ion battery, has developed the first all-solid-state battery cells that could lead to safer.

The glass battery is a type of solid-state battery. It uses a glass electrolyte and lithium or sodium metal electrodes. [1][2][3][4] In 2009, Nippon Electric Glass and Iwate University developed the first thin-film lithium-ion battery on ultra-thin glass substrate with a thickness of 30 micrometres.

The high capacity battery charges in “minutes rather than hours,” according to Maria Helena Braga, professor of engineering at the University of Porto in Portugal, who worked with Goodenough to develop the solid state lithium rechargeable which uses a glass doped with alkali metals as the battery’s.

Thirty-seven years after co-inventing the technical breakthrough that made lithium-ion batteries commercially viable, the 94-year old engineering professor has developed a solid-state battery he thinks will solve the high cost and low range holding back EV adoption. Maria Helena Braga, senior.

John Goodenough is best known for his 1980 invention of the rechargeable lithium battery, which is used in myriad devices, from electric cars to mobile phones, and holds the key to decarbonizing the world's energy system. Lithium batteries are just one of the technologies that he pioneered, through.

Fermi award winner John Goodenough, known since 1980 as the father of the lithium-ion battery, has produced another breakthrough, the solid-state battery. It charges fast, holds 3x the power of any other rechargeable room temperature battery, and is a safer, more powerful and longer-lasting.

A team of engineers led by 94-year-old John Goodenough, professor in the Cockrell School of Engineering at The University of Texas at Austin and co-inventor of the lithium-ion battery, has developed the first all-solid-state battery cells that could lead to safer, faster-charging, longer-lasting. What makes solid-state batteries safer than lithium-ion batteries?

If we switch to solid electrolyte, the electrolyte is not flammable, so it's safe. The lithium ion battery today provides 250 watt hours by kilogram. So you can get [an EV with] range around 350 to 400 kilometers (220 to 250 miles). And the lithium ion battery has a liquid electrolyte, which is flammable.

Is a lithium ion battery better than a solid-state battery?

Braga and Goodenough stated they expect the battery to have an energy density many times higher than current lithium-ion batteries, as well as an operating temperature range down to −20 °C (−4 °F); much lower than current solid-state batteries. The electrolyte is also stated to have a wide electrochemical window.

Could a ceramic oxide electrolyte transform a Goodenough battery?

A ceramic oxide electrolyte, developed by John Goodenough, could be a significant improvement for his solid-state EV battery technology. The electrolyte is the medium between cathode and anode that ions travel across during charging and discharging.

What is the operating temperature of Goodenough Gen 3?

The operating temperature of Goodenough Gen 3 is 25 degrees. Zaghib said the key is reducing the operating temperature — from 80 degrees C in Gen 1, to 50 degrees C in Gen 2, and finally 25 degrees using Goodenough's ceramic oxide electrolyte.

What is John Goodenough currently working on?

John Goodenough, now 97, is self-isolating from the coronavirus and working on Nobel-related commitments.

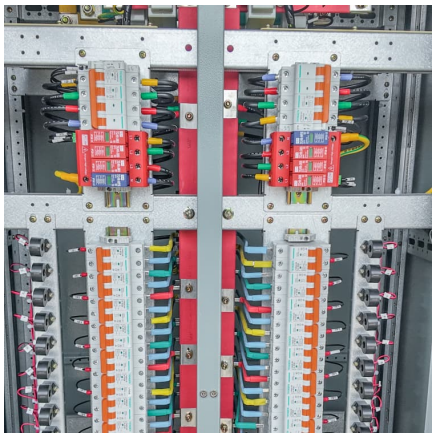
Solid state battery goodenough

John Goodenough's Latest Battery

The 97-year-old, widely referred to as the "father of the lithium-ion batteries," continues to awe the battery field. According to IEEE Spectrum, the 2019 Nobel Prize winner recently co-developed a rapid-charging, non ...

The Solid-State Lithium-Ion Battery -- Has John Goodenough Finally Done

And where does that leave us? Has Goodenough actually created the next revolution in battery technology? Some of the claims in his latest research paper are ...



Solid-state EV battery breakthrough from Li-ion battery inventor ...

Thirty-seven years after co-inventing the technical breakthrough that made lithium-ion batteries commercially viable, the 94-year old engineering professor has developed a solid-state battery ...

Solid: Definition, Properties, Types, and Examples

A solid is one of the fundamental states of matter, along with liquid and gas. It comprises particles such as atoms, ions, or molecules, packed closely together and held in fixed

positions by ...

Creating a rechargeable world: Chem

Therefore, when he was 90 years old, Goodenough believed that the world needed a "super battery," and he predicted that the state-of-the-art solid-state Li-metal battery would be that super battery.

John Bannister Goodenough, battery pioneer (1922-2023)

Under the tutelage of Clarence Zener, Goodenough excelled in solid-state physics. Chicago was also where he met his wife, Irene. Their shared Christian faith defined ...

Work on Goodenough's breakthrough solid-state EV battery

But two years earlier, he announced that he made a breakthrough on a solid-state battery that could mean the end of internal-combustion cars.

[Work on Goodenough's breakthrough solid-state EV ...]

But two years earlier, he announced that he made a breakthrough on a solid-state battery that could mean the end of internal-combustion cars.

Lithium-Ion Battery Inventor Introduces Fast-Charging, ...

Goodenough's latest breakthrough, completed with Cockrell School senior research fellow Maria Helena Braga, is a low-cost all-solid-state battery that is noncombustible ...

[Solid , Definition & Facts , Britannica]

Solid, one of the three basic states of matter, the others being liquid and gas. A solid forms from liquid or gas because the energy of atoms decreases when the atoms take up ...

[The Solid-State Lithium-Ion Battery -- Has John ...]

And where does that leave us? Has Goodenough actually created the next revolution in battery technology? Some of the claims in his latest research paper are extraordinary.

[John Bannister Goodenough, battery pioneer ...]

Under the tutelage of Clarence Zener, Goodenough excelled in solid-state physics. Chicago was also where he met his wife, Irene. Their shared Christian faith defined their life choices

Creating a rechargeable world: Chem

Therefore, when he was 90 years old, Goodenough believed that the world needed a "super battery," and he predicted that the state-of-the-art solid-state Li-metal battery ...

John B. Goodenough

On February 28, 2017, Goodenough and his team at the University of Texas published a paper in the journal Energy and Environmental Science on their demonstration of a glass battery, a low ...

Glass battery

In 2016, a glass battery was developed by John B. Goodenough, inventor of the lithium cobalt oxide and lithium iron phosphate electrode materials used in the lithium-ion battery (Li-ion), ...

[The Definition of a Solid in Chemistry and Science]

A solid is a state of matter characterized by particles arranged such that their shape and volume are relatively stable. The constituents of a solid tend to be packed together ...

[Solid-State Battery: Goodbye Low Battery Panic Attack]

John Goodenough demonstrates to the world how dedicated he is to battery technology. "I want to solve the problem before I throw in my chips," he says. With his solid-state battery, he has ...

[What Is a Solid? Definition and Examples in Science]

Because its particles are packed close together, a solid is rigid, doesn't flow, and isn't easily compressed. A solid is defined as a state of matter with a definite shape and ...

[Solid-state EV battery breakthrough from Li-ion ...]

Thirty-seven years after co-inventing the technical breakthrough that made lithium-ion batteries commercially viable, the 94-year old engineering professor ...

John Goodenough's Latest Battery

The 97-year-old, widely referred to as the "father of the lithium-ion batteries," continues to awe the battery field. According to IEEE Spectrum, the 2019 Nobel Prize winner ...

[SOLID Definition & Meaning , Dictionary]

Unlike a gas or liquid, a solid has a fixed shape, and unlike a gas, a solid has a fixed volume. In most solids (with exceptions such as glass), the molecules are arranged in crystal lattices of ...

Contact Us

For catalog requests, pricing, or partnerships, please visit: https://conrad.edu.pl