Scientists create lithium battery

Can artificial intelligence reduce the amount of lithium used in batteries?
Here's how it works. An artificial intelligence (AI) program has identified a material not found in nature that could reduce the amount of lithium used in batteries by up to 70%. The new material,a blend of sodium,lithium,yttrium,and chloride ions,is a type of mixed metal chloride and was found to be the best option from 32 million candidates.

How will lithium-ion batteries change the world?
It is also expected that demand for lithium-ion batteries will increase up to tenfold by 2030, according to the US Department for Energy, so manufacturers are constantly building battery plants to keep up. Lithium mining can be controversial as it can take several years to develop and has a considerable impact on the environment.

Can artificial intelligence be used to make batteries?
First, the researchers used AI to filter the materials based on stability, namely, whether they could actually exist in the real world. That pared the list down to fewer than 600,000 candidates. Further AI analysis selected candidates likely to have the electrical and chemical properties necessary for batteries.

What is an electrolyte in a lithium ion battery?
An electrolyte is a material that transfers ions -- electrically charged atoms -- back and forth between a battery's electrodes. In standard lithium-ion batteries,the electrolyte is a liquid. But that comes with hazards,like batteries leaking or causing fires. Developing batteries with solid electrolytes is a major aim of materials scientists.

Can lithium ion batteries be mined fast?
Lithium-ion batteries. (Photo by Vardan Papikyan,Unsplash) Lithium-ion (Li-ion) batteries power everything from electric vehicles (EVs) to personal devices like cell phones,tablets and laptops,but nickel and cobalt -- minerals needed to manufacture them -- cannot be mined fastenough to scale with consumer demand.

Can batteries be made with solid electrolytes?
Developing batteries with solid electrolytes is a major aim of materials scientists. The original 32 million candidates were generated via a game of mix-and-match,substituting different elements in crystal structures of known materials.

Dr Nuria Tapia-Ruiz, who leads a team of battery researchers at the chemistry department at Imperial College London, said any material with reduced amounts of lithium and good energy storage ...

A brand new substance, which could reduce lithium use in batteries, has been discovered using artificial intelligence (AI) and supercomputing.

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Microsoft"s AI tool narrowed 32 million theoretical materials down to 18 in just 80 hours -- with scientists synthesizing one that can reduce Lithium usage in batteries by 70%.

Now, researchers have discovered a way to use another, more plentiful mineral to create inexpensive, high-performance Li-ion batteries. As reported today in the journal Nature Energy, a team of researchers ...

The iodine and bromine-based aqueous battery showed an energy density of 1200 watt-hours per liter, surpassing the 700Wh/L of non-aqueous lithium batteries.

Developing batteries with solid electrolytes is a major aim of materials scientists. The original 32 million candidates were generated via a game of mix-and-match, substituting ...

Research scientists to create safer and greener batteries. ... o Researchers to explore the use of gel electrolyte materials to improve lithium-ion batteries o The batteries are the most commonly used in electric vehicles and electronics o Will use non-harmful, non-flammable and renewably sourced materials for next generation battery ...

Well, Stanford researchers have created a lithium-ion battery that shuts down before overheating and then restarts immediately once the temperature cools down. The Stanford research was published ...

The UIC group found a way around the problem and announced a lithium-CO2 battery which maintained stability and capacity over 500 cycles. The device is described in the paper A Long-Cycle-Life ...

Scientists create a lithium-ion battery with super speed charging and longer life By Malarie Gokey Published October 13, 2014 Save Image used with ...

These devices can help reduce fossil fuel dependence, but the difficulty lies in the key ingredient in most of today"s batteries: lithium. When mined, lithium is extracted from a brine containing large volumes of ...

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