

Could a new lithium-ion battery make electric cars more sustainable?

MIT researchers have now designed a battery material that could offer a more sustainable way to power electric cars. The new lithium-ion battery includes a cathode based on organic materials, instead of cobalt or nickel (another metal often used in lithium-ion batteries).

Could a battery make electric cars more sustainable?

Many electric vehicles are powered by batteries that contain cobalt -- a metal that carries high financial, environmental, and social costs. MIT researchers have now designed a battery material that could offer a more sustainable way to power electric cars.

Does a battery lose energy if a program is not consuming energy?

In other words, even when the linked program is not consuming any energy, the battery, nevertheless, loses energy. The outside temperature, the battery's level of charge, the battery's design, the charging current, as well as other variables, can all affect how quickly a battery discharges itself [231,232].

What will be the future of battery technology?

Then there might be improved lithium-ion batteries, maybe using silicon anodes or rocksalt cathodes, for mid-range vehicles, or perhaps solid-state lithium batteries will take over that class. Then there might be LiS or even lithium-air cells for high-end cars -- or flying taxis. But there's a lot of work yet to be done.

Why do we need a new battery chemistry?

These should have more energy and performance, and be manufactured on a sustainable material basis. They should also be safer and more cost-effective and should already consider end-of-life aspects and recycling in the design. Therefore, it is necessary to accelerate the further development of new and improved battery chemistries and cells.

How will battery technology impact the future of EVs?

Projections are that more than 60% of all vehicles sold by 2030 will be EVs, and battery technology is instrumental in supporting that growth. Batteries also play a vital role in enhancing power-grid resilience by providing backup power during outages and improving stability in the face of intermittent solar or wind generation.

The main cost of an electric vehicle (EV) is its battery. The high cost of energy-dense batteries has meant EVs have long been more expensive than their fossil fuel equivalents.

Some companies, including UK-based Faradion and Swedish Northvolt, are promoting their sodium batteries (also both advertised at 160 Wh kg⁻¹) to store excess renewable energy for electricity...

In general, energy density is a key component in battery development, and scientists are constantly developing new methods and technologies to make existing batteries more energy proficient and safe. This will make it possible to ...

The new material, sodium vanadium phosphate with the chemical formula $\text{Na}_x\text{V}_2(\text{PO}_4)_3$, improves sodium-ion battery performance by increasing the energy density--the ...

Many problems can be addressed through the discovery of new materials that improve the efficiency of energy production and consumption; reduce the need for scarce ...

Empirically, we study the new energy vehicle battery (NEVB) industry in China since the early 2000s. In the case of China's NEVB industry, an increasingly strong and ...

[42, 53] With the Notice of the State Council on Issuing the Planning for the Development of the Energy-Saving and New Energy Automobile Industry from 2012 and the Guiding Opinions of the General Office of the State Council on ...

The negative impact of used batteries of new energy vehicles on the environment has attracted global attention, and how to effectively deal with used batteries of new energy ...

Emerging technologies such as solid-state batteries, lithium-sulfur batteries, and flow batteries hold potential for greater storage capacities than lithium-ion batteries. Recent developments in battery energy density and cost reductions ...

Some of the key metals used in lithium batteries (such as lithium, cobalt and graphite) are scarce [44]. At the same time, the decarbonization of the world economy means ...

An international team of interdisciplinary researchers, including the Canepa Research Laboratory at the University of Houston, has developed a new type of material for ...

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