Ten years left to redesign lithium-ion batteries

And in the 1980s, Yoshino made changes to the materials that dramatically improved safety and enabled commercial production of the batteries. His design pioneered the use of carbon-rich anode materials into which lithium ions could be inserted. "I started in 1981, and I invented the lithium-ion battery in 1985," Yoshino said by phone.

Ten years left to redesign lithium-ion batteries Reserves of rare metals used in electric-vehicle cells are dwindling, so boost research on iron and silicon alternatives, urge Kostiantyn Turcheniuk and colleagues. Nature, 559 (7715) (2018), pp. 467-470. Crossref View in Scopus Google Scholar [2]

The authors argue that reserves of cobalt and nickel for electric-vehicle cells will run out in ten years and propose new electrodes based on iron and silicon. The article is available online ...

High-capacity anode materials for lithium-ion batteries: choice of elements and structures for active particles. N Nitta, G Yushin. Particle & Particle Systems Characterization 31 (3), ... Ten years left to redesign lithium-ion batteries. K Turcheniuk, D Bondarev, V Singhal, G Yushin. Nature 559 (7715), 467-470, 2018. 518:

Ten years left to redesign lithium-ion batteries Published by: Nature, July 2018 DOI: 10.1038/d41586-018-05752-3: Pubmed ID: 30046087. Authors: Kostiantyn Turcheniuk, Dmitry Bondarev, Vinod Singhal, Gleb Yushin View on publisher site Alert me about new mentions. Twitter Demographics.

Lithium-ion batteries (LIBs) have dominated the market of portable electronics and shown great promise for large-scale energy storage applications since their commercialization in the early 1990s [1, 2]. ... Ten years left to redesign lithium-ion batteries.

Turcheniuk K, Bondarev D, Singhal V, Yushin G. Ten years left to redesign lithium-ion batteries. Nature. 2018;559(7715):467. Article CAS Google Scholar Fan E, Li L, Wang Z, Lin J, Huang Y, Yao Y, Chen R, Wu F. Sustainable recycling technology for Li-ion batteries and beyond: challenges and future prospects.

The performance of rechargeable lithium-ion batteries has improved steadily for two decades. The amount of energy stored in a litre-sized pack has more than tripled, from around 200 watt hours per litre (Wh l -1) to more than 700 Wh l -1 .

Recycling lithium-ion batteries from electric vehicles. Sign in | Create an account. https://orcid . Europe PMC ... Ten years left to redesign lithium-ion batteries. Turcheniuk K, Bondarev D, Singhal V, Yushin G. Nature, (7715):467-470 2018 MED: 30046087 A degradation-based sorting method for lithium-ion battery reuse. ...

Ten years left to redesign lithium-ion batteries reserves of rare metals used in electric-vehicle cells are

dwindling, so boost research on iron and silicon alternatives, urge Kostiantyn Turcheniuk and colleagues. Nature, 559 (2018), pp. 467-470. Crossref View in Scopus Google Scholar [9]

Turcheniuk, K., Bondarev, D., Singhal, V., & Yushin, G. (2018). Ten years left to redesign lithium-ion batteries. Nature, 559(7715), 467-470. doi:10.1038/d41586-018 ...

It is produced from sand and stores nearly ten times more lithium ions by mass than graphite does. Combining conversion cathodes with silicon anodes in the next generation of lithium-ion battery cells could allow cells to store more than twice as much energy as the best conventional ones by volume, and more than three times by weight 8, 9.

Ten years left to redesign lithium-ion batteries reserves of rare metals used in electric-vehicle cells are dwindling, so boost research on iron and silicon alternatives, urge Kostiantyn Turcheniuk and colleagues. Nature, 559 (7715) (2018), pp. ...

Reserves of cobalt and nickel used in electric-vehicle cells will not meet future demand. Refocus research to find new electrodes based on common elements such as iron and silicon, urge Kostiantyn ...

Ten years left to redesign lithium-ion batteries reserves of rare metals used in electric-vehicle cells are dwindling, so boost research on iron and silicon alternatives, urge Kostiantyn Turcheniuk and colleagues. Nature, 559 (2018), pp. 467-470. Crossref View in Scopus Google Scholar. 24.

Ultra-high nickel layered oxide cathode material with high energy density is the most promising material to improve the electrochemical performance of lithium-ion batteries (LIBs). However, the poor structural stability and severe surface/interface side reactions of the material lead to poor rate performance and cyclic stability, which limits its application in ...

@article{osti_1712496, title = {Organic Cathode Materials for Lithium-Ion Batteries: Past, Present, and Future}, author = {Lyu, Hailong and Sun, Xiao-Guang and Dai, Sheng}, abstractNote = {With the rapid development of energy storage systems in power supplies and electrical vehicles, the search for sustainable cathode materials to enhance the energy density ...

Sustainability of Battery Technologies: Today and Tomorrow Cite This: ACS Sustainable Chem. Eng. 2021, 9, 6507-6509 Read Online ACCESS Metrics & More Article Recommendations L i-ion batteries (LIBs) have reshaped the modern world.

Recycling cannot replenish supplies. Lithium-ion batteries last for 15-20 years, 3 times longer than the 5-7

years for lead-acid batteries. Refiners might exploit poorer quality ores, especially as prices climb. But greater processing costs would push the prices higher.

John Goodenough, Stanley Whittingham and Akira Yoshino receive the prize for their development of lithium-ion rechargeable batteries. Stanley Whittingham (left), John Goodenough and Akira Yoshino (right) did work in the 1970s and 1980s that led to the development of lithium-ion batteries. Credit: Binghamton University/UT Austin/The Japan Prize

Organic radical batteries promise increased environmental friendliness, independence from strategic metals and faster charging rates compared to lithium-ion batteries 3,4,9,10,11,12,13,14.However ...

Ten years left to redesign lithium-ion batteries. ... High-capacity dilithium hydroquinone cathode material for lithium-ion batteries. Lu Y, Han H, Yang Z, Ni Y, Meng Z, Zhang Q, Wu H, Xie W, Yan Z, Chen J. Natl Sci Rev, 11(6):nwae146, 16 ...

The widespread applications of lithium-ion batteries (LIBs) generate tons of spent LIBs. Therefore, recycling LIBs is of paramount importance in protecting the environment and saving the resources. ... Yushin, G. Ten years left to redesign lithium-ion batteries. Nature 2018, 559, 467-470. Article CAS PubMed Google Scholar Talens Peiró, L ...

The burgeoning growth of lithium-ion batteries (LIBs) has caused great concern for the uninterrupted supply of lithium. Although spent LIBs are a richer source of lithium than the natural resources from ore, salt lake brine, or seawater, traditional methodology for recycling of lithium in spent LIBs suffers from costly energy consumption and the generation of unfriendly ...