What are the patents for portable energy storage lithium batteries

Are lithium-ion batteries patentable?
To be very clear: This especially means that the lithium-ion battery category does not contain any patent familiestagged as solid-state battery inventions. The fourth step's purpose was to add patent data related to redox-flow and nickel-hydrogen batteries to the dataset.

Which technologies grew in relevance to battery patenting?
We find that several battery-related technologies and applications, such as energy storage systems, battery management systems, wireless power transmission, electric vehicle charging, and uncrewed aerial vehicles (i.e., drones), grew in relevance both in absolute terms and relative to general battery patenting activity.

Where do battery patents come from?
The majority of battery patents are found to originate in Asiawhile high battery patent intensities are revealed in the performance of several Asian and European countries. Overall,a considerable increase in annual battery patenting activity is observed from 2000-2009 to 2010-2019.

Are national battery patent applications considered in IEA & EPO?
Given the IPF constraint deployed for this study and the IEA and EPO report ,these solely nationally filed applications are not consideredin either one. In fact,in the current study's dataset,IPFs make up only 19.4% of all battery patent families.

What is a lithium ion battery?
Lithium-ion (Li-ion) battery is a rechargeable batterythat charges and discharges energy through the movement of lithium ions between the negative electrode (anode) and the positive electrode (cathode) .

Can a patent proxy predict the price of lithium-ion batteries?
Kittner et al. and Ziegler and Trancik employed the patent proxy in their efforts to model the forces driving the prices of lithium-ion batteries,and found that cumulative patent filings is the best predictor of real prices scaled by energy capacity.

In 2022, more than 320 new patent applicants entered the solid-state Li-ion battery-related patent landscape, with three-quarters filing only one patent family (i.e., unique invention). Most of these IP newcomers are Chinese companies ...

The lithium-ion battery, introduced commercially in 1991, revolutionized the consumer electronics industry. Compared with older battery technologies, the lithium-ion battery was lightweight and compact, had high energy density, and required little to no maintenance, making it the ideal battery for mobile devices. It now powers the world"s most popular ...

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Lithium-based battery cells are an attractive energy source for portable applications, due in part to their ability to provide relatively high energies and long cycle life. Lithium is the...

Development of high-energy-density lithium-ion batteries: Patents: Numerous patents in battery technology: Market Share: Major player with a strong market share: Key Clients : Global car makers like Tesla, ...

The patents will be categorized by supply chain segments (electrode, electrolyte, separator, battery cell, battery pack/system) and battery technologies (Li-ion, Ni-MH, Redox flow, Lead, Li Air, Li-S, Na-ion, Mg-ion, solid-state, thin film/flexible, lithium metal electrode, NMC cathode for Lithium battery, Silicon anode for Lithium battery ...

Long-lasting lithium-ion batteries, next generation high-energy and low-cost lithium batteries are discussed. Many other battery chemistries are also briefly compared, but 100 % renewable utilization requires breakthroughs in both grid operation and technologies for long-duration storage. New concepts like dual use technologies should be developed. Previous ...

The Y02E 60/10 international patent classification (IPC) is a specific technology classification indicating climate change mitigation technologies relating to energy storage using batteries. Our analysis of this classification finds that the number of A1 publications (including both new European applications and divisional applications ...

Redox flow batteries (RFBs) are a rapidly emerging electricity storage technology and are an attractive alternative to lithium-ion batteries. RFBs operate by circulating positively and negatively-charged liquid electrolyte ...

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