Is lithium ion battery rechargeable

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Lithium-ion batteries are dominating the consumer market. Today, companies are boosting sales of their portable electric, energy solutions, and e-transports with these rechargeable batteries. But, what are lithium-ion batteries in simple words?

Turns out, Li-ion battery technology is nothing new! The first-ever Li cell came out in 1991. Two decades later, in 2019, John Goodenough, Akira Yashino, and M. Stanley contributed significantly to the development of modern lithium batteries and received the Nobel Prize in chemistry.

Since then, lithium-ion batteries have revolutionized the rechargeable batteries market across industries. Let"s learn more about how these batteries work, their types, and applications.

Lithium-ion batteries are rechargeable batteries, smaller in size with better power capabilities and high energy density. These batteries have single or multiple cells carrying Li ions with a protective circuit board. Lithium-ion batteries are typically used to charge devices like smartphones, electric vehicles, etc.

For starters, lithium-ion battery technology consists of the following.

In a Li-ion battery, the two electrodes store the ions. These ions move between the anode and cathode, which creates the electric current and powers the electronics.

Now, let"s discuss it in detail. First, the electrolyte carries the positively charged ions from the negative to the positive electrode, and vice versa. This produces electrons in the negative electrode, creating a charge on the other side of the current collector.

The generated current then flows through the device being powered, so it reaches the negative current collector. At the end, a separator is placed to block the electrons inside the battery, while maintaining the exchange of lithium ions.

When you are charging the battery, the lithium ions from the cathode get separated from the electrons. These ions move from the cathode to the anode, passing through the electrolyte. Finally, they recombine with the electrons and neutralize electrically.

During the discharging cycle, the opposite occurs. The ions move from the cathode, pass through the electrolyte, and reach the anode.

Eventually, this lithium ions movement creates an electric potential difference, called voltage. Connecting your device to the battery setup forces the electrons to power it.

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Lithium-ion batteries are not the same and have different chemical compositions, depending on the electrode material. Let"s discuss them in detail along with their best-suited applications.

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