**THE FOREVER BATTERY**

If I could invent something new, it would be a forever battery. A forever battery is a battery that neither get weak, die nor need replacement. This battery, if invented will be an extraordinary breakthrough and a game changer in energy solution and applications utilised in cars, laptops, mobile phones, electric grid storage etc.

We need to understand that the battery is a chemical device that stores electrical energy in form of chemicals and by means of electrochemical reaction, it converts the stored chemical energy into direct current (DC) electric energy. Alessandro Volta, an Italian Physicist, invented the first battery in 1800. The electrochemical reaction in a battery involves the transfer of electrons from one electrode to another electrode through an electric current.

Research into powerful batteries that can last longer and deliver the required energy capacities has been at its peak. In 2019, the Nobel Prize in Chemistry, was awarded jointly to three Scientists for the development of Lithium-Ion Batteries.

Basically, batteries are classified into two types. We have Primary batteries which are non-rechargeable electrically and Secondary batteries which are rechargeable electrically after being discharged. The Lithium-Ion, Oxygen-Ion and forever batteries are secondary batteries. Energy Density of secondary battery are relatively lower than that of primary batteries but have other good characteristics like high power density, flat discharge curves, high discharge rate, low temperature performance. In the recent decades, two new types of rechargeable batteries have emerged. They are the Nickel-Metal Hydride Battery and the Lithium-Ion Battery. The lithium-ion battery became a game changer and commercially superior with its high specific energy, energy density and more than 50% of the consumer market particularly in laptops, mobile phones and cameras.

In 2023, researchers in Austria have added an unusual contender to the mix using oxygen.

The team has made a new oxygen-ion battery that can store about a third of the energy by weight compared to lithium ion but could have a much longer life-spans. It also uses abundant materials, and its use of a solid electrolyte means it is inflammable.

Many normal batteries are made of a mix of zinc, manganese, potassium and graphite but the forever battery is made up of oxygen-ion that would last for an extraordinarily long time. The battery made up of oxygen-ion would be cheap to produce, very reliable and would also be readily available as oxygen-ion is very common.

The oxygen-ion powered batteries could replace many current batteries and be used for anything that would need electricity. Oxygen-ion is renewable and would promote the idea of a green planet so there would be no need for burning fossil fuels which will help minimise the effect of Global warming and climate change. However, oxygen-ion powered battery, though longer lasting cannot hold the same density as normal batteries so the forever battery needs more research and is a visionary work-in- progress.

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