

# Pune Inc: This startup is building a '100% safe' sodium-ion battery using Indian raw materials

Rechargion, led by Dr Vilas Shelke and his wife, Dr Manjusha Shelke, a Chief Scientist at NCL, was founded in 2021 as a spin-off from the CSIR-National Chemical Laboratory of Pune.

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Rechargion has tied up with big corporates to enrich the material for a battery-grade material to make the anode and cathode material for scaling. (Express photo)

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An unseen race among nations involves batteries as they aim for an electric transformation. Currently, Electric Vehicles (EVs) rely on lithium-ion batteries, known for their high efficiency and proven performance. However, lithium is only available in a few countries, and the entire value chain of lithium-ion batteries is controlled by China, leaving India heavily dependent on imports.

Against this geopolitical backdrop, a startup, Rechargion, was founded in 2021 as a spin-off from the CSIR-National Chemical Laboratory of [Pune](#). The company is led by Dr Vilas Shelke, a physicist with over 22 years of academic experience, and his wife, Dr Manjusha Shelke, a Chief Scientist at NCL who has worked on various battery chemistries.

“Due to our research background, we could figure out that sodium-ion is a technology that is close to lithium-ion batteries in terms of performance, and cost, particularly in India’s context. Most importantly, sodium is widely available in India,” says Dr Vilas. Globally, there is a growing interest in sodium-ion batteries, which are more sustainable than lithium-ion batteries, and fit the race towards net zero.



Rechargion routinely produces 20 Ah capacity cells that have been tested by the Automotive Research Association of India, among others.

But, Rechargion was not only going to make a battery; it was going to build from locally available materials only. “Because of geopolitical issues and tariff war, among others, there is a lot of push from the Government of India for a Make-in-India, self-reliant energy solution.

This turned out to be more difficult than it appears on paper. There is almost no manufacturing in India, and hence the supply chain is not built at all,” says Dr Vilas.

Even if the battery components, sodium and aluminium, are abundantly available in India, “the battery grade enrichment is not being done by any company”.

Rechargion has tied up with big corporates to enrich the material for a battery-grade material to make the anode and cathode material for scaling.



Dr Vilas Shelke, a physicist with over 22 years of academic experience, and (left) his wife, Dr Manjusha Shelke, a Chief Scientist at NCL

There was also no established ecosystem in India to transition a lab cell prototype into a commercial prototype. When the Shelkes began their work, they had to build a battery fabrication plant from the ground up at Venture Center. This initiative was primarily funded through grants from the government and other organizations, including Rs 7 crore from the Ministry of Heavy Industry, the United Nations Industrial Development Organization, and the Indo-US Science Technology Forum. Now, Rechargion routinely produces 20 Ah capacity cells that have been tested by the Automotive Research Association of India, among others. The company is now focused on scaling up.

Rechargion is targeting two-wheelers and three-wheelers with their first-generation batteries. However, they face some criticism regarding sodium-ion batteries, particularly the argument

that they have lower storage capacity.

It's worth noting that a sodium-ion battery is at least 20 per cent heavier than a lithium-ion battery. "This is not a problem because there are two significant advantages: lithium-ion batteries are prone to catching fire, while sodium-ion batteries are 100 percent safe; additionally, lithium-ion batteries tend to have a shorter lifespan compared to sodium-ion batteries," Dr. Vilas explains.

He adds that, although governments are promoting electric mobility and renewable energy storage, consumers remain hesitant due to issues associated with lithium-ion batteries. "Once we launch the product in the market and receive feedback from users, I am confident that adaptability will be quicker," Dr Vilas says.

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