

Start-up aims at producing sodium-ion batteries

November 27 2017



Credit: © Beaujot/RS2E

Two years after the first battery prototype using sodium ions in a standard industrial format was designed, the start-up Tiamat has been created to design, develop and produce this promising technology. This could counter some of the limits of lithium-ion batteries that dominate the market today, including recharge rate, lifetime and production cost. Specifically, sodium-ion batteries might allow mass storage of intermittent renewable energies or power electric vehicles

In November 2015, researchers from several French universities designed the first sodium-ion battery prototype in the 18650 format. That format is very widespread in industry, in particular for lithium-ion batteries. Using those lithium-ion batteries as direct inspiration, these sodium-based batteries have better performance in terms of [life expectancy](#) and charge and discharge rates. The major asset is the use of sodium, a less expensive and more abundant element than lithium (2.6 percent of sodium in earth's crust, versus barely 0.06 percent of lithium). Additionally, sodium is found everywhere on the planet, in particular in sea water, in the form of sodium chloride (NaCl), whereas lithium resources are located in only a few regions of the globe. (Argentina, Chili and Bolivia hold two thirds of the world's lithium.)

Tiamat, a company dedicated to the development and production of these alternatives to lithium-ion batteries, continues this work. Its goal is not to dethrone [lithium-ion batteries](#), which are already used in most mobile electronic devices. Tiamat is positioned on power and continuity of service because of its long-lasting batteries (more than 10 years life expectancy versus three to four years for [lithium batteries](#) under continuous use conditions), and 10 times faster charges and recharges. This performance opens possibilities for use in areas such as stationary storage (mass storage of intermittent renewable energies, wind and solar) and mobile storage for [electric vehicles](#) (buses that can be recharged at the end of the line, for example). Tiamat is focusing on fleets of rental vehicles, which require short recharge times and need service continuity for users. With sodium-ion technology we can envisage new everyday uses, such as electric vehicles with 200 km of autonomy that recharge in a few minutes.

After these technologies are approved, the company, based in Amiens, hopes to further develop its activity there. With strong support from RS2E, it is already working in collaboration with the academics and industrials in this network. This is a first step before being able to launch

production of these batteries, if possible in France, which would make France a leader in these new energy [storage](#) solutions.

Provided by CNRS

Citation: Start-up aims at producing sodium-ion batteries (2017, November 27) retrieved 20 September 2024 from <https://phys.org/news/2017-11-start-up-aims-sodium-ion-batteries.html>

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