# Researchers to develop new energy storage device based on water

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The global energy demand is still increasing. However, today's concepts for power generation aren't able to deliver the amount of electricity, which is needed in the future. Dr. Fabio La Mantia, junior group leader of the "Semiconductor and Energy Conversion"-group (Center for Electrochemical Sciences) of the Ruhr-Universität Bochum, is working on a solution for the problem.

In March he and his team are going to start a project, with the ambition to develop an aqueous lithium-ion battery. They want to produce an accumulator, which is working at two volt with a three times decreased cost, compared to conventional ones. The Federal Ministry of Education and Research is going to support the project with 1.424.000 Euro for a duration of five years.

The current world-wide consumption is predicted by experts to rise up from 13 to 25 terawatt by 2050. Renewable energies are only able to supply ten percent of the need, because they are expensive and not always available in the same extent. This applies especially for solar and wind energy. "Fast and economical systems, to cache the current, are in demand", explains La Mantia. The idea is to produce batteries, which are appropriate for the application in the power grid.

General lithium-ion batteries are based on organic solvents. They are the standard for all portable devices. However, for the use in power supply systems, they are too expensive and unsafe. They overheat too quickly, which can cause short circuits. To improve the performance, lifespan,

energy density and the price-performance ratio, the young scientists concentrate themselves on the combination of appropriate materials, separators, cells and aqueous electrolytes (liquid conductor of electricity).

Provided by Ruhr-University Bochum