

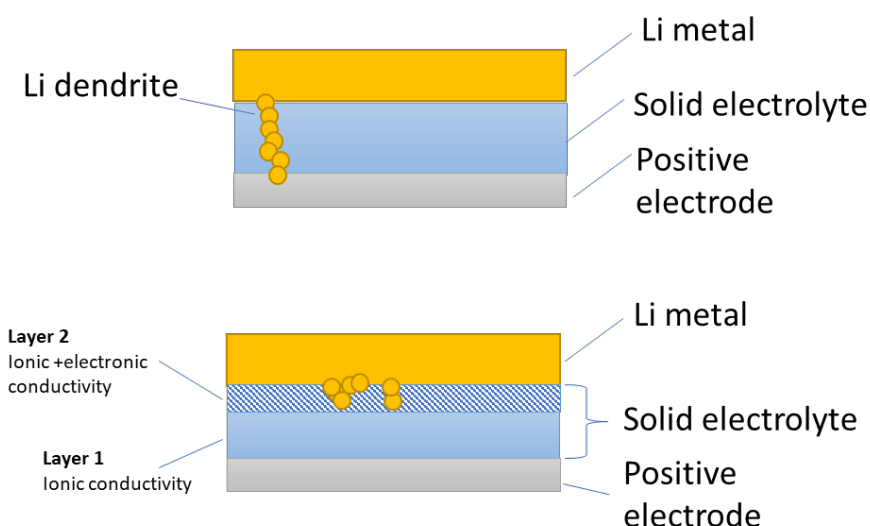
MULTILAYER SOLID ELECTROLYTE AND BATTERIES COMPRISING THEM

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Solid state battery (SSB) is a promising electrochemical energy storage technology to power devices of our modern society. Solid electrolytes are believed to enable the use of Lithium-metal anode to provide a real jump in energy density, in comparison to conventional Li-ion Batteries (LIBs). However, there is still a long way to go for practical applications of SSBs. The growth and propagation of lithium dendrites from the Li metal anode to the positive electrode is still a problem even when solid electrolytes are used.

The authors of the present invention have shown that the use of a layer having dual conductivity (ionic and electronic) in an electrolyte having also a purely ionic conductivity layer allows preventing, or at least diminishing, the growth of lithium dendrites and reducing the internal resistance in a Li-metal solid-state battery. This layer having dual conductivity properties is placed in contact with the Li metal of the anode and acts as a buffer layer for dendrite growth, while homogenizing the current distribution thanks to its electronic properties. In fact, the electronic conductivity on the dual conductive layer improves the distribution of the electronic current density at the interface between the Li metal anode and said electrolyte layer, thus blocking the lithium dendrite growth and propagation across the other electrolyte layer (purely ionic conductive layer).



ADDED VALUE

- ✓ Reduction and prevention of lithium dendrite growth
- ✓ Reduction of internal resistance

APPLICATION OF THE TECHNOLOGY

- ✓ Li-metal solid-state batteries

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