

LITHIUM POLYMER MEMBRANE BASED ON A SEMI-CRYSTALLINE FLUORINATED POLYMER MATRIX AND A NONIONIC SURFACTANT

DESCRIPTION OF THE TECHNOLOGY

Lithium polymeric membrane characterized which comprising a fluorinated and semicrystalline polymer matrix, a lithium salt and a no-ionic surfactant as a plasticizer.

These Lithium polymeric membranes have thermal stability (up to 200 °C), electrochemical (higher than 4 V vs Li / Li +) and no break in applied strain range (up to 100%) compared to membranes comprising traditional organic carbonates like ethylene carbonate (EC) or diethyl carbonate (DEC), further having values of ionic conductivity at 25 ° C similar to these.

Consequently, polymeric membranes of the present invention are suitable for use in the operating range in terms of temperature and voltage.

The polymeric membrane can act both as an electrolyte, allowing the passage of lithium ions across the electrodes, and as electrical insulator.

They also provide greater safety battery because they have no flammable substances in its composition compared with liquid carbonates used today that are highly flammable.

The process to obtain the polymer membrane, comprises:

- a) Obtain a polymer solution comprising the polymer matrix fluorinated and semicrystalline, the lithium salt, the nonionic surfactant and at least one solvent,
- b) Depositing the solution obtained in step a) on a support, and
- c) Remove the solvent.

APPLICATION BUSINESS SECTORS

Sector devices converting chemical energy into electrical energy or vice versa:

- automotive
- energystorage

TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

- Better thermal, mechanical and electrochemical properties.
- Higher values of ion conductivity by the use of nonionic surfactants used as plasticizers.
- Battery provide greater safety because they have no flammable substances in its composition.

CURRENT STAGE OF THE TECHNOLOGY

The technology development is completed.

INTELLECTUAL PROPERTY RIGHTS

The technology comes from research conducted through a European project and belongs to the Institute for Energy Technology.

- The technology is protected by patent application "Membrana polimérica de litio basada en una matriz polimérica fluorada semicristalina y un surfactante no iónico". Application 201331499.

COLLABORATION SOUGHT

Companies interested in the following forms of cooperation:

- Agreement patent license for implementation and use of technology.
- Agreement for the development of the R & D (TC) to complete the development of technology, or application to other sectors.

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Figure: Stability of the membrane against high voltages

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