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New conducting polymer for lithium-ion batteries

Notre référence :
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Status des brevets

Priority patent of invention n° EP 14305254.6 filed in February 24th, 2014, entitled " New lithium-doped Pernigraniline-based materials, their methods of preparation and their uses in various applications"



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Status Commercial

Exclusive or non-exclusive license

Laboratoires

CONTEXT

In lithium ion batteries, the electrode is often designed by the use of an active electrochemical material (LCO, NCA, NMC, LMO, LFP), a conductive agent (Carbon black) and a binder (PVDF).

In recent years, batteries having a high energy density have come to be required and research have been conducted on conducting polymers such as polyaniline (PANI), polythiophene or polypyrrole as active materials or binders.

TECHNICAL DESCRIPTION

The invention relates to PANi.

Neutral PANi exist in different forms: Leucoemeraldine (fully reduced), Emeraldine (half reduced), Pernigraniline (fully oxidized). Both Pernigraniline and Emeraldine can be in a deprotonated form (base form) or in a protonated form (salt form with an anion).

Pernigraniline has only been successfully synthetised since the early nineties whereas the other forms were known and prepared for eighty years.

The invention relates to the synthesis of Pernigraniline in its base form doped by lithium ion and to its different uses.

BENEFITS

- Exchange reversibly up to 1 e- of charge for every aniline repeating unit in a lithium electrolyte at high potential
- High electrical conduction favors kinetics and so the use as additive
- High stability during cycling at a broad potential window
- Mechanical properties allow its preparation in many forms (membranes, coatings, thick films,...).

INDUSTRIAL APPLICATIONS

Use as additive, binder or active material in lithium-ion batteries or in supercapacitors.

For further information, please [contact us](#) (Ref 06723-01)

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