New Tungsten oxide-based Hole Transport Layer for OPV

Notre référence :
08259-01

Status des brevets

French priority patent application n°FR1650216 filed on January 12th, 2016 and entitled “Solution d’ions tungstates et dispositif photovoltaïque hybride”

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Status Commercial

Exclusive or non-exclusive license

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CONTEXT

PEDOT:PSS is the most used hole transport layer (HTL) in organic photovoltaic technologies. However, it has several drawbacks, such as residual acidity or low compatibility with processes like inkjet deposition. To overcome these defects, competitor HTLs are developed, such as tungsten oxide in the form of sol-gel or colloidal solution. But these solutions exhibit a low stability in time. The aim of the invention is to provide tungsten-based solutions with improved stability in time (allowing a longer storage time) and performance.

TECHNICAL DESCRIPTION

This technology concerns a new HTL material and its preparation method, based on tungstate ions (W^{6+}) and tungstate polyanions in an alcohol solution. The ionic form allows improving the stability of the solution (no sedimentation or aggregation).

DEVELOPMENT STAGE

The W^{6+} solution has been successfully prepared. It remained 100% stable and transparent during several months of storage. In addition, OPV devices realized using this new HTL exhibited OPV performance equivalent to the standard PEDOT:PSS HTL. Next development steps include the optimization of the solvent system (to allow lower drying and curing temperatures) and the preparation process.

BENEFITS

- High stability in time (> 6 months of storage): no aggregation / sedimentation
- OPV performance comparable to PEDOT:PSS
- Low cost preparation process
- Non-toxic

INDUSTRIAL APPLICATIONS

HTL for organic electronics (OPV, OLED…).

For further information, please contact us (Ref 08259-01)

in Nantes, France

Mots clés :
OPV interface HTL ink