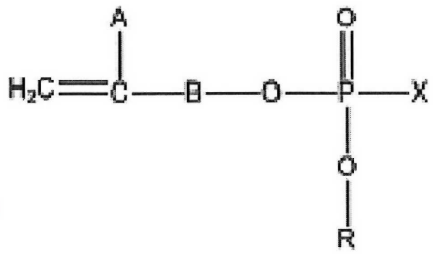
Unfortunately, the very nature of the PEDOT:PSS composition has drawbacks. In particular, colloidal dispersions of PEDOT:PSS are highly acidic and are the potential cause of degradation of the adjacent layers. To counter this problem, it is necessary to replace PSS, which is very acidic, with another polyelectrolyte while at the same time maintaining the advantages of PEDOT:PSS, in particular the stability of the dispersion.

After numerous tests, the Applicant has discovered a family of polyanion (Pan) stabilizers that act as charge dopants, allowing very good stability of the colloidal dispersions with PEDOT, while at the same time limiting the acidity of these colloidal dispersions. The resulting films are both easy to manufacture and have good electrical conductivity and good mechanical properties.

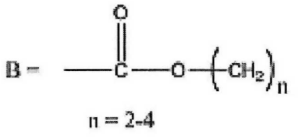
Summary:

There is provided a PEDOT:polyanion composition in which the polyanion comprises monomers which correspond to formula I below:

I:



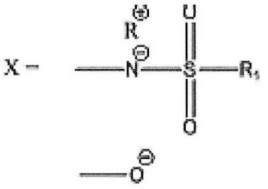
A = H, CH_3



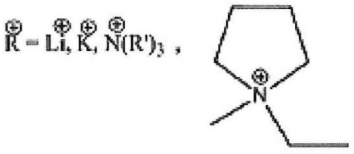
n = 2-4

or aryl group

R = alkyl or aryl group



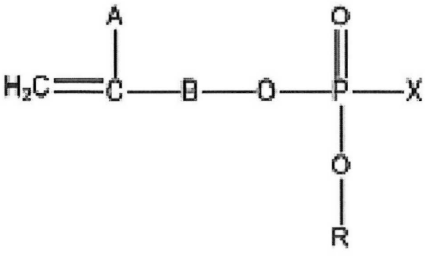
R1 = CF_3, CH_3, F



R' = aryl group

In an aspect, there is provided a PEDOT:poly styrenesulfonyl(trifluoromethylsulfonyl)imide composition in which the poly styrenesulfonyl(trifluoromethylsulfonyl)imide comprises monomers which correspond to formula I below:

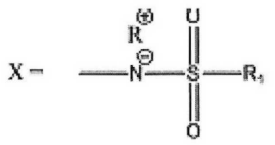
I:



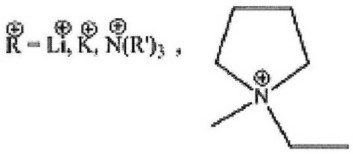
A = H, CH_3

B is phenyl group

R = alkyl or aryl group



R1 = CF_3



R' = aryl group

In another aspect, there is provided a conductive transparent film obtained from a composition as defined above.

In another aspect, there is provided the use of a composition as defined above for dispersing nanofilters.

In another aspect, there is provided a conductive transparent film obtained from a composition as defined above and carbon nanotubes.

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Detailed description:

The PAns used in the compositions of the invention are obtained by radical polymerization or by controlled radical polymerization of monomers I in the optional presence of ionic or nonionic comonomers.

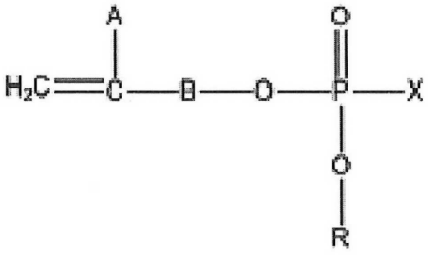
The monomers optionally copolymerized with I are chosen from vinyl, vinylidene, diene, olefinic, allylic and (meth)acrylic monomers. These monomers are chosen more particularly from vinylaromatic monomers such as styrene or substituted styrenes, especially α-methylstyrene, acrylic

monomers such as acrylic acid or salts thereof, alkyl, cycloalkyl or aryl acrylates such as methyl, ethyl, butyl, ethylhexyl or phenyl acrylate, hydroxyalkyl acrylates such as 2-hydroxyethyl acrylate, alkyl ether acrylates such as 2-methoxyethyl acrylate, alkoxy- or aryloxy-polyalkylene glycol acrylates such as methoxypolyethylene glycol acrylates, ethoxypolyethylene glycol acrylates, methoxy-polypropylene glycol acrylates, methoxypolyethylene glycol-polypropylene glycol acrylates or mixtures thereof, aminoalkyl acrylates such as 2-(dimethylamino)ethyl acrylate (DAMEA), fluoro acrylates, silyl acrylates,

Claims

1 A PEDOT:poly styrenesulfonyl(trifluoromethylsulfonyl)imide composition in which the poly styrenesulfonyl(trifluoromethylsulfonyl)imide comprises monomers which correspond to formula I below:

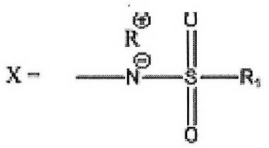
I:



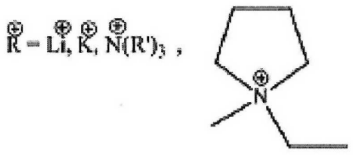
A = H, CH_3

B is phenyl group

R = alkyl or aryl group



R1 = CF_3



R' = aryl group

2 The composition as claimed in claim 1, in which the polystyrenesulfonyl(trifluoromethylsulfonyl)imide is polymerized by controlled radical polymerization with nitroxides.

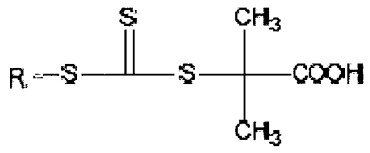
3 The composition as claimed in claim 2, in which the nitroxide is N-tert-butyl-1-diethylphosphono-2,2-dimethylpropyl nitroxide.

4 The composition as claimed in claim 1, in which the

polystyrenesulfonyl(trifluoromethylsulfonyl)imide is polymerized by controlled radical polymerization of RAFT type.

5 The composition as claimed in claim 4, in which the RAFT agent corresponds to formula II below:

II:



in which R represents an alkyl group comprising 1 to 22 carbon atoms.

6 The composition as claimed in claim 1, also containing an additive.

7 The composition as claimed in claim 6, in which the additive is ethylene glycol.

8 A conductive transparent film obtained from a composition as claimed in one of claims 1 to 7.

9 The use of a composition as claimed in one of claims 1 to 7 for dispersing nanofillers.

10 The use as claimed in claim 9, in which the nanofillers consist of carbon nanotubes.

11 A conductive transparent film obtained from a composition as claimed in one of claims 1 to 7 and carbon nanotubes.