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Application Details

APPLICATION NUMBER	202141012944
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	25/03/2021
APPLICANT NAME	1 . Institute of Aeronautical Engineering 2 . Dr.Kamatam Hari Prasad
TITLE OF INVENTION	ELECTROSPUN NANOCOMPOSITE QUASI-SOLID ELECTROLYTES FOR DYE-SENSITIZED SOLAR CELLS AND THEIR PREPARATION METHOD THEREOF
FIELD OF INVENTION	ELECTRICAL
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PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	02/04/2021

Application Status

APPLICATION STATUS	Awaiting Request for Examination
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➡ Filed ➡ Published ➡ RQ Filed ➡ Under Examination ➡ Disposed

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Patent Search

Invention Title	ELECTROSPUN NANOCOMPOSITE QUASI-SOLID ELECTROLYTES FOR DYE-SENSITIZED SOLAR CELLS AND THEIR PREPARATION METHOD THEREOF
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Abstract:

ABSTRACT Title: Electrospun Nanocomposite Quasi-Solid Electrolytes for Dye-Sensitized Solar Cells and their Preparation Method Thereof
 The present disclosure proposes electrospun nanocomposite quasi-solid electrolytes that exhibit high conductivity and high PCE for dye-sensitized solar cells. The TiO₂ nanofibrous that is used as fillers exhibit high aspect ratio and a high dielectric constant that facilitates better dissociation with polymer and hinders agglomeration in the polymer matrix. The ion-conducting behaviour, relaxation dynamics and the photovoltaic performance of the nanocomposite electrospun PVDF-HFP/ x wt% of nanofibrous TiO₂ (x = 2, 4, 6, 8 wt%) electrolyte membranes are studied. Photovoltaic parameters of the fabricated DSSCs are extracted using an equivalent circuit of single diode model of generalized solar cells to interpret, the parameters influence in the photovoltaic performance.

Complete Specification

Claims:CLAIMS:

We Claim:

1. A method for synthesis of electrospun pure nanocomposite quasi-solid electrolytes for dye-sensitized solar cells, comprising: dissolving poly(vinylidene fluoride-co-hexafluoropropylene) in an optimized solution of acetone and N,N-dimethylacetamide under constant stirring for 3 hours to form a transparent viscous polymer solution; dispensing nanofibrous TiO₂ of different weight percentages into said transparent viscous polymer solution under constant stirring for 5 hours to obtain a white viscous polymer solution; electro-spinning said white viscous polymer solution using a syringe to obtain of electrospun pure PVDF-HFP membranes and nanocomposite polymer fibrous membranes on a rotating drum collector; extracting said electrospun pure PVDF-HFP membranes and nanocomposite polymer fibrous membranes from said rotating drum collector; and drying said electrospun pure PVDF-HFP membranes and nanocomposite polymer fibrous membranes in an oven at 60°C for 24 h to remove remnant solvents, to obtain electrospun pure PVDF-HFP membranes and nanocomposite polymer fibrous membranes with an average thickness of 70 to 120 μm, Whereby said electrospun pure PVDF-HFP membranes and nanocomposite polymer fibrous membranes exhibit high conductivity and high PCE for dye-sensitized solar cells.
2. The method for synthesis of electrospun pure nanocomposite quasi-solid electrolytes for dye-sensitized solar cells as claimed in claim 1. wherein 16 weight percentages

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FORM 1 THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 APPLICATION FOR GRANT OF PATENT (See section 7, 54 and 135 and sub-rule (1) of rule 20)		(FOR OFFICE USE ONLY)			
		Application No.:			
		Filing Date:			
		Amount of Fee Paid:			
		CBR No.:			
		Signature:			
1. APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)					
2. TYPE OF APPLICATION [Please tick (✓) at the appropriate category]					
Ordinary (✓)		Convention ()		PCT-NP ()	
Divisional ()	Patent of Addition ()	Divisional ()	Patent of Addition ()	Divisional ()	Patent of Addition ()
3A. APPLICANT(S)					
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				Country	India
				Pin code	500043
3B. CATEGORY OF APPLICANT [Please tick (✓) at the appropriate category]					
Natural Person ()		Other than Natural Person			
		Small Entity ()	Startup (✓)	Others ()	
4. INVENTOR(S) [Please tick (✓) at the appropriate category]					
Are all the inventor(s) same as the applicant(s) named above?		Yes ()		No (✓)	
If "No", furnish the details of the inventor(s)					
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5. TITLE OF THE INVENTION					
Electrospun Nanocomposite Quasi-Solid Electrolytes for Dye-Sensitized Solar Cells and their preparation method thereof					
6. AUTHORISED REGISTERED PATENT AGENT(S)		IN/PA No.	3925		
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8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION					
Country	Application Number	Filing date	Name of the applicant	Title of the invention	IPC (as classified in the convention country)
9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)					
International application number			International filing date		
10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION					
Original (first) application No.			Date of filing of original (first) application		
11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT					
Main application/patent No.			Date of filing of main application		

12. DECLARATIONS:

(i) Declaration by the Inventor (s)

(In case the applicant is an assignee: the inventor(s) may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

I/We, the above named inventor(s) is/are the true & first inventor(s) for this Invention and declare that the applicant(s) herein is/are my/our assignee or legal representative.

(a) Date: 22.03.2021

(b) Signature(s):



S. Vinoth

N. Satyanarayana

(c) Name(s):

Dr. Kamatam Hari Prasad

Dr. S. Vinoth

Dr. N. Satyanarayana

(ii) Declaration by the applicant (s) in the convention country

(In case the applicant in India is different than the applicant in the convention country: the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)

I/We, the applicant(s) in the convention country declare that the applicant(s) herein is/are my/our assignee or legal representative.

(a) Date

(b) Signature(s)

(c) Name(s) of the signatory

(iii) Declaration by the applicant(s)

I/We the applicant(s) hereby declare(s) that: -

- I am/ We are in possession of the above-mentioned invention.
- The provisional/complete specification relating to the invention is filed with this application.
- The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me/us before the grant of patent to me/us.
- There is no lawful ground of objection(s) to the grant of the Patent to me/us.
- I am/we are the true & first inventor(s).
- I am/we are the assignee or legal representative of true & first inventor(s).
- The application or each of the applications, particulars of which are given in Paragraph-8, was the first application in convention country/countries in respect of my/our invention(s).
- I/We claim the priority from the above mentioned application(s) filed in convention country/countries and state that no application for protection in respect of the invention had been made in a convention country before that date by me/us or by any person from which I/We derive the title.
- My/our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph-9.
- The application is divided out of my /our application particulars of which is given in Paragraph-10 and prays that this application may be treated as deemed to have been filed on DD/MM/YYYY under section 16 of the Act.
- The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11.

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

a) Form 2

Item	Details	Fee	Remarks
Complete/ provisional specification)#:	No. of pages:		
No. of Claim(s):	No. of pages:		
Abstract:	No. of pages:		
No. of Drawing(s):	No. of pages:		

In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification under rule 13(4), the number of such pages filed with the provisional specification are required to be mentioned here.

- b) Complete specification (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).
- c) Sequence listing in electronic form
- d) Drawings (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).
- e) Priority document(s) or a request to retrieve the priority document(s) from DAS (Digital Access Service) if the applicant had already requested the office of first filing to make the priority document(s) available to DAS.
- f) Translation of priority document/Specification/International Search Report/International Preliminary Report on Patentability.
- g) Statement and Undertaking on Form 3
- h) Declaration of Inventorship on Form 5
- i) Power of Authority
- j)

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I/We hereby declare that to the best of my/our knowledge, information and belief the fact and matters stated herein are correct and I/We request that a patent may be granted to me/us for the said invention.

Dated this 22nd day of March 2021

Signature: 

Name: Hima Bindu Atti

To,
The Controller of Patents
The Patent Office, at Chennai

Note: -

- * Repeat boxes in case of more than one entry.
- * To be signed by the applicant(s) or by authorized registered patent agent otherwise where mentioned.
- * Tick (✓)/cross (x) whichever is applicable/not applicable in declaration in paragraph-12.
- * Name of the inventor and applicant should be given in full, family name in the beginning.
- * Strike out the portion which is/are not applicable.
- * For fee: See First Schedule";