

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202011043463 A

(19) INDIA

(22) Date of filing of Application :06/10/2020

(43) Publication Date : 07/10/2022

(54) Title of the invention : PROCESS OF PREPARING CALCIUM-DEPOSITED THREE-DIMENSIONAL (3D) CARBON FOR ENERGY STORAGE AND METHOD OF PRODUCING THEREOF

(51) International classification	:H01M0004360000, H01M0010052500, H01M0004133000, H01G0011300000, C07K0014005000	(71) Name of Applicant : 1)Chitkara Innovation Incubator Foundation Address of Applicant :SCO: 160-161, Sector - 9c, Madhya Marg, Chandigarh- 160009, India. Chandigarh India
(31) Priority Document No	:NA	(72) Name of Inventor :
(32) Priority Date	:NA	1)KHANRA, Partha
(33) Name of priority country	:NA	2)KUMAR, Pankaj
(86) International Application No	:NA	3)SINGH, Harjeet
Filing Date	:NA	4)MALARVEL, Muthukumaran
(87) International Publication No	: NA	5)KAPOOR, Mohit
(61) Patent of Addition to Application Number	:NA	
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

PROCESS OF PREPARING CALCIUM-DEPOSITED THREE-DIMENSIONAL (3D) CARBON FOR ENERGY STORAGE AND METHOD OF PRODUCING THEREOF Present disclosure generally relates to environmental chemical engineering, more particularly to process of preparing three-dimensional carbon from waste materials such as eggshells and waste paper for storing energy, and method thereof. Process includes cleaning waste papers using chemical reagent to remove hydrophobic impurities, and treating cleaned waste papers using acetic acid to convert waste papers into cellulose pulp. Further, process includes treating eggshells with sodium oxychloride to clean eggshells. Process includes drying and subsequently grinding cleaned eggshells into powdered eggshells and mixing powdered eggshells with cellulose pulp, by constantly stirring to produce uniform mixture. Process includes freeze-drying uniform mixture until moisture is removed from uniform mixture and carbonating freeze-dried uniform mixture under nitrogen to obtain pre-calcined carbon. Thereafter, process includes calcinating pre-calcined carbon under nitrogen and hydrogen to obtain calcium-deposited three-dimensional (3D) carbon, which possess high capacitance performance and improved cyclic stability.

No. of Pages : 21 No. of Claims : 11