

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :25/04/2025

(21) Application No.202541039969 A

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(54) Title of the invention : FIXED BED COLUMN ADSORPTION STUDY OF REMAZOL DYE REMOVAL USING ACTIVATED CARBON FORM PHYLLANTHUS EMBLICA LEAF

(51) International classification :C02F0001280000, A61K0036470000, B01J0020200000, B01J0020280000, C02F0003340000

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Filing Date :NA

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(61) Patent of Addition to Application Number :NA
Filing Date :NA

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Filing Date :NA

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(57) Abstract :

The escalation of Aquatic pollution by synthetic dyes and pesticides such as Remazol continues to pose alarming detriment to the ecosystem as well as human beings due to their extreme toxicity and non-biodegradable components. This study examines the efficiency of adsorbent materials for removing Remazol dye using a fixed-bed column setup with activated carbon obtained from Phyllanthus emblica (Indian gooseberry) leaves. The carbon prepared using chemical activation processes was characterized using BET surface area analysis, FTIR spectroscopy, and SEM imaging which provided insight into its morphology and underlying adsorption potential. Each adsorption experiment was conducted while varying bed height, flow rate, and initial concentration of adsorbate to analyze their impact on adsorption efficiency. Column performance was evaluated through breakthrough curves which were fitted by Thomas and Yoon-Nelson models to estimate column efficiency. The research offered in this study suggests that Phyllanthus emblica-based activated carbon has significant adsorption potential during continuous treatment of dye contaminated waters and is an economical and environmentally friendly adsorbent material. This work aids in the development of materials designed for the treatment and sustainable disposal of industrial effluents

No. of Pages : 13 No. of Claims : 1

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :25/04/2025

(21) Application No.202541040054 A

(43) Publication Date : 23/05/2025

(54) Title of the invention : ENHANCED REMOVAL OF IBUPROFEN FROM PHARMACEUTICAL EFFLUENT USING NOVEL TiO₂- COATED MULTI-WALLED CARBON NANOTUBES

(51) International classification :A61K0031192000, C02F0001280000, A61P0029000000, C02F0101300000, B05D0001180000

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(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

ABSTRACT Ibuprofen is a commonly used over-the-counter non-steroidal anti-inflammatory drug (NSAID), widely prescribed for pain relief, inflammation, and fever reduction. Due to its high global consumption and partial metabolism in the human body, ibuprofen and its toxic metabolites are frequently detected in pharmaceutical effluents and aquatic environments. The persistent presence of ibuprofen in water bodies has raised significant environmental concerns, including toxicity to aquatic organisms, endocrine disruption, and bioaccumulation. Conventional wastewater treatment methods such as biological degradation, filtration, and oxidation processes are largely ineffective in fully eliminating ibuprofen, often due to its low biodegradability and chemical stability. To address this challenge, the present invention introduces a novel adsorbent material-titanium dioxide (TiO₂)-coated multiwalled carbon nanotubes (MWCNTs)-synthesized. The MWCNTs are first oxidized to introduce oxygen functional group, followed by uniform TiO₂ coating to improve adsorption efficiency and structural stability. This adsorbent demonstrated exceptional performance in removing Ibuprofen from aqueous solutions, achieving over 90% removal under optimal conditions (pH 4, 150 minutes). The adsorption followed Langmuir isotherm and pseudo-second-order kinetics, indicating monolayer chemisorption. The novelty of this work lies in the coating of TiO₂ onto the MWCNT surface, resulting in a highly active, reusable, and scalable adsorbent. This innovation presents a promising solution for the sustainable treatment of pharmaceutical wastewater.

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(54) Title of the invention : FIXED BED COLUMN ADSORPTION STUDY OF REMAZOL DYE REMOVAL USING ACTIVATED CARBON FORM PHYLLANTHUS EMBLICA LEAF

(51) International classification :C02F0001280000, A61K0036470000, B01J0020200000, B01J0020280000, C02F0003340000

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(57) Abstract :

The escalation of Aquatic pollution by synthetic dyes and pesticides such as Remazol continues to pose alarming detriment to the ecosystem as well as human beings due to their extreme toxicity and non-biodegradable components. This study examines the efficiency of adsorbent materials for removing Remazol dye using a fixed-bed column setup with activated carbon obtained from Phyllanthus emblica (Indian gooseberry) leaves. The carbon prepared using chemical activation processes was characterized using BET surface area analysis, FTIR spectroscopy, and SEM imaging which provided insight into its morphology and underlying adsorption potential. Each adsorption experiment was conducted while varying bed height, flow rate, and initial concentration of adsorbate to analyze their impact on adsorption efficiency. Column performance was evaluated through breakthrough curves which were fitted by Thomas and Yoon-Nelson models to estimate column efficiency. The research offered in this study suggests that Phyllanthus emblica-based activated carbon has significant adsorption potential during continuous treatment of dye contaminated waters and is an economical and environmentally friendly adsorbent material. This work aids in the development of materials designed for the treatment and sustainable disposal of industrial effluents

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(51) International classification :C02F0001280000, A61K0036470000, B01J0020200000, B01J0020280000, C02F0003340000

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No. of Pages : 13 No. of Claims : 1

(54) Title of the invention : PRODUCTION OF A BIOCHEMICAL SOLUTION FOR GINGER PEEL REMOVAL BY CITRIC ACID BLEND FROM FOOD WASTE AN

(51) International classification :C12P0007480000, C11D0003382000, B09B0003000000, A61K0036906800, A61K0008365000 (86) International Application No :NA Filing Date :NA (87) International Publication No : NA (61) Patent of Addition to Application Number :NA Filing Date :NA (62) Divisional to Application Number :NA Filing Date :NA	(71)Name of Applicant : 1)Hindusthan College of Engineering and Technology Address of Applicant :Hindusthan College of Engineering and Technology, Valley Campus, Pollachi Highway, Coimbatore, Tamilnadu, India 641032. ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Dr.G. Jeevarathinam Address of Applicant :Associate Professor& Head /FT, Hindusthan College of Engineering and Technology, Valley Campus, Pollachi Highway, Coimbatore, Tamilnadu, India 641032. ----- 2)Ms.T. Nivetha Address of Applicant :Assistant Professor / FT, Hindusthan College of Engineering and Technology, Valley Campus, Pollachi Highway, Coimbatore, Tamilnadu, India 641032. ----- --- 3)Ms.C. S. Neethu Address of Applicant :Assistant Professor/ FT, Hindusthan College of Engineering and Technology, Valley Campus, Pollachi Highway, Coimbatore, Tamilnadu, India 641032. ----- --- 4)Dr. M Seenuvasan Address of Applicant :Professor & Head-Chemical, Hindusthan College of Engineering and Technology, Valley Campus, Pollachi Highway, Coimbatore, Tamilnadu, India 641032. ----- --- 5)Ms. Farhana Rasheed Address of Applicant :Hindusthan College of Engineering and Technology, Valley Campus, Pollachi Highway, Coimbatore, Tamilnadu, India 641032. ----- 6)Ms. Keerthana J M Address of Applicant :Hindusthan College of Engineering and Technology, Valley Campus, Pollachi Highway, Coimbatore, Tamilnadu, India 641032. -----
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(57) Abstract :

ANNEXURE 3 The idea of the project is to find an effortless way to remove the ginger peel because of its unorganized shape. We are preparing a solution which contains some acids that make the ginger peel tender to be removed. To make this solution we opted for a biological method of obtaining acid like citric acid which will make the ginger peel soft enough. The most notable sources of citric acid are citrus fruits like lemon, lime and orange, which contains highest level of natural citric acid. Citric acid is prepared by *Aspergillus Niger* in a submerged fermentation using lemon peels. Pineapple waste is dried and powdered which is added to the solution that contains citric acid. As the solution mostly makes use of the waste product due to which it can be considered as waste management technique. This solution can be reused for peeling the ginger after several uses. Due to the easy peeling technique, time is conserved and on the other hand it utilizes the waste too

No. of Pages : 5 No. of Claims : 4

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(21) Application No.202241028399 A

(19) INDIA

(22) Date of filing of Application :17/05/2022

(43) Publication Date : 17/06/2022

(54) Title of the invention : MAGNETITE EMBEDDED BIOCHAR AS NANO-SORBENT FOR EFFECTIVE ADSORPTION OF TEXTILE DYE AND THE METHOD THEROF

(51) International classification :C02F0001280000, C10B0053020000, B01J0020200000, G16C0020100000, C05D0009000000 (86) International Application No Filing Date :PCT// :01/01/1900 (87) International Publication No : NA (61) Patent of Addition to Application Number Filing Date :NA :NA (62) Divisional to Application Number Filing Date :NA :NA	(71)Name of Applicant : 1)Hindusthan College of Engineering and Technology Address of Applicant :The Principal Hindusthan College of Engineering and Technology, Valley Campus, Pollachi Highway, Coimbatore, Tamilnadu, India – 641 032. Mobile No: +91-99620 82276 E-mail: msvasan.chem@gmail.com ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Dr Seenuvasan M Address of Applicant :55, Press Enclave, Kovaipudur, Coimbatore, Tamilnadu, India – 641042 ----- 2)Dr Magudeswaran N Address of Applicant :90/20 Perumal Nagar, Kovaipudur, Coimbatore, Tamilnadu, India - 641042 ----- 3)Dr Jaya J Address of Applicant :Professor, Department of Electronics and Communication Engineering, Hindusthan College of Engineering and Technology, Coimbatore, Tamilnadu, India – 641 032 ----- 4)Mr Dineshkumar M Address of Applicant :191A, Giri Amman Koil Street, Peelamedu, Coimbatore, Tamilnadu, India – 641 004 ----- 5)Mr Rajkumar A Address of Applicant :297, Perumal Kovil Street, Papparam Bakkam, Tiruvallur, Tamilnadu, India - 602025. ----- 6)Ms Induja P Address of Applicant :11/62a, 5a, VOC nagar, 7th street, sirumugai, Coimbatore, Tamilnadu, India - 641 302 ----- 7)Dr Nithyanandam C Address of Applicant :LIG-183, TNHB I-IV Block, Ganapathy Maanagar, Coimbatore, Tamilnadu, India – 641006. ----- 8)Dr Senthil Murugan V Address of Applicant :Associate Professor, Department of Mechanical Engineering, Hindusthan College of Engineering and Technology, Coimbatore, Tamilnadu, India – 641 032 ----- 9)Mr Sriharish K Address of Applicant :Assistant Professor, Department of Mechanical Engineering, Hindusthan College of Engineering and Technology, Coimbatore, Tamilnadu, India – 641 032 -----
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(57) Abstract :

MAGNETITE EMBEDDED BIOCHAR AS NANO-SORBENT FOR EFFECTIVE ADSORPTION OF TEXTILE DYE AND THE METHOD THEROF ABSTRACT The present invention discloses a process of magnetite embedded biochar as nano-sorbent for effective adsorption of textile dye. The nano-sorbent was synthesized by the embedment of magnetite onto the biochar obtained from Cassia auriculata for the effective adsorption of Levafix blue (LB) dye. A different instrumental technique revealed the properties of biochar and the nano-sorbent. The effect of contact time, initial dye concentration and nano-sorbent dosage on the removal of LB dye was examined. Also, out of the kinetics studies models, the best fit and highest R2 values showed that the adsorption followed pseudo-second-order kinetics. Langmuir, Freundlich and Temkin isotherm models were established for the adsorption equilibrium data and the Temkin model showed the best reliability with the experimental results with highest R2 value of 0.9915. The adsorption system was modeled using the Artificial Neural Net-work (ANN) for bio char and nano-sorbent.

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(21) Application No.202041044700 A

(19) INDIA

(22) Date of filing of Application :14/10/2020

(43) Publication Date : 30/10/2020

(54) Title of the invention : PRODUCTION OF BIODEGRADABLE PLASTIC FROM ORGANIC FLOUR AND THE METHOD OF PREPARATION THEREOF

(51) International classification	:C08J 11/16	(71)Name of Applicant :
(31) Priority Document No	:NA	1)S. KAVITHA
(32) Priority Date	:NA	Address of Applicant :12, P N NAGAR, KUNIAMUTHUR,
(33) Name of priority country	:NA	COIMBATORE, TAMIL NADU, INDIA-641008. Tamil Nadu
(86) International Application No	:NA	India
Filing Date	:NA	(72)Name of Inventor :
(87) International Publication No	: NA	1)S. KAVITHA
(61) Patent of Addition to Application Number	:NA	2)M.SEENUVASAN
Filing Date	:NA	3)K.SATHISH KUMAR
(62) Divisional to Application Number	:NA	4)K.SWATHI
Filing Date	:NA	5)S.DILLWYN

(57) Abstract :

ABSTRACT OF THE INVENTION Title: Production of biodegradable plastic from organic flour and the method of preparation thereof This invention discloses the composition to prepare biodegradable plastic comprising organic flour, polymer and plasticizer. To prepare the biodegradable plastic, organic flour, polymer and plasticizer in the ratio 1:0.6:0.2 are mixed together with water base. It is further mixed with a mechanical stirrer and heated to induce polymerization reaction. The collected semisolid form is casted as a film and dried in a suitable mold to get the desired shape. The present invention produces a biodegradable plastic that can be used as a packaging material and container.

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(21) Application No.202041044259 A

(19) INDIA

(22) Date of filing of Application :12/10/2020

(43) Publication Date : 16/10/2020

(54) Title of the invention : POLYESTER RESIN LOADED NANOCOMPOSITE MATERIAL FOR CARBON DIOXIDE SEQUESTRATION AND THE METHOD OF PRE

(51) International classification	:E21B 41/00	(71)Name of Applicant :
(31) Priority Document No	:NA	1) HINDUSTHAN COLLEGE OF ENGINEERING AND TECHNOLOGY
(32) Priority Date	:NA	Address of Applicant :VALLEY CAMPUS, POLLACHI
(33) Name of priority country	:NA	HIGHWAY, COIMBATORE-641 032, TAMIL NADU, INDIA.
(86) International Application No	:NA	Tamil Nadu India
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(87) International Publication No	: NA	1)M.SEENUVASAN
(61) Patent of Addition to Application Number	:NA	2)N.SRIDHAR
Filing Date	:NA	3)G.JEEVARATHINAM
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

Title: Polyester resin loaded nanocomposite material for carbon dioxide sequestration and the method of preparation thereof The present invention describes the composition of the polyester resin loaded nanocomposite for carbon dioxide sequestration comprising jojoba oil containing tricaprylin, myristate, and esters of fatty acid, graphene oxide nanoparticle and hardener. To synthesize polyester from jojoba oil, three parts of the oil is mixed with one part of glycerol, 20% of methanol and phthalic anhydride followed by curing at 60°C-120°C. To synthesize the nanocomposites, the polyester synthesized from jojoba oil is mixed with a well dispersed graphene oxide nanoparticle followed by the addition of hardener and casting into respective molds. The present invention provides recyclable nanobeads for carbon dioxide, sequestration from a fluid stream.

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(21) Application No.202241045857 A

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(54) Title of the invention : A NEW TECHNIQUE FOR SOLID DUST REMOVAL USING TWO INLET CYCLONE SEPARATOR

(51) International classification :B01D0045160000, B04C0009000000, B01D0045120000, B04C0005081000, B04C0005280000
(86) International Application No :NA
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(87) International Publication No : NA
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(57) Abstract :

Cyclone separator is the device used Tor dust removal. In contrast to the conventional design,' which only has one feed intake, the cyclone separator in this study has two inlets. The effectiveness of the cyclone separator's particle collection was examined in relation to the inclusion of a secondary intake. By giving the cyclone separator twin inlets, the centrifugal force acting on the particles was changed, changing the effectiveness of particle collection. It was created as a cyclone separator with two inlets. Its performance was examined by experiments using the particle-to-air ratio (particle concentration), the gas flow rate ratio between the two inlets, and the individual gas flow rates in each of the inlets as the parameters. The real performance of the suggested cyclone separator was seen after conducting testing, and it differed in how well it performed in collecting the particles from a gas-solid combination. The entrance gas velocity, collecting efficiency, airflow measurements, and flow rate of air were calculated to investigate the operation of a cyclone separator. The two inlet cyclone separator reveals that the dust is easily removed, centrifugal force is increased, particle collection efficiency becomes eventually quicker and so the time taken for the entire process is reduced.

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(57) Abstract :

The Effects of Blending Cow Milk with Soymilk on Yoghurt Quality Abstract: When soy milk was combined with buffalo or cow milk, numerous features of yoghurt were investigated. We used soymilk, buffalo milk, cow milk, a 75/25 mixture of buffalo milk and soymilk, and a 75/25 mixture of cow milk and soymilk for our yoghurt treatment. In terms of acidity, redox potential, solids, fat, total nitrogen, ash (total volatile fatty acids, saturated fatty acids), and total amino acids, soy milk yoghurt was the least acidic. The most acidic yoghurt was made from buffalo milk. When soymilk is combined with buffalo or cow milk to produce yoghurt, a portion of these nutrients are lost. Soymilk yoghurt contained the highest levels of linoleic and linolenic acid. It was also rich in unsaturated fatty acids. How many S's are there The thermophiles in fresh yoghurt samples were nearly identical. When making yoghurt with soy milk alone or in combination with buffalo or cow milk, the L count was drastically reduced, butyricus. When buffalo or cow milk was combined with soy milk, it contained the flavour of yoghurt.

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(57) Abstract:

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