# R. D. ENGINEERING COLLEGE



| S.No | Date | Name of teacher | Name of Patent | Name of the professional body |
|---|---|---|---|---|
| 1 | 18/08/2023 | Dr. Gaurav Bansal | BUILDING AN EFFECTIVE E COMMERCE FRAUD DETECTION MODEL USING COMPUTER AI AND DATA MINING TECHNIQUES | THE PATENT OFFICE, GOVERNMENT OF INDIA |
| 2 | 25/07/2023 | Dr. Pankaj Kumar Singh | MULTICHAMBERED DEVICE TO PERFORM PHYTOCHEMICAL ANALYSIS | THE PATENT OFFICE, GOVERNMENT OF INDIA |
| 3 | 21/07/2023 | Dr. Dharamveer Singh | HYBRID SOLAR SYSTEM WITH N-IDENTICAL PARTLY COVERED PHOTOVOLTAIC COMPOUND PARABOLIC CONCENTRATOR COLLECTORS | OFFICAIL JOURNAL OF PATENT OFFICE |
| 4 | 21/07/2023 | Dr. Dharamveer Singh | HYBRID ACTIVE SOLAR DESALINATIONSYSTEM WITH PARABOLIC CONCENTRATOR COLLECTOR USING HELICALLY COILED HEAT EXCHANGER | OFFICAIL JOURNAL OF PATENT OFFICE |
| 5 | 21/03/2023 | Dr. Pankaj Kumar Singh | ENVIRONMENTAL MONITORING DEVICE | THE PATENT CFFICE, GOVERNMENT OF INDIA |
| 6 | 8/2/2023 | Dr. Pankaj Kumar Singh | CASTABLE AND CURABLE MAGNETIC CEMENT COMPOSITION AND METHOD | SOUTH AFRICAN STANDARD PATENT |
| 7 | 13/01/2023 | Sarthak Tyagi | A NOVEL TECHNIQUE BASED ON SUPPORT VECTOR MACHINES FOR PREDICTING THE DAILY CLOSING PRICES OF SELECTED SHARES IN THE STOCK MARKET | OFFICAIL JOURNAL OF PATENT OFFICE |
| 8 | 2/12/2022 | Dr. Pankaj Kumar Singh | CURCUMIN COMPOSITION WITH ENHANCED BIOAVAILABILITY, ANTI-DIABETIC, ANTI-CANCER ACTIVITY | OFFICAIL JOURNAL OF PATENT OFFICE |
| 9 | 21/12/2022 | Dr. Gaurav Rastogi | A NOVEL PROCESS FOR PREPARATION OF POLYSACCHARIDE OR ITS DERIVATIVE FROM CASSIA SEEDS | THE PATENT OFFICE, GOVERNMENT OF INDIA |
| 10 | 14/10/2022 | Dr. Pankaj Kumar Singh | Intelligenter Inhalator für Asthmatiker | Die Präsidentin des Deutschen Patent- und Markenamts |

Director
R.D. Engineering College
Duhai, Ghaziabad

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|---|---|---|---|---|
| 11 | 17/08/2021 | Sanjay Paliwal | NOVEL CROP RECOGNITION TECHNIQUE FOR WEED CONTROL OF SELF LIFE OF CROPS AND HUMANS | COMMON WEALTH OF AUSTRALIA, PATENT OFFICE |
| 12 | 4/7/2021 | Sanjay Paliwal | A METHYL Hg CONTAMINATED WASTEWATER TREATMENT | COMMON WEALTH OF AUSTRALIA, PATENT OFFICE |
| 13 | 26/06/2021 | Dr. Vishal Upmanu | A SYSTEM FOR EXCHANGING MEDIA BETWEEN ENTITIES | COMMON WEALTH OF AUSTRALIA, PATENT OFFICE |
| 14 | 21/06/2021 | Dr. Pankaj Kumar Singh | AN AUTOMATED PLANTATION HEALTH MONITORING SYSTEM AND A METHOD THEREOF | COMMON WEALTH OF AUSTRALIA, PATENT OFFICE |
| 15 | 30/04/2021 | Dr. Pankaj Kumar Singh | A METHOD FOR TREATMENT OF METHYL Hg CONTAMINATED WATER | OFFICAIL JOURNAL OF PATENT OFFICE |
| 16 | 2/4/2021 | Sanjay Paliwal | A MICROBIAL CONSORTIUM FOR TREATMENT OF INDUSTRIAL WASTEWATER AND A METHOF THEREFOR | OFFICAIL JOURNAL OF PATENT OFFICE |
| 17 | 23/10/2020 | Dr. Pankaj Kumar Singh | A COMPUTER NETWORK SYSTEM FOR TRANSFERRING FILE USING NETWORK SOCKETS | OFFICAIL JOURNAL OF PATENT OFFICE |
| 18 | 2/10/2020 | Dr. Pankaj Kumar Singh | DECISION SUPPORT SYSTEM FOR ENERGY AND ENVIRONMENT SAVING | OFFICAIL JOURNAL OF PATENT OFFICE |
| 19 | 28/08/2020 | Dr. Pankaj Kumar Singh | HIGHLY EFFICIENT ACTIVE CARBON, THE PROCESS FOR PREPERATION AND USES THEREOF | OFFICAIL JOURNAL OF PATENT OFFICE |
| 20 | 28/08/2020 | Sanjay Paliwal | METHOD FOR TREATING WASTEWATER USING FLY ASH AS ADSORBENT | OFFICAIL JOURNAL OF PATENT OFFICE |
| 21 | 28/08/2020 | Dr. Pankaj Kumar Singh | METHOD FOR EXTRACTING GALACTOMANNAN FROM PLANT LEUCAENA LEUCOCEPHALA | OFFICAIL JOURNAL OF PATENT OFFICE |
| 22 | 20/12/2019 | Dr. Pankaj Kumar Singh | PEST DETECTION AND CONTROL SYSTEM IN SMART FARMING USING IOT | OFFICAIL JOURNAL OF PATENT OFFICE |

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R.D. Engineering College
Duhai, Ghaziabad

# पेटेंट कार्यालय
# शासकीय जर्नल

# OFFICIAL JOURNAL
# OF
# THE PATENT OFFICE


| निर्गमन सं. 33/2023<br>ISSUE NO. 33/2023 | शुक्रवार<br>FRIDAY | दिनांक: 18/08/2023<br>DATE: 18/08/2023 |
|---|---|---|


पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE




Director
R.D. Engineering College
Duhai, Ghaziabad

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :02/06/2023

(21) Application No.202341037908 A

(43) Publication Date : 18/08/2023

(54) Title of the invention : BUILDING AN EFFECTIVE E-COMMERCE FRAUD DETECTION MODEL USING COMPUTER AI AND DATA MINING TECHNIQUES

(51) International classification : H21D 114000; H21P 1700000; G06Q 201200; G06Q 2140000; G06Q 300000

(86) International Application No : PCT:/

Filing Date : 01/01/1900

(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

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3)Sarthak Tyagi

4)Jenamani Chandrakanta Badajena

5)Chitakunta Praveen Kumar

6)Dr Shashank Singh

7)Sanjukta Mohanty

8)Dr R. Anuradh Reddy

9)S Shirevelu

10)Dr. Niranjanamurthy M

11)Anthony Savio Hermínio da Piedade Fernandes

12)Pavithra B

Name of Applicant : NA

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Address of Applicant :Assistant Professor, Dept of MCA , Dayananda Sagar College of Engineering, Bangalore, Karnataka, India Bangalore

(57) Abstract :

The invention relates to a system and method of building an e-commerce fraud detection system with AI and Data Mining Techniques. The first step in building an e data collection, which involves gathering a comprehensive dataset containing both legitimate and fraudulent transaction data. Preprocessing techniques are then applied to clean the data, handle missing values, and perform feature engineering to extract meaningful information. Data mining techniques, such as clustering, association rule mining, and anomaly detection, are employed to uncover patterns and anomalies in the dataset. These techniques aid in identifying suspicious activities and fraud patterns that may be hidden within the data. Machine learning models play a crucial role in fraud detection. Algorithms such as logistic regression, decision trees, random forests, support vector machines, and neural networks are trained on the labeled data to classify transactions as legitimate or fraudulent. Ensemble methods further enhance the model's performance by combining multiple models. Real-time monitoring systems are implemented to analyze incoming transactions in real-time, utilizing the trained model to assess the risk associated with each transaction. Suspicious activities are flagged for further investigation, aiding in proactive fraud prevention. Feature selection techniques are utilized to identify the most relevant features that contribute to fraud detection, reducing dimensionality and improving the model's efficiency. Continuous model improvement is essential to keep up with evolving fraud patterns. Regular updates and incorporating new fraud patterns into the model ensure its effectiveness over time. Collaboration with fraud analysts, domain experts, and stakeholders is crucial to gain insights and refine the fraud detection model. Evaluating the model's performance using metrics such as accuracy, precision, recall, F1 score, and ROC analysis helps assess its effectiveness and make necessary adjustments. As per present invention, e-commerce fraud detection with AI and data mining techniques offers businesses the ability to proactively identify and prevent fraudulent activities, mitigating financial losses and maintaining customer trust in the online ecosystem.

No. of Pages : 14 No. of Claims : 10



Director
R.D. Engineering College
Duhai, Ghaziabad

Design Patent-2

INTELLECTUAL PROPERTY INDIA

सत्यमेव जयते

ORIGINAL
क्रम सं/ Serial No. : 147102

# पेटेंट कार्यालय, भारत सरकार | The Patent Office, Government Of India

## डिजाइन के पंजीकरण का प्रमाण पत्र | Certificate of Registration of Design

डिजाइन सं. / Design No. : 391065-001

तारीख / Date : 25/07/2023

पारस्परिकता तारीख / Reciprocity Date* :

देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो *MULTICHAMBERED DEVICE TO PERFORM PHYTOCHEMICAL ANALYSIS* से संबंधित है, का पंजीकरण, श्रेणी 24-01 में 1.Prof Rajinder Kumar Uppal 2. Dr. K. Sarojini Chakravarthy 3.Dr. Pankaj Kumar Singh 4.Dr. Chandran Masi 5.Patrik Viktor 6.Albert Molnar 7.Monika Fodor के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 24-01 in respect of the application of such design to *MULTICHAMBERED DEVICE TO PERFORM PHYTOCHEMICAL ANALYSIS* in the name of 1.Prof Rajinder Kumar Uppal 2. Dr. K. Sarojini Chakravarthy 3.Dr. Pankaj Kumar Singh 4.Dr. Chandran Masi 5.Patrik Viktor 6.Albert Molnar 7.Monika Fodor.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।
In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

R.D. Engineering
Dubai, Director

जारी करने की तिथि :
Date of Issue : 30/10/2023

महानियंत्रक पेटेंट, डिजाइन और व्यापार चिह्न
Controller General of Patents, Designs and Trade Marks

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The reciprocity date (if any) which has been allowed and the name of the country. Copyright in the design will subsist for ten years from the date of Registration, and may under the terms of the Act and Rules, be extended for a further period of five years. This Certificate is not for use in legal proceedings or for obtaining registration abroad.

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# OFFICIAL JOURNAL
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| निर्गमन सं. 29/2023 | शुक्रवार | दिनांक: 21/07/2023 |
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| ISSUE NO. 29/2023 | FRIDAY | DATE: 21/07/2023 |


पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

Director College

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :29/06/2023

(21) Application No.202311043598 A
(43) Publication Date : 21/07/2023

(54) Title of the invention : HYBRID SOLAR SYSTEM WITH N-IDENTICAL PARTLY COVERED PHOTOVOLTAIC COMPOUND PARABOLIC CONCENTRATOR COLLECTORS

(51) International classification :F24S 237000, H01L 310540, H01L 510000, H01L 514200, H02S 404400
(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

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**3)Aakersh Chauhan**
**4)Samsher**
**5)Anil Kumar**
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**Address of Applicant : NA**
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**5)Anil Kumar**
Address of Applicant :Department of mechanical engineering, Delhi Technological University, New Delhi-110042 New Delhi ---------- ----------

(57) Abstract :
The solar distillation system includes N-identical 25% partly covered photovoltaic thermal compound parabolic concentrator collectors (N-PVT-CPC), each collector having a reflective surface and a receiver area, a helically coiled heat exchanger integrated with a single slope solar distiller unit, collectors connected in series and positioned at an angle of 45° facing south, a basin fluid containing CuO nanoparticles, wherein the fluid is circulated through the heat exchange, a glass cover positioned at an inclination angle of 30° to the horizontal, covering the basin, a DC motor driven by electricity generated by the photovoltaic modules, wherein the motor operates a pump for fluid circulation, nanoparticles, specifically CuO nanoparticles, utilized for heat exchange with the basin fluid, and vapor condensation mechanism collecting condensed water at the lower ends of the inclined glass cover.

No. of Pages : 19 No. of Claims : 10

Director
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Department for Promotion of Industry and Internal Trade
Ministry of Commerce & Industry,
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## Application Details

| | |
|---|---|
| APPLICATION NUMBER | 202311043598 |
| APPLICATION TYPE | ORDINARY APPLICATION |
| DATE OF FILING | 29/06/2023 |
| APPLICANT NAME | 1 . Dharamveer Singh<br>2 . Satyaveer Singh<br>3 . Aakersh Chauhan<br>4 . Samsher<br>5 . Anil Kumar |
| TITLE OF INVENTION | "HYBRID SOLAR SYSTEM WITH N-IDENTICAL PARTLY COVERED PHOTOVOLTAIC COMPOUND PARABOLIC CONCENTRATOR COLLECTORS" |
| FIELD OF INVENTION | ELECTRICAL |
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| E-MAIL (UPDATED Online) | |
| PRIORITY DATE | |
| REQUEST FOR EXAMINATION DATE | -- |
| PUBLICATION DATE (U/S 11A) | 21/07/2023 |

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## Application Status

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# शासकीय जर्नल

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| निर्गमन सं. 29/2023 | शुक्रवार | दिनांक: 21/07/2023 |
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| ISSUE NO. 29/2023 | FRIDAY | DATE: 21/07/2023 |


पेटेंट कार्यालय का एक प्रकाशन
PUBLICATION OF THE PATENT OFFICE

Director College

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :23/06/2023

(21) Application No.202311042006 A
(43) Publication Date : 21/07/2023

(54) Title of the invention : HYBRID ACTIVE SOLAR DESALINATION SYSTEM WITH PARABOLIC CONCENTRATOR COLLECTOR USING HELICALLY COILED HEAT EXCHANGER

| | |
|---|---|
| (51) International classification | :C02F 014400, C02F 030800, F28D 070200, H01M 040400, H01M 100568 |
| (86) International Application No<br>Filing Date | :NA<br>:NA |
| (87) International Publication No | : NA |
| (61) Patent of Addition to Application Number<br>Filing Date | :NA<br>:NA |
| (62) Divisional to Application Number<br>Filing Date | :NA<br>:NA |

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**3)Satyaveer Singh**
**4)Aakersh Chauhan**
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(72)**Name of Inventor :**
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(57) Abstract :
The present invention relates to the field of w solar desalination system. More specifically, a hybrid active solar desalination system using a combination of photovoltaic thermal compound parabolic concentrator collectors (PVT-CPC), a double tilted solar distillation unit, and a helically coiled heat exchanger. The hybrid active solar desalination system includes a double tilted solar distillation unit with an n-identical partially covered photovoltaic thermal compound parabolic concentrator collector (N-PVT-CPC-DS), a helically coiled heat exchanger integrated into the solar distillation unit, nanoparticles added to the basin of the solar distillation unit for enhanced heat absorption, a condenser section for vapor condensation and collection of distilled water, a glass cover angled at 30 degrees to the horizontal and facing south, and a DC motor and pump powered by energy generated by the PV module.

No. of Pages : 21 No. of Claims : 10

Director
R.D. Engineering College
Duhai, Ghaziabad

Office of the Controller General of Patents, Designs & Trade Marks
Department for Promotion of Industry and Internal Trade
Ministry of Commerce & Industry,
Government of India

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GEOGRAPHICAL INDICATIONS

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## Application Details

| | |
|---|---|
| APPLICATION NUMBER | 202311042006 |
| APPLICATION TYPE | ORDINARY APPLICATION |
| DATE OF FILING | 23/06/2023 |
| APPLICANT NAME | 1 . Dr. Dharamveer Singh<br>2 . Dr. Samsher<br>3 . Satyaveer Singh<br>4 . Aakersh Chauhan |
| TITLE OF INVENTION | "HYBRID ACTIVE SOLAR DESALINATION SYSTEM WITH PARABOLIC CONCENTRATOR COLLECTOR USING HELICALLY COILED HEAT EXCHANGER" |
| FIELD OF INVENTION | CHEMICAL |
| E-MAIL (As Per Record) | contact@elpisanalytix.com |
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| E-MAIL (UPDATED Online) | |
| PRIORITY DATE | |
| REQUEST FOR EXAMINATION DATE | -- |
| PUBLICATION DATE (U/S 11A) | 21/07/2023 |

## Application Status

Director
R.D. Engineering College
Duhai, Ghaziabad

Design Patent - 1

ORIGINAL

मूल/No : 137739

# भारत सरकार
# GOVERNMENT OF INDIA
## पेटेंट कार्यालय
## THE PATENT OFFICE
## डिजाइन के पंजीकरण का प्रमाणपत्र
## CERTIFICATE OF REGISTRATION OF DESIGN

| | | |
|---|---|---|
| डिजाइन सं. / Design No. | : | 381939-001 |
| तारीख / Date | : | 21/03/2023 |
| पारस्परिकता तारीख / Reciprocity Date* | : | |
| देश / Country | : | |

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो **ENVIRONMENTAL MONITORING DEVICE** से संबंधित है, का पंजीकरण, श्रेणी **10-05** में 1.Dr Mohammed Asef Iqbal 2. Dr Pankaj Kumar Singh 3.Dr Shilpi Singh 4.Dr.S.Boobalan 5.Dr .B Senthil Rathi 6.Dr .Sujatha.Sadana 7.Ms . Lavanya R 8.Dr. V.Kannan के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class **10-05** in respect of the application of such design to **ENVIRONMENTAL MONITORING DEVICE** in the name of 1.Dr Mohammed Asef Iqbal 2. Dr Pankaj Kumar Singh 3.Dr Shilpi Singh 4.Dr.S.Boobalan 5.Dr .B Senthil Rathi 6.Dr .Sujatha.Sadana 7.Ms . Lavanya R 8.Dr. V.Kannan.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।
In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

Director
R.D. Engineering College
Duhai, Ghaziabad

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

निर्गमन की तारीख/Date of Issue : 24/05/2023

नियंत्रक जनरल पेटेंट, डिजाइन और व्यापार चिह्न
Controller General of Patents, Designs and Trade Marks

पारस्परिकता तारीख (यदि कोई हो) जिसकी अनुमति देश के नाम पर दी गई है। डिजाइन का स्वत्वाधिकार पंजीकरण की तारीख से दस वर्षों के लिए होगा जिसका विस्तार, अधिनियम एवं नियम के निबंधनों के अधीन, पाँच वर्षों की अतिरिक्त अवधि के लिए किया जा सकेगा। इस प्रमाण पत्र का उपयोग विधिक कार्यवाहियों अथवा विदेश में पंजीकरण प्राप्त करने के लिए नहीं की जा सकता है।

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South African Standard Patent



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## Patent Register - [2022/13139]

**Patent number**
2022/13139

**Title of invention**
CASTABLE AND CURABLE MAGNETIC CEMENT COMPOSITION AND METHOD FOR

**Date of application**
2022-12-05

**Date of acceptance**
2023-02-08

**Date of expiry**
2042-12-05

**Date of grant**

**Type of patent**
Complete

**Status**
Accepted

**IPC Class**
C04B

**Patent abstract**
A castable and curable magnetic cement composition, comprising, i) magnetic or magnetizable particle in the range of- 12-96% ii) cement particles in the range of- 0.0027-2 um, iii) aluminosilicate particle in the range of- 12-70% iv) a binding modifier in the range of- and v) a surface-active dispersing agent in the range of 0.1-5% by weight. The method for preparing the cement composition comprises the following steps: i) mixing the particles with dispersing agent to obtain a homogeneous mixture; and ii) blending the mixture with silica-bearing additive, followed by addition of potable water to obtain the cement composition

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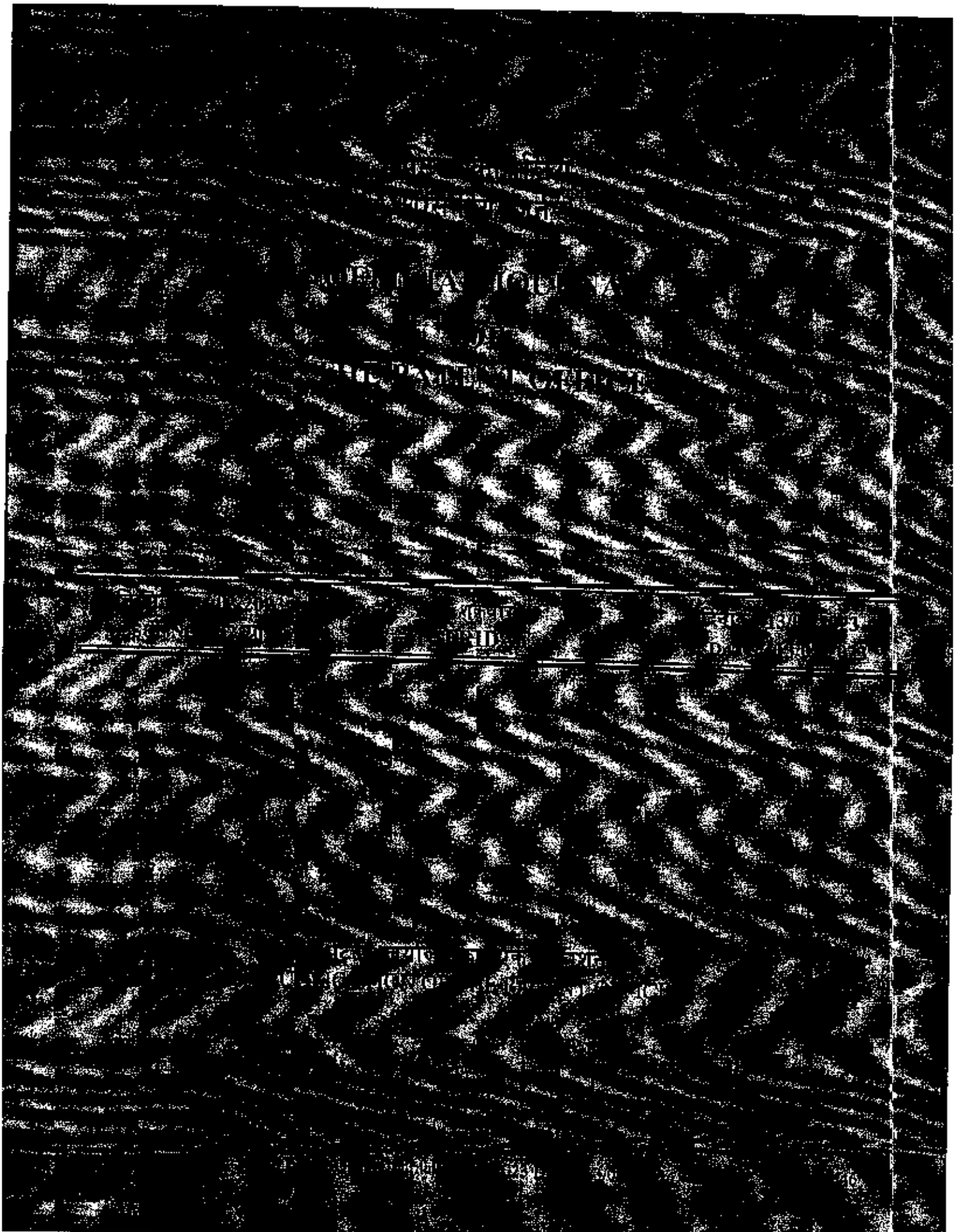

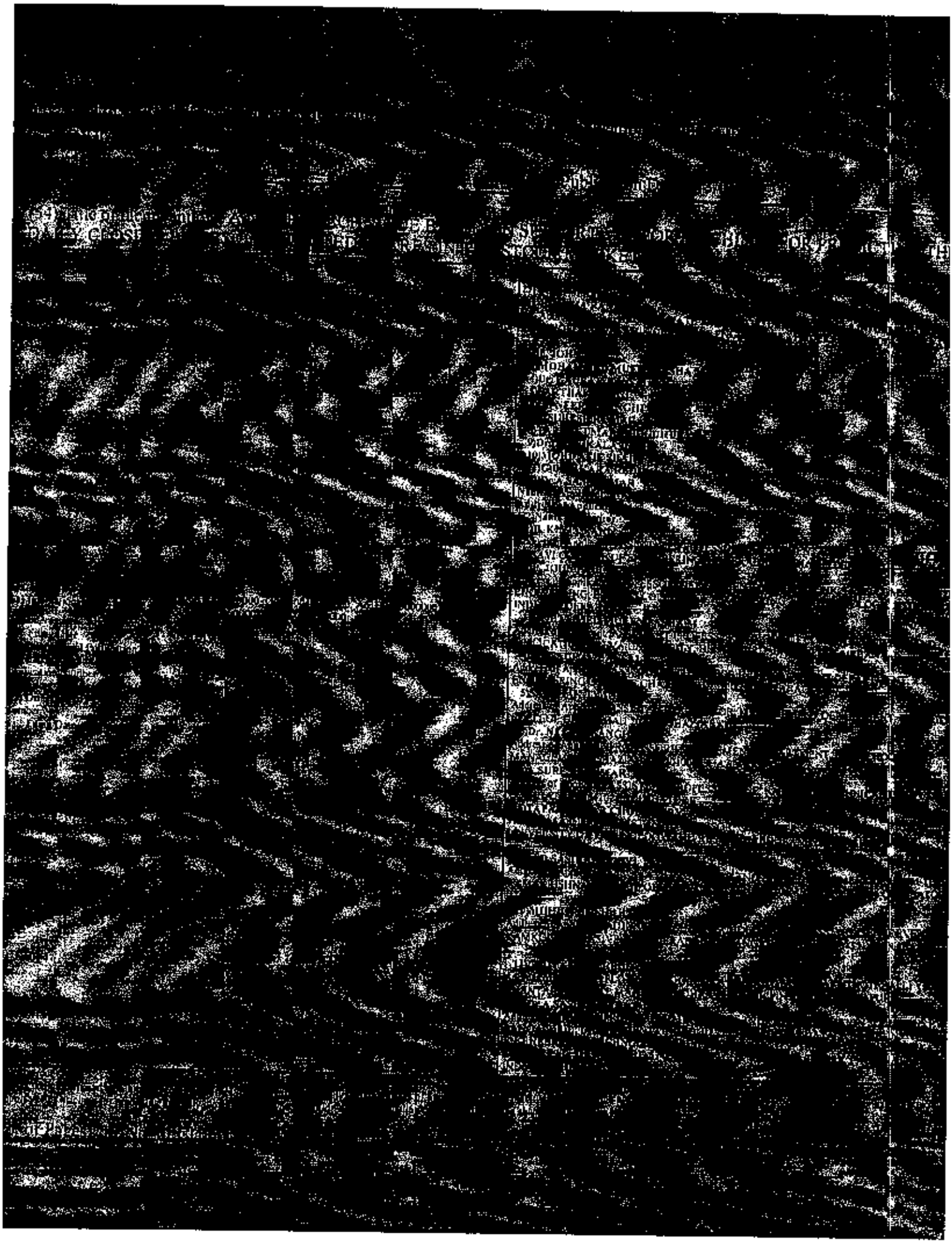

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :25/11/2022

(21) Application No.202211067986 A

(43) Publication Date : 02/12/2022

(54) Title of the invention : CURCUMIN COMPOSITION WITH ENHANCED BIOAVAILABILITY, ANTI-DIABETIC, ANTI-CANCER ACTIVITY

| | |
|---|---|
| (51) International classification | :A61K0036670000, A61K0031120000, A23L0033105000, A61P0035000000, A61P0039060000 |
| (86) International Application No<br>Filing Date | :NA<br>:NA |
| (87) International Publication No | : NA |
| (61) Patent of Addition to Application Number<br>Filing Date | :NA<br>:NA |
| (62) Divisional to Application Number<br>Filing Date | :NA<br>:NA |

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**3)Sonam Khan**
**4)Dr. Paul Richards Mooni**
**5)Subham Biswal**
**6)Shruti Singh**
**7)Dr/Bgen Adrien R Quidlat**
**8)Dr Shilpi Singh**
**9)Dr Pankaj Kumar Singh**
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Address of Applicant :Professor & Director R D Engineering College -Ghaziabad , U P ,India - 201206 ---------- ----------
**10)Dr. Ravinder Singh Mann**
Address of Applicant :VPO Khojala Tehsil Batala Distt Gurdaspur Gurdaspur ---------- ----------
**11)Shipra Kanwar**
Address of Applicant :Dewalchor Kham Haldwani, Manpur Paschim, Nanital, Uttarakhand-263139, Nainital ---------- ----------

(57) Abstract :
A curcumin composition with enhanced bioavailability, anti-diabetic, anti-cancer activity, comprising: i) curcumin in the range of 35 - 45 %; ii) curcumin derivative in the range of 35 - 45 %; iii) green tea in the range of 5 – 10 %; iv) extract of soya bean in the range of 5 – 10 %; and v) long pepper in the range of 5 – 10%. A method for preparing the composition comprises of following steps, i) extracting the curcumin and derivatives from plant material with dichloromethane , followed by evaporation in a vacuum to obtain dichloromethane extract; ii) isolating the dichloromethane extract using silica gel chromatography, subsequently eluted from a solvent to obtain curcumin extract; and iii) mixing the curcumin extract with the derivatives, followed by addition of the green tea, extract of soya bean and long pepper to obtain composition.

No. of Pages : 16 No. of Claims : 5

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सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA
पेटेंट कार्यालय
THE PATENT OFFICE

क्रमांक : 0111
SL No :

# पेटेंट प्रमाणपत्र
# PATENT CERTIFICATE
(Rule 74 of The Patents Rules)

| | | |
|---|---|---|
| पेटेंट सं. / Patent No. | : | 415092 |
| आवेदन सं. / Application No. | : | 202011034130 |
| फाइल करने की तारीख / Date of Filing | : | 09/08/2020 |
| पेटेंटी / Patentee | : | 1.Prof.(Dr.) Pankaj Kumar Singh 2.Dr Prashant Singh 3.Dr Vivek Singh 4.Dr. Gaurav Kumar Rastogi et al. et al. et al. et al. |

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित A NOVEL PROCESS FOR PREPARATION OF POLYSACCHARIDE OR ITS DERIVATIVE FROM CASSIA SEEDS नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख अगस्त 2020 के नौवें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled A NOVEL PROCESS FOR PREPARATION OF POLYSACCHARIDE OR ITS DERIVATIVE FROM CASSIA SEEDS as disclosed in the above mentioned application for the term of 20 years from the 9th day of August 2020 in accordance with the provisions of the Patents Act,1970.

THE PATENT OFFICE
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अनुदान की तारीख :
Date of Grant : 21/12/2022

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Duhai, Ghaziabad

Controller of Patent

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, अगस्त 2022 के नौवें दिन को और उसके पश्चात प्रत्येक वर्ष में उसी दिन देय होगी।

Note. - The fees for renewal of this patent, if it is to be maintained will fall / has fallen due on 9th day of August 2022 and on the same in every year thereafter.

German Patent

# Bundesrepublik Deutschland

# Urkunde

über die Eintragung des
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Intelligenter Inhalator für Asthmatiker

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Kumar, Sandeep, Greater Noida, Uttar Pradesh, IN
Rathee, Naveen, Dr., Greater Noida, Uttar Pradesh, IN
Singh, Pankaj Kumar, Dr., Ghaziabad, Uttar Pradesh, IN
Singh, Shilpi, Dr., Ghaziabad, Uttar Pradesh, IN

**Tag der Anmeldung:**
30.09.2022

**Tag der Eintragung:**
14.10.2022

Director
Engineering College
Ghaziabad

Die Präsidentin des Deutschen Patent- und Markenamts

Cornelia Rudloff-Schäffer

Cornelia Rudloff-Schäffer

München, 14.10.2022

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Australian Government

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(4)

# CERTIFICATE OF GRANT

# INNOVATION PATENT

**Patent number:** 2021105625

The Commissioner of Patents has granted the above patent on 17 November 2021, and certifies that the below particulars have been registered in the Register of Patents.

**Name and address of patentee(s):**

R D Engineering College of NH No.58, Delhi - Meerut Expy, Duhai Ghaziabad Uttar Pradesh 201206 India

University of Saskatchewan of Saskatoon Saskatoon Saskatchewan S7N 5E5 Canada

Fortis Escorts Heart Institute of Okhla New Delhi Delhi 110025 India

**Title of invention:**

NOVEL CROP RECOGNITION TECHNIQUES FOR WEED CONTROL OF SELF LIFE OF CROPS AND HUMANS

**Name of inventor(s):**

Singh, Pankaj Kumar; Singh, Ravi Shankar; Bhadoriya, Shailendra S.; Sharma, Shaaswat; Singh, Manoj Kumar; Singh, Sanjeev; Paliwal, Sanjay; Upmanu, Vishal and Sharma, Sanjeev

**Term of Patent:**

Eight years from 17 August 2021

NOTE: This Innovation Patent cannot be enforced unless and until it has been examined by the Commissioner of Patents and a Certificate of Examination has been issued. See sections 120(1A) and 129A of the Patents Act 1990, set out on the reverse of this document.

with Canada university & Fortis Hospital (Escort)

Director
R.D. Engineering College
Duhai, Ghaziabad

Dated this 17th day of November 2021

Commissioner of Patents

PATENTS ACT 1990

Australian Government

IP Australia

# CERTIFICATE OF GRANT

# INNOVATION PATENT

**Patent number:** 2021103856

The Commissioner of Patents has granted the above patent on 25 August 2021, and certifies that the below particulars have been registered in the Register of Patents.

**Name and address of patentee(s):**

Pankaj Kumar Singh of Director-Research, Department of Civil, R D Engineering College Ghaziabad Uttar Pradesh 201206 India

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Ashutosh Singh of Associate Professor, Dept. of Chemistry, K.S. Saket PG College Ayodhya Uttar Pradesh 224001 India

Shilpi Singh of Professor, R D Engineering College Ghaziabad Uttar Pradesh 201206 India

**Title of invention:**

A METHYL Hg CONTAMINATED WASTEWATER TREATMENT

**Name of inventor(s):**

Singh, Pankaj Kumar; Singh, Ravi Shankar; Singh, Sanjeev; Singh, Abhishek; Paliwal, Sanjay; Singh, Ashutosh and Singh, Shilpi

**Term of Patent:**

Eight years from 4 July 2021

NOTE: This Innovation Patent cannot be enforced unless and until it has been examined by the Commissioner of Patents and a Certificate of Examination has been issued. See sections 120(1A) and 129A of the Patents Act 1990, set out on the reverse of this document.

with Canadian Scientist & Govt. Institute Professors.

Director
R.D. Engineering College
Ghaziabad

Dated this 25th day of August 2021

Commissioner of Patents

PATENTS ACT 1990

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# CERTIFICATE OF GRANT

# INNOVATION PATENT

**Patent number:** 2021103643

The Commissioner of Patents has granted the above patent on 4 August 2021, and certifies that the below particulars have been registered in the Register of Patents.

**Name and address of patentee(s):**

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Ganesh Gupta of Associate Professor, Department of CSE, GL Bajaj Institute of Tech. & Management Greater Noida Uttar Pradesh 201306 India

Shivani Joshi of Professor, Department of CSE, GL Bajaj Institute of Tech. & Management Greater Noida Uttar Pradesh 201306 India

**Title of invention:**

A SYSTEM FOR EXCHANGING MEDIA BETWEEN ENTITIES

**Name of inventor(s):**

Singh, Pankaj; Shukla, Abhishek; Mishra, Pradeep; Pandey, Ritesh; Ali, Kunwar Babar; Srivastava, Prabhat Kumar; Upmanu, Vishal; Dwivedi, Avinash; Pippal, Sanjiv Kumar; Gupta, Ganesh and Joshi, Shivani

**Term of Patent:**

Eight years from 26 June 2021

Dated this 4th day of August 2021

Commissioner of Patents

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# CERTIFICATE OF GRANT

# INNOVATION PATENT

**Patent number:** 2021103499

The Commissioner of Patents has granted the above patent on 4 August 2021, and certifies that the below particulars have been registered in the Register of Patents.

**Name and address of patentee(s):**

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D.R. Somashekar of Director -RKGIT, Ghaziabad Ghaziabad Uttar Pradesh 201003 India

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Sanjay Paliwal of Associate Professor, Dept. of Mechanical, Engg., R D Engineering College Ghaziabad Uttar Pradesh 201206 India

Vivek Singh of Asst. Professor Botany, U.P. College Varanasi Uttar Pradesh 221002 India

Shaaswat Sharma of Vice President, R D Engineering College, 20 Newport Parkway, Apt # 603 New Jersey Jersey City, 07310 United States of America

**Title of invention:**

AN AUTOMATED PLANTATION HEALTH MONITORING SYSTEM AND A METHOD THEREOF

**Name of inventor(s):**

Singh, Pankaj; Singh, Ravi; Somashekar, D. R.; Singh, Sanjeev; Gaur, Prerna; Singh, Abhishek; Paliwal, Sanjay; Singh, Vivek and Sharma , Shaaswat

**Term of Patent:**

Eight years from 21 June 2021

NOTE: This Innovation Patent cannot be enforced unless and until it has been examined by the Commissioner of Patents and a Certificate of Examination has been issued. See sections 120(1A) and 129A of the Patents Act 1990, set out on the reverse of this document.

with Canadian Scientist and NSUT college & Govt University Scientist.

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Dated this 4th day of August 2021

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Director
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(19) INDIA
(22) Date of filing of Application :26/04/2021

(21) Application No.202111019114 A
(43) Publication Date : 30/04/2021

(54) Title of the invention : A METHOD FOR TREATMENT OF METHYL HG CONTAMINATED WATER

| | |
|---|---|
| (51) International classification | :C02F0003320000, A61K0035620000, C12N0001120000, C02F0103000000, A01K0067033000 |
| (31) Priority Document No | :NA |
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| (33) Name of priority country | :NA |
| (86) International Application No | :NA |
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| (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 |

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**7)Supriya**

(57) Abstract :
The present disclosure relates to a composition for remediating methyl mercury contaminated water is disclosed. The composition includes an earthworm Eisenia fetida, algae consortia, and an adsorbent. The earthworm can feed on the algae consortia to survive in the water undergoing contamination therethrough. The algae consortium includes red algae, brown algae, and green algae. The treated water has COD in the range of 80-90%. The treated water has BOD>90%.

No. of Pages : 11 No. of Claims : 7

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पेटेंट कार्यालय का एक प्रकाशन
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(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :26/03/2021

(21) Application No.202111013581 A
(43) Publication Date : 02/04/2021

(54) Title of the invention : A MICROBIAL CONSORTIUM FOR TREATMENT OF INDUSTRIAL WASTEWATER AND A METHOD THEREFOR

| | |
|---|---|
| (51) International classification | :C12N0001120000, C02F0003320000, C12N0001200000, C12N0001140000, C12P0039000000 |
| (31) Priority Document No | :NA |
| (32) Priority Date | :NA |
| (33) Name of priority country | :NA |
| (86) International Application No<br>Filing Date | :NA<br>:NA |
| (87) International Publication No | : NA |
| (61) Patent of Addition to Application Number<br>Filing Date | :NA<br>:NA |
| (62) Divisional to Application Number<br>Filing Date | :NA<br>:NA |

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Address of Applicant :R.D Engineering College 8th km milestone from Ghaziabad National Highway(NH) no. 58, Delhi-Meerut Expressway, Duhai Ghaziabad Uttar Pradesh INDIA 201206 Uttar Pradesh India
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**3)Avinash Dwivedi**
**4)Ravi Shankar Singh**
**5)Sanjay Paliwal**
**6)Vrunda Karve**
**7)Rajdev Tiwari**
**8)Reema Kohli**
**9)Jyoti Sharma**
**10)Rashmi singh**
**11)G.L Tiwari**
(72)**Name of Inventor :**
**1)Pankaj Kumar Singh**
**2)Sanjeev Singh**
**3)Avinash Dwivedi**
**4)Ravi Shankar Singh**
**5)Sanjay Paliwal**
**6)Vrunda Karve**
**7)Rajdev Tiwari**
**8)Reema Kohli**
**9)Jyoti Sharma**
**10)Rashmi singh**
**11)G.L Tiwari**

(57) Abstract :
The present disclosure relates to a microbial consortium for treatment of industrial wastewater, and a method therefor. The consortium includes an inoculation of a filamentous fungus, and at least one green microalga deployed into industrial wastewater. The filamentous fungus is Aspergillus niger and the microalgae is Chlorella vuglaris. Spores of each of the consortium are of size in the range of 1.0E5/L to 1.2E9/L. The consortium further includes nanoparticles/nanomaterials, and/or combinations thereof. The consortium is deployed into industrial wastewater in forms selected from a group consisting of a sachet, a powder, a liquid, a spray, fumes, a gas, and so on.

No. of Pages : 20 No. of Claims : 8

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पेटेंट कार्यालय का एक प्रकाशन
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Director
R.D. Engineering College
Duhai, Ghaziabad

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :05/10/2020

(21) Application No.202011043301 A
(43) Publication Date : 23/10/2020

(54) Title of the invention : A COMPUTER NETWORK SYSTEM FOR TRANSFERRING FILE USING NETWORK SOCKETS

| | | |
|---|---|---|
| (51) International classification | :H04L 29/06<br>H04L 29/08<br>H04N 21/4147 | |
| (31) Priority Document No | :NA | |
| (32) Priority Date | :NA | |
| (33) Name of priority country | :NA | |
| (86) International Application No<br>Filing Date | :NA<br>:NA | |
| (87) International Publication No | : NA | |
| (61) Patent of Addition to Application Number<br>Filing Date | :NA<br>:NA | |
| (62) Divisional to Application Number<br>Filing Date | :NA<br>:NA | |

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(57) Abstract :
A system of computer processing devices connected over a computer network, and adapted to transfer file transfer using network sockets. The system includes a first computer receiving device connected to a first input device, which receives a first user input for enabling 5 receiving of one or more files from the first input device, processes the first user input and creates one or more network socket for receiving the one or more files. The system further includes a second computer sending device connected to a second input device, which receives a second user input for enabling sending of one or more files from the second input device, processes the second user input and creates one or more network socket for sending the one or 10 more files. The second computer sending device further receives a file and a socket identification to which the file is to be sent, and the second computer device further processes the file and the socket identification, and generates a byte stream, and further establish connection to a network socket with the socket identification, and thereafter sends the byte stream to the network socket of the first computer receiving device. The first computer 15 receiving device receives and processes the byte stream, and generates the file. The socket is defined as a communication mechanism bound by the socket identification which is combination of IP address of computer processing device on which the socket is created, and a port number.

No. of Pages : 19 No. of Claims : 7

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(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :18/09/2020

(21) Application No.202041040604 A
(43) Publication Date : 02/10/2020

(54) Title of the invention : DECISION SUPPORT SYSTEM FOR ENERGY AND ENVIRONMENT SAVING

(51) International classification :H04L67/125
(31) Priority Document No :NA
(32) Priority Date :NA
(33) Name of priority country :NA
(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

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(72)**Name of Inventor :**
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**2)Dr Sanjeev Singh**
**3)Dr. Avinash Dwivedi**
**4)Dr Ravi Shankar Singh (Ph.D)**
**5)Dr. Neha Sharma**
**6)Shaaswat Sharma**

(57) Abstract :
ABSTRACT: A decision support system for hydrological assessment for a hydrological system of a facility. The system includes a memory unit adapted to store at least a social data, a financial data, a technical data, or an environmental data, or combination thereof, a rule 5 engine adapted to store a set of rules, an input unit adapted to receive a facility input related to a facility for a hydrological assessment is to be carried out, and a processing unit adapted to receive and process the facility input, and to fetch at least the social data, the financial data, the technical data, or the environmental data, or combination thereof based on the set of rules, and to generate a hydrological assessment for the facility. 10 Figure: Fig. 1 is the representative figure.

No. of Pages : 27 No. of Claims : 3

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2 Grant of Indian Patent
1. Fly Ash 2. Die Cast Activated Carbon.

1 Published Patent
= Galactomannan

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PUBLICATION OF THE PATENT OFFICE

Grant of Indian Patent
Grant order attached

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :24/07/2020

(21) Application No.202011031876 A
(43) Publication Date : 28/08/2020

(54) Title of the invention : HIGHLY EFFICIENT ACTIVE CARBON, THE PROCESS FOR PREPARATION AND USES THEREOF

(51) International classification :C13B 20/12
(31) Priority Document No :NA
(32) Priority Date :NA
(33) Name of priority country :NA
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) [illegible]nt of Addition to Application Number :NA
[illegible]ng Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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**3)Shashi Bhushan Suman**
**4)Samshul**
**5)Prof.(Dr.) Pankaj Kumar Singh**
**6)Anjali Singh**
(72)**Name of Inventor :**
**1)Aatif Khan**
**2)Rekha Sharma**
**3)Anjali Singh**
**4)Prof.(Dr.) Pankaj Kumar Singh**
**5)Samshul**
**6)Shashi Bhushan Suman**

(57) Abstract :
The present invention provides highly effeicient active carbon which is obtained 5 from natural resources and landfill composites and the process for preparation thereof. The presen invention further relaes to a method of removing toxic substances from waste water.

No. of Pages : 21 No. of Claims : 10

Director
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Patent Grant order → Patent No.-3

**52BEFORE THE CONTROLLER OF PATENTS PATENT OFFICE, MUMBAI,**

**PATENTS ACT 1970**

**(SECTION 15)**

***In the matter of Patent Act, 1970 and as amended Patent (Amendment) Act 2005 In the matter of Patents Rule, 2003 and as amended Patent (Amendment) Rule 2006***

In the matter of Patent Application No **202011031876**

**ORDER UNDER SECTION. 15**

The applicant's agent appeared for a hearing on 07/04/2022 at 11:30 HRS(IST) for (30 Mins) and the objections were discussed as raised in the hearing Notice. Based on the discussion during the hearing, the applicant's agent was inclined to file the amended claims with hearing submission as soon as possible (within time limit) from the date of hearing which was allowed. The amended claims 01-02 are filed after the hearing.

In view of the amendments and also from the elaborative hearing submissions (oral as well as written), a written submission clearly clarified. Therefore, the present invention is inventive to cited prior arts, therefore Novelty and Inventive steps are acknowledged. All the other requirements raised in the hearing notice, are further submitted & all objections are met. The said objections are therefore rendered moot. The submission as submitted was found to be satisfactory and convincing and therefore accepted.

However, the NBA objection is still outstanding which is raised in FER & SER. Therefore it is mandatory for the applicant to take permission from the NBA (National Biodiversity Authority) as per section 6(1) of the NBA Act.

Having considered all the circumstances, the submission made by the agent for the applicant during the hearing including all the documents on record and also in view of my above findings, and there is no pre-grant opposition filed. I hereby proceed for a grant with respect to the application 202011031876 entitled "HIGHLY EFFICIENT ACTIVE CARBON, THE PROCESS FOR PREPARATION AND USES THEREOF" under The Patents Act 1970. Granted with 01-02 claims (amended claims) as submitted 23/05/2022.

The final set of amended granted claims:

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GEOGRAPHICAL INDICATIONS

We Claim:

1. A process for preparation of activated carbon comprising;

a) Washing of rice husk with water or organic solvent or a mixture thereof,

b) Drying the washed rice husk obtained in step (a),

c) Grinding the dried rice husk obtained in step (b),

d) Sieving the ground rice husk obtained in step (c),

e) Carbonizing the sieved rice husk obtained in step (d),

f) Treating the carbonized rice obtained in step (e) with alkali base and

g) drying the reaction mass at higher temperature in the range of 100-900°C, characterized in that: wherein carbonization is carried out in the temperature range between 300 and 450°C under inert gas atmosphere for 60-120 minutes, and wherein the Activated carbon obtained is having surface area of 80 to1345 $m^2/g$, porosity of 0.007-420 µm and methylene blue adsorption capacity of 190 mg/g.

2. The process according to claim 1, wherein drying is carried out in the temperature range of 650-800°C.

However, the subject matter of the present application is waiting for NBA approval.

Dated this 09-01-2023

(D A NAYAK)

Asst. Controller of Patents & Designs,

Patent Office Mumbai

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

Director
R.D. Engineering College

Grant of Indian Patent
Grant order attached

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :16/07/2020
(21) Application No.202011030466 A
(43) Publication Date : 28/08/2020

(54) Title of the invention : METHOD FOR TREATING WASTEWATER USING FLY ASH AS ADSORBENT

(51) International classification :C04B 33/135
(31) Priority Document No :NA
(32) Priority Date :NA
(33) Name of priority country :NA
(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

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**2)Jyoti Sharma**
**3)Dr Vivek Singh**
**4)Dr Prashant Singh**
**5)Shashi Bhushan Suman**
**6)Sanjay Paliwal**

(57) Abstract :
The present disclosure relates to a cost-effective wastewater treatment method. More specifically the present disclosure focuses on effect of parameters such as combination ratio of fly ash and wood ash, contact time, adsorbent dosage and particle size of adsorbent along with 5 microalgae for treatment of wastewater. The present disclosure focuses on the use of fly ash alone and optionally in combination with microalgae as an effective method for wastewater treatment.

No. of Pages : 25 No. of Claims : 10

Director
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Duhai, Ghaziabad

Grant Order → Patent No:- 2

**PATENT OFFICE DELHI**

**THE PATENTS ACT, 1970**

**Section 15**

In the matter of the Patents Act, 1970 (as amended) and the Patents Rules, 2003 (as amended) In the Matter of Patent Application no. 202011030466 Dated: 16/07/2020

## DECISION

In view of the observation and submissions made by the Ld. Applicant/agent/authority concern and Ld. Examiner view, the raised objections are met and the application complies with the requirements of the Patents Act, 1970 (as amended) except NBA permission. So, I withdraw the said objection and the application is in order of grant amended claims 1-7 filed dated 14/04/2022.

The Application stands disposed off. This is to be noted that the aforesaid observations, and decision thereof, are based solely on the electronically uploaded documents to date.

Dated this 29th day of July 2022

(Dr. Rajiv Kumar Singh)

Assit. Controller of Patents & Designs.

Copy to: Applicant

Director
R.D. Engineering College
Ghaziabad

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :13/07/2020

(21) Application No.202011029806 A

(43) Publication Date : 28/08/2020

(54) Title of the invention : METHOD FOR EXTRACTING GALACTOMANNAN FROM PLANT LEUCAENA LEUCOCEPHALA

| | |
|---|---|
| (51) International classification | :A01N 65/00 |
| (31) Priority Document No | :NA |
| (32) Priority Date | :NA |
| (33) Name of priority country | :NA |
| (86) International Application No<br>Filing Date | :NA<br>:NA |
| (87) International Publication No | : NA |
| (61) Patent of Addition to Application Number<br>Filing Date | :NA<br>:NA |
| (62) Divisional to Application Number<br>Filing Date | :NA<br>:NA |

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**2)Dr Prashant Singh**
**3)Dr Vivek Singh**
**4)Dr. Gaurav Kumar Rastogi**
**5)Dr Ashish Kumar Dwivedi**

(57) Abstract :
The present invention provides a method for extracting a Leucaena leucocephala plant seed extract galactomannan. A method for extracting a Leucaena leucocephala plant seed extract, which includes crushing seeds, followed by extraction with a solvent.

No. of Pages : 22 No. of Claims : 10

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(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :12/12/2019

(21) Application No.201911051419 A

(43) Publication Date : 20/12/2019

(54) Title of the invention : PEST DETECTION AND CONTROL SYSTEM IN SMART FARMING USING IOT

(51) International classification :A01M0001100000,A01M0031000000,A01M0023000000,A01M0007000000,A01M0025000000

(31) Priority Document No :NA

(32) Priority Date :NA

(33) Name of priority country :NA

(86) International Application No :PCT// Filing Date :01/01/1900

(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

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**3)Dr. Vikas Chaudhary**
**4)Dr. Pankaj Singh**

(57) Abstract :
The disclosure relates to an agricultural system, which comprises a plurality of IoT based crop monitoring and pest control system for growing plants in large fields, wherein, the invention discloses a modern agricultural automatic insect and pest monitoring and early warning system based on IoT, sensor devices and cloud computing. The method combines a cloud server, a smart interactive device/phone, and a plurality of sensors and LED trap lamps. The trap lamps consist of rainproof covers, LED lamp bodies, insect and pest receiving devices, and dual-layer dense high-voltage wire network fences; the rainproof covers are arranged above the LED lamp bodies; the insect and rodent capturing devices are arranged below the LED lamp bodies; and the dual-layer dense high-voltage fences are arranged at peripheries of the LED lamp bodies. Furthermore, the monitoring and control of the whole farmland can be processed monitored precisely through devices such as personal computer and smart phones.

No. of Pages : 16 No. of Claims : 6



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