CAMBRIDGE INSTITUTE OF TECHNOLOGY

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K.R. PURAM, BANGALORE – 560 036

Department of Civil Engineering

Sl no	PATENT DETAILS	STATUS	Inventors
1	Australian Innovation Patent Grant: (Patent number 2021101309) "Cost effective water filtration system and treatment method thereof.	Granted	Dr Shankar B.S
2	Australian Innovation Patent Grant: (Patent number 2021101301). "A critical evaluative process for the groundwater stability indices".	Granted	Dr Shankar B.S
3	German Patent Grant: (Patent number 202021106578.8) "A system for extracting activated carbon for biosorption of cadmium ions from aqueous solution".	Granted	Dr Shankar B.S
4	South African Patent Granted: (Patent number 2022 10/459) "A wastewater treatment system using combination of different graded soils".	Granted	Dr Shankar B.S Sreevidya Raman S
5	UK Patent Grant: (Design number 6298500) "Biogas generator from combination of food waste and water".	Granted	Dr Shankar B.S Sreevidya Raman S
6	UK Patent Grant: (Design number 6367812) "Electricity generator from Municipal wastewater using microbial fuel cells	Granted	Dr Shankar B.S Sreevidya Raman S
7	Indian Design Grant: (Design number 417305-001) "Low cost Defluoridation unit for groundwater remediation".	Granted	Dr Shankar B.S Sreevidya Raman S
8	Indian Patent filed & published: (Patent number 202141057152) "A system for treatment of domestic wastewater using Eisenia fetida earthworms".	Filed and published	Dr Shankar B.S Sreevidya Raman S
9	Indian Patent filed & published: (Patent number 202341016799) "Comparative study on the use of plant based (natural) and artificial coagulants for domestic water treatment with special reference to hardness".	Filed and published	Dr Shankar B.S
10	Indian Patent filed & published: (Patent number 202241076032) "Phytoremediation of fluoride from water using Eichhornia Crassipes and Lemnoideae	Filed and published	Dr Shankar B.S
11	Indian Patent filed & published: (Patent number 202141057153) "A system and method for calculating an intensifying degradation of groundwater quality over a period of time".	Filed and published	Dr Shankar B.S Sreevidya Raman S
12	Indian Patent filed & published: (Patent ID: TEMP/E-1/47823/2022-CHE.) "Dewatering of Dredged Sediments and Soils by Thermal Flux Method",	Filed and published	Dr. Channabasavaraj W
13	Indian Patent filed & published: (Patent ID: 202341016801 A)"Sustainability and durability properties of fly ash based geopolymer concrete – a state of art review"	Filed and published	Mr. Vinay Kumar S
13	Indian Patent filed & published: " Mobile device charging system with adaptive solar panel using AI"	Filed and published	Mr. Abhilash R

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JOURNAL PUBLICATIONS (SCOPUS AND SCI INDEXED PUBLICATIONS)

1. **Shankar B.S**. and Usha Arcot. (2021) "An Index Based Quality Evaluation of Groundwater—a Case Study of Whitefield Area in Bangalore, India", International Journal of Environmental Analytical Chemistry, https://doi.org/10.1080/03067319.2021.2002311.
2. **Shankar B.S. and Sreevidya Raman** (2020) "A novel approach for the formulation of Modified Water Quality Index and its application for groundwater quality appraisal and grading", Human and Ecological Risk Assessment: An International Journal (Taylor and Francis); Vol. 26, Issue 10, pp.2812 -2823. DOI:10.1080/10807039.2019.1688638.
3. **Shankar B.S** (2019) "A Critical Assay of Heavy Metal Pollution Index for the Groundwaters of Peenya Industrial Area, Bangalore, India", Springer- Environ Monit Assess 191: 289. https://doi.org/10.1007/s10661-019-7453-9
4. **Shankar B.S**. and Balasubramanya N. (2009) "An appraisal of the groundwater quality status of Bangalore South district, Karnataka, India", Nature Environment and Pollution Technology Journal. Vol.8, No.1,pp.69-76.
5. **Shankar B.S**. (2009) "Chromium pollution in the groundwaters of an industrial area in Bangalore, India". Journal of Environmental Engineering and Science, Vol.26, No.5, pp.305-310
6. . **Shankar B.S.** and Balasubramanya N. (2008) "Groundwater quality degradation due to industrialization- A case study of K.R. Puram Industrial area, Bangalore", Indian journal of Env Protection, Vol. 28, No.7, pp.625-630.
7. Shankar B.S. and Balasubramanya N. (2008) "Evaluation of quality indices for the groundwaters of an industrial area in Bangalore, India", Nature Environment and Pollution Technology Journal. Vol.7, No.4, pp.663-666.
8. **Shankar B.S**., Balasubramanya N. and Maruthesha Reddy M.T. (2008) "Impact of Industrialization on groundwater quality- a case study of Peenya Industrial area, Bangalore, India", Environmental monitoring and assessment, Springer, Vol.142, pp 262-268.
9. **Shankar B.S**. and Latha S. (2008) "Assessment of water quality index for the groundwaters of an industrial area in Bangalore, India", International Journal of Environmental Engineering and Science, Vol.28, No.6, pp 911-915
10. **Shankar B.S**. and Usha H.S. (2007) "Environmental degradation due to Industrialization- a case study of Whitefield industrial area of Bangalore, India", Journal of Environmental Engineering and Science, Vol.24, No.9, pp1348-1352.
11. **Shankar B.S**. and Balasubramanya N. (2008) "Hydrochemical assessment of the current status of pollutants in the groundwaters of V valley", Journal of Environmental Science and Engineering (NEERI), Vol.50, No.2, pp 97-102.

12. Wollur C, HN S, EK R and P S (2024) "Utilisation of reservoir sediments for engineering applications". Proceedings of the Institution of Civil Engineers – Waste and Resource Management, https://doi.org/10.1680/jwarm.23.00013.
13. Dr. H N Sowmya, Channabasavaraj Wollur*, Dr. G P Shivashankara, Dr. H K Ramaraju (2024) "The influence of Meteorological Parameters and ventilation coefficient on surface ozone and particulate matters" MOUSUM Journal Scopus Indexd Q3 Journal. DOI: https://doi.org/10.54302/mausam.v75i1.6080
14. Dr. H N Sowmya, Channabasavaraj Wollur*, Dr. G P Shivashankara, Dr. H K Ramaraju (2024) "The influence of Meteorological Parameters and ventilation coefficient on surface ozone and particulate matters" MOUSUM Journal Scopus Indexd Q3 Journal. DOI: https://doi.org/10.54302/mausam.v75i1.6080.
15. Channabasavaraj W, Dr. P. Shivananda, Dr.S.Harinath, Muhammed Zain Kangda, (2023) "Measurement of Heat flow through the Sediments mass by Thermal Flux Method". Innovative Infrastructure Journal. Scopus Indexd Q2 Journal.https://doi.org/10.1007/s41062-022-00965-y.
16. Channabasavaraj W, Murthy C V, Dr. P. Shivananda, Dr.S.Harinath (2021) " A case study on Air-cooled blast furnace slag blended with black cotton soil for sustainable engineering applications" GIS Science journal Volume.8 Issue.1 PP.53- 67. Scopus indexed journal.
17. Channabasavaraj W, Dr. P.Shivananda, Dr.S.Harinath (2020) "Characterization of Dredged sediments from JNPT port Mumbai, India" International Journal of Advanced Research in Engineering and Technology (IJARET), Volume.11 Issue 12 PP.512-522. Scopus Indexed Journal Indexd Q3 Journal. DOI:10.34218/IJARET.11.12.2020.055
18. Suchith D Gumaste, Kannan R Iyer, Susmitha sharma, Channabasavaraj W, D.N Singh in "Applied Clay Science" (2014) titled "Simulation of fabric in sedimented clays", Volume 91–92, April 2014, Pages 117-126. SCI Journal. http://dx.doi.org/10.1016/j.clay.2014.01.011.

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INTELLECTUAL PROPERTY INDIA

ORIGINAL
क्रम सं/Serial No. : 176245

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.	:	417305-001
तारीख / Date	:	17/05/2024
पारस्परिकता तारीख / Reciprocity Date*	:	
देश / Country	:	

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो *LOW COST DEFLUORIDATION UNIT FOR GROUNDWATER REMEDIATION* से संबंधित है, का पंजीकरण, श्रेणी 23-01 में 1.Dr.Shankar, 2. Mrs.Sreevidya Raman, 3.Dr.Gayathri Narayana Rao, 4.Dr.Mahadeva Raju, 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 23-01 in respect of the application of such design to *LOW COST DEFLUORIDATION UNIT FOR GROUNDWATER REMEDIATION* in the name of 1.Dr.Shankar, 2. Mrs.Sreevidya Raman, 3.Dr.Gayathri Narayana Rao, 4.Dr.Mahadeva Raju,.

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.

जारी करने की तिथि :
Date of Issue : 25/07/2024

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

*पारस्परिकता तारीख (यदि कोई हो) जिसकी अनुमति दी गई है तथा देश का नाम। 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 हो सकता है।

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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Australian Government

IP Australia

CERTIFICATE OF GRANT

INNOVATION PATENT

Patent number: 2021101309

The Commissioner of Patents has granted the above patent on 21 April 2021, and certifies that the below particulars have been registered in the Register of Patents.

Name and address of patentee(s):

Dr. SHANKAR B.S ,PROFESSOR IN CIVIL ENGINEERING, 876, 18th main, 38th cross, 4th T Block, Jayanagar, Bangalore Karnataka 56004 India

Dr.GAYATHRI H.N , Professor In Chemistry, Oxford College Of Engineering, Bangalore Karnataka India

Dr.LATHA SANJEEV, Associate Professor in Civil Engineering, # 204, 8th Main, NGEF Layout,Sadanand Nagar Bangalore Karnataka 560038 India

Title of invention:

COST EFFECTIVE WATER FILTRATION SYSTEM AND TREATMENT METHOD THEREOF

Name of inventor(s):

B. S., SHANKAR; H. N., GAYATHRI and SANJEEV, LATHA

Term of Patent:

Eight years from 12 March 2021

COMMONWEALTH OF AUSTRALIA AUSTRALIA PATENT OFFICE

Dated this 21st day of April 2021

Commissioner of Patents

PATENTS ACT 1990

The Australian Patents Register is the official record and should be referred to for the full details pertaining to this IP Right.

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Australian Government
IP Australia

CERTIFICATE OF GRANT
INNOVATION PATENT

Patent number: 2021101301

The Commissioner of Patents has granted the above patent on 21 April 2021, and certifies that the below particulars have been registered in the Register of Patents.

Name and address of patentee(s):

Dr. SHANKAR B.S of PROFESSOR IN CIVIL ENGINEERING, 876, 18th main, 38th cross, 4th T Block, Jayanagar Bangalore Karnataka 56004 India

Dr. LATHA SANJEEV of ASSOCIATE PROFESSOR IN CIVIL ENGINEERING, # 204, 8th Main, NGEF Layout, Sadanand Nagar Bangalore Karnataka 560038 India

Dr.GAYATHRI H.N of Professor In Chemistry, Oxford College Of Engineering, Bangalore Karnataka India

Title of invention:

A CRITICAL EVALUATIVE PROCESS FOR THE GROUNDWATER STABILITY INDICES

Name of inventor(s):

B.S, SHANKAR; SANJEEV, LATHA and H.N, GAYATHRI

Term of Patent:

Eight years from 12 March 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.

COMMONWEALTH OF AUSTRALIA
AUSTRALIA
PATENT OFFICE

Dated this 21st day of April 2021

Commissioner of Patents

PATENTS ACT 1990

The Australian Patents Register is the official record and should be referred to for the full details pertaining to this IP Right.

Bundesrepublik Deutschland

Urkunde

über die Eintragung des
Gebrauchsmusters Nr. 20 2021 106 578

Bezeichnung:
Ein System zur Extraktion von Aktivkohle für die Biosorption von Cadmium-Ionen aus wässriger Lösung

IPC:
C01B 32/312

Inhaber/Inhaberin:
Bangalore, Shankar, Dr., Bengaluru, IN
Cambridge Institute of Technology, Bengaluru, Karnataka, IN
Gayathri, Narayana Rao, Dr., Bengaluru, Karnataka, IN
Mahadeva, Raju, Bengaluru, Karnataka, IN

Tag der Anmeldung:
02.12.2021

Tag der Eintragung:
12.01.2022

Die Präsidentin des Deutschen Patent- und Markenamts

Cornelia Rudloff-Schäffer

München, 12.01.2022

Die Voraussetzungen der Schutzfähigkeit werden bei der Eintragung eines Gebrauchsmusters nicht geprüft.
Den aktuellen Rechtsstand und Schutzumfang entnehmen Sie bitte dem DPMAregister unter www.dpma.de.

(12) PATENT APPLICATION PUBLICATION
(21) Application No.202141057152 A
(19) INDIA
(22) Date of filing of Application :08/12/2021
(43) Publication Date : 21/01/2022

(54) Title of the invention : A SYSTEM FOR TREATMENT OF DOMESTIC WASTEWATER USING EISENIA FETIDA EARTHWORMS

(51) International classification :C02F0003040000, C02F0001280000, A01K0067033000, B32B0027300000, B01D0024200000
(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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2)Sreevidya Raman. S
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(57) Abstract :
The system comprises an upper chamber for storing a vermifilter bed, wherein the vermifilter bed comprises a topmost layer consist of bedding materials having a plurality of earthworms, a middle layer of a sand, a bottom layer consist of a fine gravel and a coarse gravel; a metal mesh coupled beneath the upper chamber supported by a plurality of pillars for allowing only water to trickle down; a PVC drum kept on an elevated platform connected for releasing wastewater, wherein the PVC drums comprises a tap at a bottom to which an irrigation system consisted of an irrigation pipe with holes for trickling water that allowed uniform distribution of wastewater on a soil surface of the upper surface; and a lower chamber for collecting filtered water from the wastewater percolated down through various layers in the vermifilter bed passing through the soil layer inhabited by earthworms.

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

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :08/12/2021

(21) Application No.202141057153 A
(43) Publication Date : 21/01/2022

(54) Title of the invention : A SYSTEM AND METHOD FOR CALCULATING AN INTENSIFYING DEGRADATION OF GROUNDWATER QUALITY OVER A PERIOD OF TIME

(51) International classification :G01N0033180000, E21B0049080000, C02F0103060000, A61B0005020500, A61B0005024000
(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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2)Sreevidya Raman. S
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2)Sreevidya Raman. S
Address of Applicant :Assistant Professor, Department of Civil Engineering, Cambridge Institute of Technology, Jai Bhuvaneshwari Layout Rd, SR Layout, Chikkabasavanapura, Krishnarajapura, Bengaluru, Karnataka 560036, India. ---------- ----------

(57) Abstract :
The present invention generally relates to a system for calculating an intensifying degradation of groundwater quality over a period of time comprises a plurality of two-liter polyvinyl chloride (PVC) containers for collecting a plurality of groundwater samples from a bore well and an open well thereby sealing tightly; an analysis unit for analyzing a set of physico-chemical parameters of the plurality of groundwater samples and computing water quality indices to communicate information on the quality of water to the concerned citizens and the policy makers; and a control unit for generating a rating of the groundwater in one of a consumption quality selected from a excellent, good, poor, very poor and unfit for consumption.

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

REPUBLIC OF SOUTH AFRICA

REPUBLIEK VAN SUID AFRIKA

PATENTS ACT, 1978

CERTIFICATE

In accordance with section 44 (1) of the Patents Act, No. 57 of 1978, it is hereby certified that:

DR. SHANKAR B.S; DR. GAYATHRI H.N; SREEVIDYA RAMAN; MAHADEVA RAJU

Has been granted a patent in respect of an invention described and claimed in complete specification deposited at the Patent Office under the number

2022/10459

A copy of the complete specification is annexed, together with the relevant Form P2.

In testimony thereof, the seal of the Patent Office has been affixed at Pretoria with effect from the 21st day of **December 2022**

Registrar of Patents

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :27/12/2022

(21) Application No.202241076032 A
(43) Publication Date : 13/01/2023

(54) Title of the invention : PHYTOREMEDIATION OF FLUROIDE FROM WATER USING EICHHORNIACRASSIPES AND LEMNOIDEAE

(51) International classification :B09C0001100000, A61Q0011000000, A61P0001020000, A61K0033420000, C02F0003320000
(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

(71)**Name of Applicant :**
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2)SIDDU BASAGOND
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4)SINTHIYA R
Address of Applicant :Cambridge Institute of Technology, Bengaluru KR Puram, Bengaluru Bengaluru ---------- ----------
5)TIJI M
Address of Applicant :Cambridge Institute of Technology, Bengaluru KR Puram, Bengaluru Bengaluru ---------- ----------

(57) Abstract :
The presence of fluoride in groundwater, in concentrations beyond the stipulated limits lead to a number of serious health disorders. While fluorides less than 1mg/l might cause dental caries or tooth decay, in concentrations beyond 1.5mg/l, they are known to cause more severe threats such as dental fluorosis, skeletal fluorosis and non- skeletal fluorosis. Recently researchers have expressed that consumption of excess of fluoride water by human beings could cause hypothyroidism, Osteosclerosis, kidney changes, retardation and gastrointestinal problems.Conventional techniques to reduce the concentration of these parameters are found to be extremely cost-prohibitive and also found to have several limitations. It is in this connection that phytoremediation emerges as an accessible, economical and environmentally friendly and aesthetically pleasing treatment for the removal of the said parameters from water. This research aims to study the phytoremediation potential of Eichhornia crassipes, a water hyacinth which profusely grows in natural water bodies for treating water contaminated with fluoride. Eichhornia crassipes is a promising candidate with excellent phytoextraction properties for the removal of fluoride from contaminated waters. The phytoremediator experimental set up that shall be fabricated would be simple and extremely economical for treating water at a community level.

No. of Pages : 23 No. of Claims : 11

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :14/03/2023

(21) Application No.202341016799 A
(43) Publication Date : 24/03/2023

(54) Title of the invention : Comaparitive study on the use of plant based(natural) and artificial coagulants for domestic water treatment with special reference to hardness

(51) International classification :C02F 014400, C02F 015200, C02F 090000, G01N 213100, G01N 218400
(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

(71)**Name of Applicant :**
1)Cambridge Institute of Technology
Address of Applicant :Cambridge Institute of Technology, Bengaluru KR Puram, Bengaluru - 560036 Bengaluru ---------- ----------
Name of Applicant : NA
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(72)**Name of Inventor :**
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2)Lakshmi G Prasad
Address of Applicant :Civil Dept,Cambridge Institute of Technology, Bengaluru KR Puram, Bengaluru - 560036 Bengaluru ---------- ----------
3)Mohammed Bilal
Address of Applicant :Civil Dept, Cambridge Institute of Technology, Bengaluru KR Puram, Bengaluru - 560036 Bengaluru ---------- ----------
4)Arun Kumar N
Address of Applicant :Civil Dept, Cambridge Institute of Technology, Bengaluru KR Puram, Bengaluru - 560036 Bengaluru ---------- ----------
5)DR. Shankar B S
Address of Applicant :Civil Dept, Cambridge Institute of Technology, Bengaluru KR Puram, Bengaluru - 560036 Bengaluru ---------- ----------

(57) Abstract :
It is absolutely essential to remove hardness in drinking water, as it causes various health issues such as diabetes, reproductive failures, neural diseases and so on.Coagulation and flocculation by adding chemicals are the methods that are usually used for water treatment. But these are difficult and also expensive. So, there is an increased demand for some innovative, low maintenance and energy efficient technology for water/wastewater treatment. This study is concerned with the coagulation activity of extracts of various plant-based coagulants. The aim is to ascertain the potential of plant-based coagulants in the influence of coagulation activity with respect to hardness removal/softening. The objective of this study also aim to assess the possibility of using natural coagulants as an alternative to the current commercial synthetic coagulant such as alum (aluminium sulphate), to compare the performance and to optimize the coagulation process.

No. of Pages : 10 No. of Claims : 6

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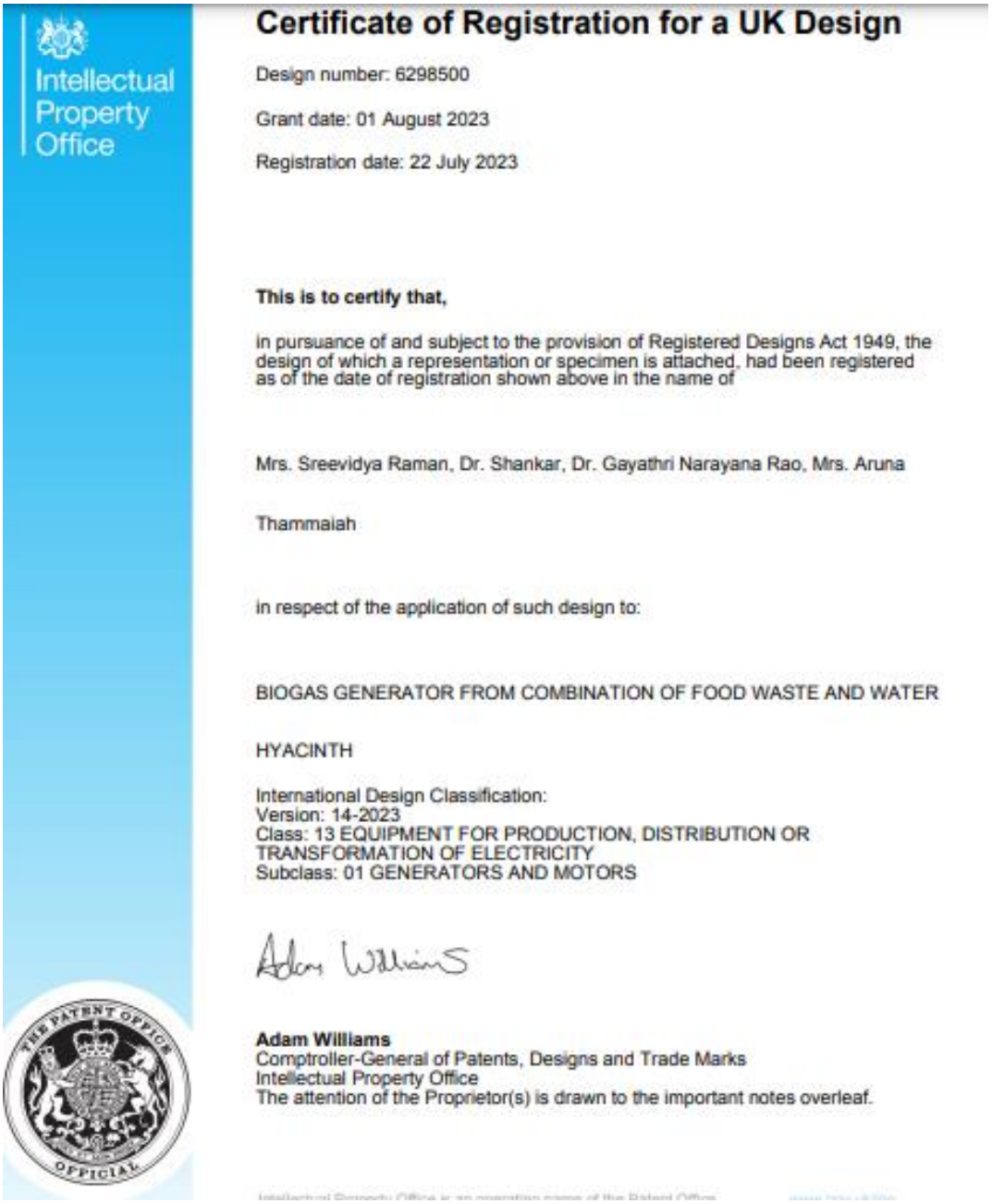

Intellectual Property Office

Certificate of Registration for a UK Design

Design number: 6298500

Grant date: 01 August 2023

Registration date: 22 July 2023

This is to certify that,

in pursuance of and subject to the provision of Registered Designs Act 1949, the design of which a representation or specimen is attached, had been registered as of the date of registration shown above in the name of

Mrs. Sreevidya Raman, Dr. Shankar, Dr. Gayathri Narayana Rao, Mrs. Aruna Thammaiah

in respect of the application of such design to:

BIOGAS GENERATOR FROM COMBINATION OF FOOD WASTE AND WATER HYACINTH

International Design Classification:
Version: 14-2023
Class: 13 EQUIPMENT FOR PRODUCTION, DISTRIBUTION OR TRANSFORMATION OF ELECTRICITY
Subclass: 01 GENERATORS AND MOTORS

Adam Williams

Adam Williams
Comptroller-General of Patents, Designs and Trade Marks
Intellectual Property Office
The attention of the Proprietor(s) is drawn to the important notes overleaf.

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BE, ME, Ph.D, MIE, MISTE, MWRS
Professor and Head
Department of Civil Engineering
Gopalan College of Engineering
Bangalore, Karnataka

For the work with following details:

Publication Type: Journal
Paper Title: A Novel Approach for the Formulation of Modified Water Quality Index and Its Application for Ground Water Quality Appraisal and Grading
Journal Name: Human and Ecological Risk Assessment: An International Journal (Taylor and Francis)
Volume: 26
Issue No.: 10
Month of Publication: February, Year: 2020
Page No.: 2812-2823
ISSN: 1549-7860 (Online)

Nanjesh Bennur
Director, InSc

CAMBRIDGE INSTITUTE OF TECHNOLOGY

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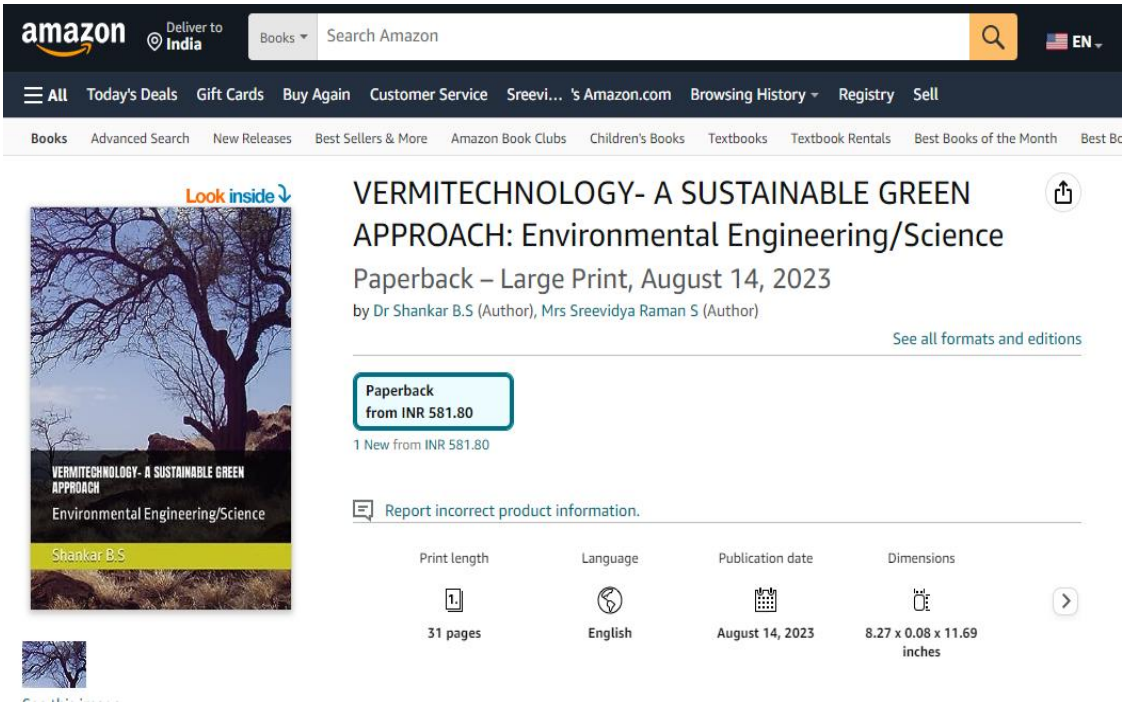
BOOK /BOOK CHAPTER PUBLICATION

BOOKS PUBLISHED

1. Vermitechnology- a sustainable green approach: August 2023: Amazon Asia-Pacific Holdings Private Limited:



2. Disinfection of Public water supplies using chloramines: April 2024: Amazon Asia-Pacific Holdings Private Limited

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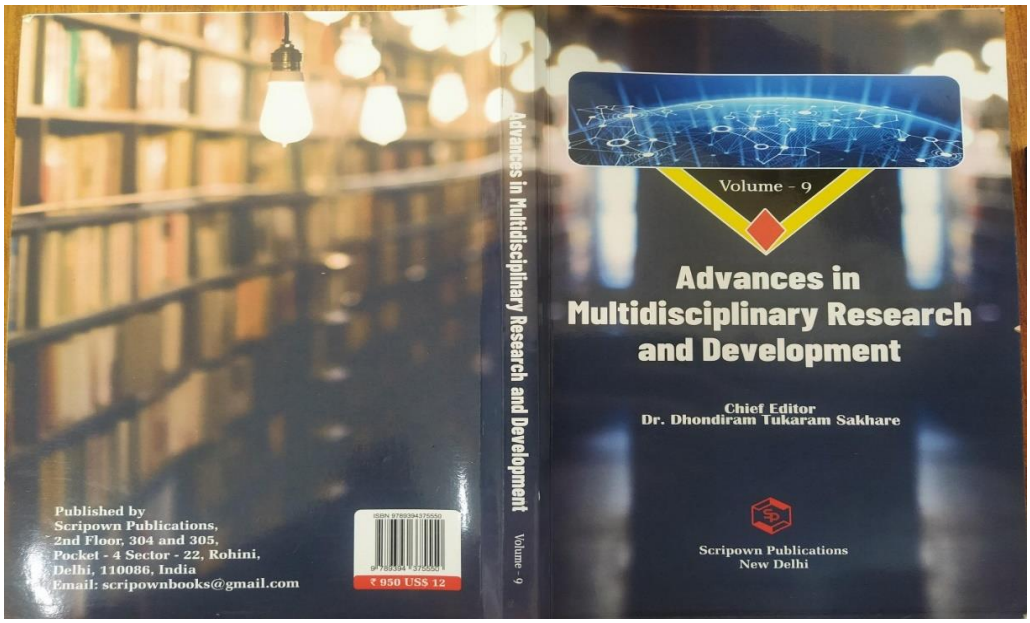
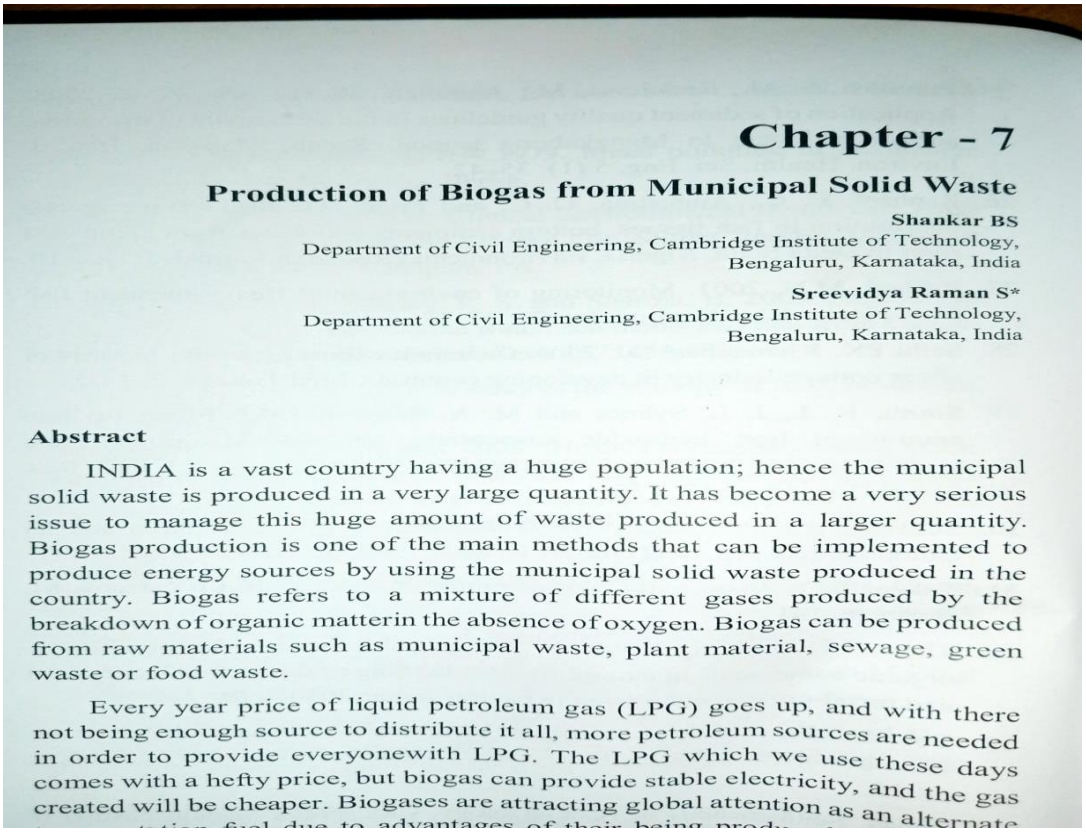
BOOK CHAPTER PUBLICATION

1. "Production of Biogas from Municipal Solid Waste" - *Advances in Multidisciplinary Research and Development* (Volume - 9), Page no 78- 98.





Chapter - 7

Production of Biogas from Municipal Solid Waste

Shankar BS
Department of Civil Engineering, Cambridge Institute of Technology, Bengaluru, Karnataka, India

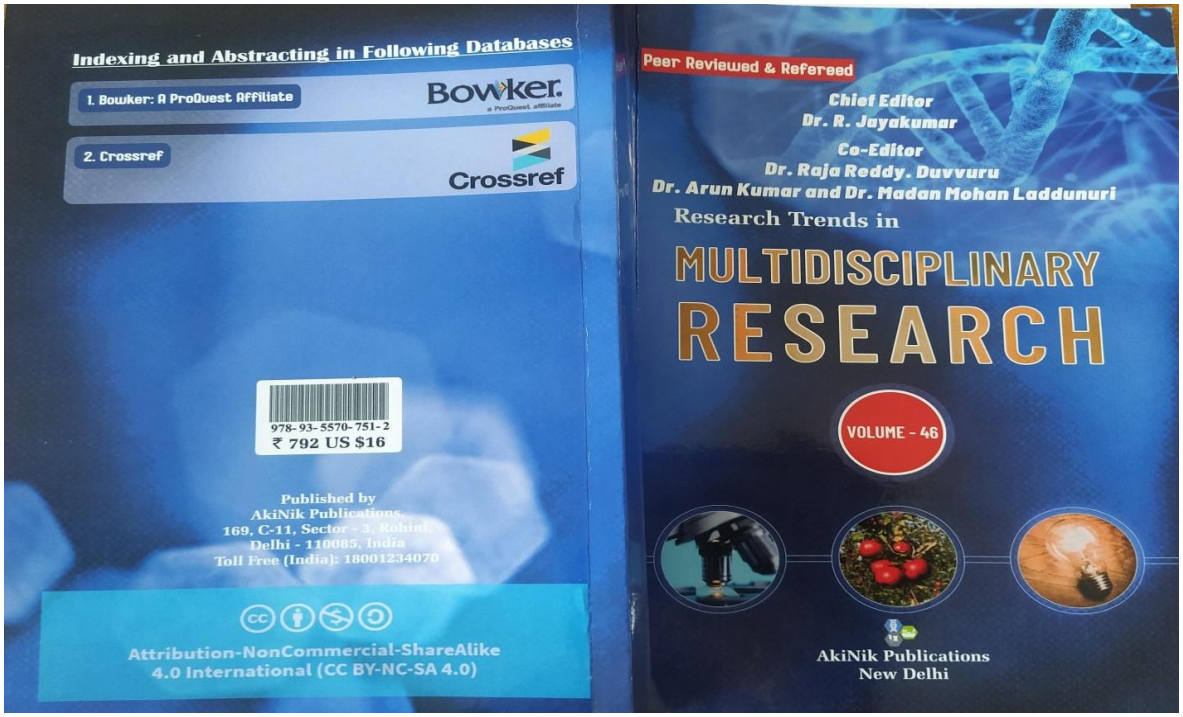
Sreevidya Raman S*
Department of Civil Engineering, Cambridge Institute of Technology, Bengaluru, Karnataka, India

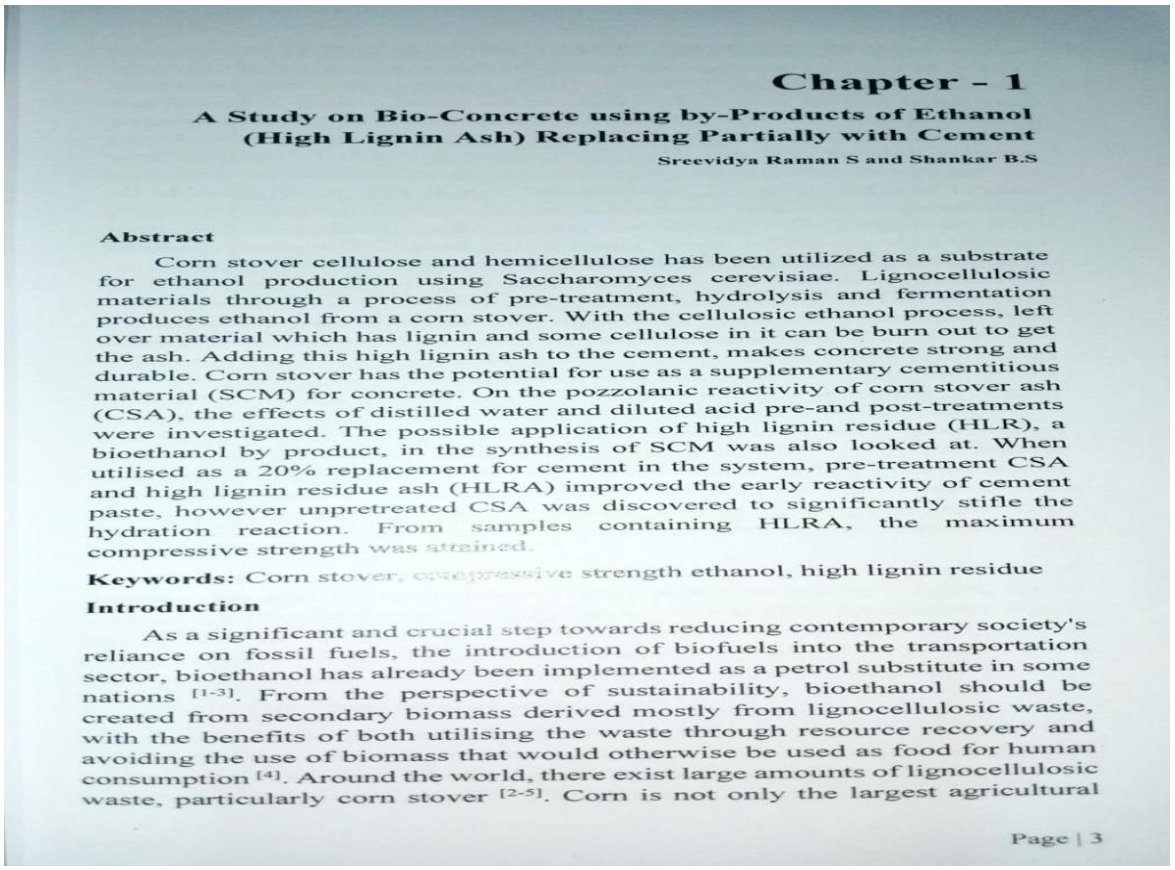
Abstract

INDIA is a vast country having a huge population; hence the municipal solid waste is produced in a very large quantity. It has become a very serious issue to manage this huge amount of waste produced in a larger quantity. Biogas production is one of the main methods that can be implemented to produce energy sources by using the municipal solid waste produced in the country. Biogas refers to a mixture of different gases produced by the breakdown of organic matterin the absence of oxygen. Biogas can be produced from raw materials such as municipal waste, plant material, sewage, green waste or food waste.

Every year price of liquid petroleum gas (LPG) goes up, and with there not being enough source to distribute it all, more petroleum sources are needed in order to provide everyonewith LPG. The LPG which we use these days comes with a hefty price, but biogas can provide stable electricity, and the gas created will be cheaper. Biogases are attracting global attention as an alternate

2. "A study on Bio-concrete using products of Ethanol (High lignin ash) replacing partially with Cement"- *Recent trends in Multidisciplinary research* (Volume - 46), Page no 01- 12.





Chapter - 1

A Study on Bio-Concrete using by-Products of Ethanol (High Lignin Ash) Replacing Partially with Cement

Sreevidya Raman S and Shankar B.S

Abstract

Corn stover cellulose and hemicellulose has been utilized as a substrate for ethanol production using Saccharomyces cerevisiae. Lignocellulosic materials through a process of pre-treatment, hydrolysis and fermentation produces ethanol from a corn stover. With the cellulosic ethanol process, left over material which has lignin and some cellulose in it can be burn out to get the ash. Adding this high lignin ash to the cement, makes concrete strong and durable. Corn stover has the potential for use as a supplementary cementitious material (SCM) for concrete. On the pozzolanic reactivity of corn stover ash (CSA), the effects of distilled water and diluted acid pre-and post-treatments were investigated. The possible application of high lignin residue (HLR), a bioethanol by product, in the synthesis of SCM was also looked at. When utilised as a 20% replacement for cement in the system, pre-treatment CSA and high lignin residue ash (HLRA) improved the early reactivity of cement paste, however unpretreated CSA was discovered to significantly stifle the hydration reaction. From samples containing HLRA, the maximum compressive strength was attained.

Keywords: Corn stover, compressive strength ethanol, high lignin residue

Introduction

As a significant and crucial step towards reducing contemporary society's reliance on fossil fuels, the introduction of biofuels into the transportation sector, bioethanol has already been implemented as a petrol substitute in some nations [1-3]. From the perspective of sustainability, bioethanol should be created from secondary biomass derived mostly from lignocellulosic waste, with the benefits of both utilising the waste through resource recovery and avoiding the use of biomass that would otherwise be used as food for human consumption [4]. Around the world, there exist large amounts of lignocellulosic waste, particularly corn stover [2-5]. Corn is not only the largest agricultural

Page | 3

3. “Sustainable Water Purification Using Mango seeds: A Natural Alternative to Traditional Coagulants” - Environment & Sustainable Development @ 2025, ISBN: 978-93-49076-02-0, Page no 159- 172.

4. “An Investigation into Dewatering Municipal Sludge Using Filter Press and Geotextile Tube Techniques” - Environment & Sustainable Development @ 2025, ISBN: 978-93-49076-02-0 Page no 8-17.

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Chapter-2
An Investigation into Dewatering Municipal Sludge Using Filter Press and Geotextile Tube Techniques

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Professor & Head
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Introduction
General
The global production of sewage sludge has risen significantly due to the rapid increase in population worldwide. Both industrial and domestic activities generate substantial amounts of residual sludge, making solids management a critical component of wastewater treatment. In fact, the costs associated with processing and handling sludge are comparable to those of wastewater purification. Common sludge disposal methods include landfilling, incineration, land application, and alternative uses, all of which require the sludge to be as dry as possible. Therefore, achieving maximum dewatering is crucial for economic and environmental efficiency. Sludge undergoes various processes such as stabilization, thickening, dewatering, incineration, and transportation before its final disposal or reuse. Effective management of these waste materials is a significant environmental concern. Sludge, a mixture of microbial, organic, and inorganic matter, is generated as a byproduct of treating water and

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Chapter-15

Sustainable Water Purification Using Mango seeds: A Natural Alternative to Traditional Coagulants

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ABSTRACT:

Excess total dissolved solids (TDS) in water are a matter of concern and must be addressed due to its association with various health problems, including diabetes, kidney stones, gastrointestinal disorders, and so on. Common water treatment methods, such as distillation, ion exchange, and reverse osmosis, are often complex and costly. Consequently, there is a growing need for innovative, low-maintenance, and energy-efficient technologies for water and wastewater treatment.

This study focuses on the coagulation properties of plant-based extracts, aiming to evaluate their effectiveness in TDS removal. It also explores the potential of natural coagulants as sustainable alternatives to conventional synthetic coagulants like alum (aluminium sulphate). The research compares the performance of Mangifera indica (mango) extract with alum and investigates the optimization of the coagulation

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Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

swayam

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Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras

(Jul-Oct 2024)

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This is certified that VINAY KUMAR S, Assistant Professor of Cambridge Institute of Technology participated & completed successfully AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Sustainable Construction Technology" from 2021-07-26 to 2021-07-30 at Indian Institute of Technology Indore.

Adviser-I, ATAL Academy

Coordinator

No: ATAL/2021/1627702111

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Advisor-I, ATAL Academy
Mamta Rani Agarwal

Coordinator

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Adviser-I, ATAL Academy

Coordinator

INTACH
Bengaluru Chapter

B.M.S. College of Engineering

ACCE, India
Bengaluru Centre

Supporting Partner:

HELIFIX

Supporting Partner:

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constructive solutions

Certificate Of Participation

This is to certify that

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participated in a three - day workshop on

Sustainable materials and Technologies for Heritage and Traditional Buildings

organised by

BMS College of Engineering

and

Indian National Trust for Art and Cultural Heritage, Bengaluru Chapter

in association with ACCE (India), Bengaluru Centre

conducted from 21st to 23rd December 2023 at BMS College of Engineering, Bengaluru

Dr Meera Iyer	Dr H B Nagaraj	Er.Nagesh Puttaswamy
Convenor, INTACH, Bengaluru Chapter	HOD, Civil Engineering Department BMS College of Engineering	Chairman, ACCE(I), Bengaluru Centre

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ARUNA T

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NPTEL Coordinator
IIT Madras

(Jul-Oct 2024)

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ARUNA T

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Foundation Engineering

with a consolidated score of **50** %

Online Assignments	15.94/25	Proctored Exam	34.5/75

Total number of candidates certified in this course: **154**

Jul-Oct 2022
(12 week course)

Prof. Debjani Chakraborty
Coordinator, NPTEL
IIT Kharagpur

Indian Institute of Technology Kharagpur

Roll No: NPTEL22CE67544750551 To validate the certificate No. of credits recommended: 3 or 4

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Sonali Kadam
Associate Professor Level (AICTE Institute), Coordinator
BHARATI VIDYAPEETH 'S COLLEGE OF ENGINEERING FOR WOMEN

Dr. Sunil Luthra
Director & Bureau Head
Training and Learning Bureau, AICTE

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Bandita naik
Associate Professor Level (AICTE Institute), Coordinator
METHODIST COLLEGE OF ENGINEERING & TECHNOLOGY

Dr. Sunil Luthra
Director & Bureau Head
Training and Learning Bureau, AICTE

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Hasim Ali Khan
Assistant Professor Level (AICTE Institute), Coordinator
ADAMAS UNIVERSITY TECHNICAL CAMPUS

Dr. Sunil Luthra
Director & Bureau Head
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SUSHMA T V
Assistant Professor Level (AICTE Institute), Coordinator
CMR Institute of Technology

Dr. Sunil Luthra
Director & Bureau Head
Training and Learning Bureau, AICTE

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Madhu Singh
Associate Professor (Other Institute), Coordinator
NIT Jamshedpur

Dr. Sunil Luthra
Director & Bureau Head
Training and Learning Bureau, AICTE

STUDENT ACHIEVEMENTS

STUDENT CERTIFICATIONS

Sl No	Name of the Student	Certification
1	Shakir Ali Malik	NPTEL certification-Geotechnical Engineering-II
		Microsoft certified: Azure AI Fundamentals
		NPTEL certification-Geotechnical Engineering-I
2	Rakshankitha. H	NPTEL certification- Fluid Mechanics
3	Aaqib Reyaz	Microsoft certified: Azure AI Fundamentals
		Auto CADD and Revit Arc
4	Sushmitha.T	Microsoft certified: Azure AI Fundamentals
5	Suchitrahas	Microsoft certified: Azure AI Fundamentals

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for successfully completing the course

Fluid Mechanics

with a consolidated score of **46** %

Online Assignments	15.63/25	Proctored Exam	30/75

Total number of candidates certified in this course: **88**

Jul-Oct 2023

(12 week course)

Prof. T. V. Bharat
Head, Centre for Educational Technology
NPTEL Coordinator, IIT Guwahati

Indian Institute of Technology Guwahati

Roll No: NPTEL23CE65S532301798 To verify the certificate No. of credits recommended: 3 or 4

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Course of 3 Credits on 2024-07-23

from **VTU – Centre for Online Education.**

Registrar (Evaluation)

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