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**3.4.3**

**Patents Published/Awarded During the Last Five  
Years (2017-18 to 2021-2022)**

**Supporting Documents**

(12) PATENT APPLICATION PUBLICATION

(21) Application No.201711043061 A

(19) INDIA

(22) Date of filing of Application :30/11/2017

(43) Publication Date : 22/12/2017

(54) Title of the invention : A POWER GENERATING SYSTEM FOR GENERATING ELECTRICITY FROM A SEWERAGE WATER FLOW UNIT

(51) International classification	:F03B13/00	(71)Name of Applicant :
(31) Priority Document No	:NA	1)PAUL, Yogesh
(32) Priority Date	:NA	Address of Applicant :64, 65; Ram Nagar, Kansapur Road,
(33) Name of priority country	:NA	Yamunanagar, Haryana-135001 INDIA Haryana India
(86) International Application No	:NA	2)GARG, Vijay Kumar
Filing Date	:NA	3)KUMAR, Vineet
(87) International Publication No	: NA	(72)Name of Inventor :
(61) Patent of Addition to Application Number	:NA	1)KUMAR, Vineet
Filing Date	:NA	2)GARG, Vijay Kumar
(62) Divisional to Application Number	:NA	3)PAUL, Yogesh
Filing Date	:NA	

(57) Abstract :

A power generating system for generating electricity from a sewerage water flow unit is disclosed in the present invention. The system includes a main flow channel having an upper end portion, a lower end portion and a middle portion configured therebetween. Wherein, the middle portion includes a funnel part configured thereinside and the said funnel system is adapted to increase the kinetic energy of the sewerage water flow. Further, the present power generating system also includes a vertical axis turbine configured on the said middle portion of the main flow channel. Further, the present power generating system also includes a water flow management turbine at an optimum speed to generate electricity. Fig.1

No. of Pages : 27 No. of Claims : 10



Director (UIET)  
Kurukshetra University  
KURUKSHETRA-136119

(12) PATENT APPLICATION PUBLICATION

(21) Application No.201811005031 A

(19) INDIA

(22) Date of filing of Application :09/02/2018

(43) Publication Date : 23/02/2018

(54) Title of the invention : A HYDROELECTRIC TURBINE SYSTEM

(51) International classification	:F03B15/14	<b>(71)Name of Applicant :</b> <b>1)KUMAR, Vineet</b> Address of Applicant :Electrical Engineering Department, UIET, Kurukshetra University, Kurukshetra, Haryana-136119 INDIA Haryana India <b>2)GARG, Vijay Kumar</b> <b>(72)Name of Inventor :</b> <b>1)KUMAR, Vineet</b> <b>2)GARG, Vijay Kumar</b>
(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	

(57) Abstract :

A hydroelectric turbine system having water channelizing unit and a circular rotor to be rotated on its axis via a uniform water flow from the said water channelizing unit. The said circular rotor includes a circular base and a plurality of cup-shaped blades. The said water channelizing unit includes a main water flow path and a plurality of nozzles, wherein, the said plurality of nozzles are adapted for controlling the flow of water in a predefined flow path. Further, the said circular rotor includes a circular base and a plurality of cup-shaped blades configured thereof. The said circular rotor is horizontally placed below the said plurality of nozzles, wherein each of the said plurality of nozzles provide a uniform water flow to circularly push each of the plurality of cup-shaped blades.

No. of Pages : 23 No. of Claims : 8



Director (UIET)  
 Kurukshetra University  
 KURUKSHETRA-136119

(12) PATENT APPLICATION PUBLICATION

(21) Application No.201911014514 A

(19) INDIA

(22) Date of filing of Application :10/04/2019

(43) Publication Date : 16/10/2020

(54) Title of the invention : MULTI-SCREEN PORTABLE DEVICE FOR DISPLAY

(51) International classification	:G06F0001160000, H04M0001020000, G06F0003048200, G09G0003200000, A61B0005049200	(71)Name of Applicant : <b>1)National Institute of Technology, Kurukshetra</b> Address of Applicant :National Institute of Technology Kurukshetra, Kurukshetra-136119, Haryana, India Haryana India
(31) Priority Document No	:NA	(72)Name of Inventor : <b>1)KUMAR, Arvind</b>
(32) Priority Date	:NA	<b>2)SAINI, Kunal</b>
(33) Name of priority country	:NA	<b>3)PANDEY, Krishna</b>
(86) International Application No	:NA	<b>4)BANSAL, Puneet</b>
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	

(57) Abstract :

The present subject matter describes a portable electronic device comprises a first and a second screen mutually connected by a first flexible-connector for being freely folded with respect to each other. A third screen is foldably supported within the device, said third-screen not being mutually-connected to the first-screen. At-least one processor is configured to control the first, second and third screens to cause at least one of: a synchronized-display across the screens; an identical display with respect to each screen; and a display differing across the screens.



*gaur*  
Director (UIET)  
Kurukshetra University  
KURUKSHETRA-136119

No. of Pages : 18 No. of Claims : 10

<b>“FORM 1</b> THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 <b>APPLICATION FOR GRANT OF PATENT</b> (See section 7, 54 and 135 and sub-rule (1) of rule 20)				(FOR OFFICE USE ONLY)	
				Application No.	
				Filing date:	
				Amount of Fee paid:	
				CBR No:	
				Signature:	
<b>1. APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)</b>					
<b>2. TYPE OF APPLICATION [Please tick (√) at the appropriate category]</b>					
Ordinary (√)		Convention ( )		PCT-NP ( )	
Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )
<b>3A. APPLICANT(S)</b>					
Name in Full		Nationality	Country of Residence	Address of the Applicant	
Central University of Haryana Jant -Pali, Mahendergarh		Indian autonomous organization	India	Central University of Haryana Jant-pali, Mahendergarh	
				State	Haryana
				Country	India
				PIN code	123031
<b>3B. CATEGORY OF APPLICANT [Please tick (√) at the appropriate category]</b>					
Natural Person ( )		Other than Natural Person			
		Small Entity ( )	Start up ( )	Others (√)	
<b>4. INVENTOR(S) [Please tick (√) at the appropriate category]</b>					
Are all the inventor(s)		Yes ( )		No (√)	

same as the applicant(s) Named above?		√	
<b>If "No", furnish the details of the inventor(s)</b>			
Name in Full	Nationality	Country of Residence	Address of the Inventor
Gulab Singh	Indian	India	House No. Department of Biotechnology
			Street Central University of Haryana
			City Jant Pali, Mahendergarh
			State Haryana
			Country India
			Pin code 123031
Sanjay Yadav	Indian	India	House No. Department of Health
			Street Civil surgeon Office
			City Narnaul
			State Haryana
			Country India
			Pin code 123001
Neeraj Kumar Aggarwal	Indian	India	House No. Department of Microbiology
			Street Kurukshetra University
			City Kurukshetra
			State Haryana
			Country India
			Pin code 136119
<b>5. TITLE OF THE INVENTION</b>			
"Nanotechnology based device for removal of Fluoride from potable water"			
<b>6. AUTHORISED REGISTERED PATENT AGENT(S) :</b> Not Applicable	IN/PA No.		
	Name		
	Mobile No.		
<b>7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA</b>	Name	Central University of Haryana, Jant Pali, Mahendergarh	
	Postal Address	Central University of Haryana, Jant Pali, Mahendergarh,	

Telephone No.	01285-249401
Mobile No.	-
Fax No.	01285-249402
E-mail ID	registrar@cuh.ac.in

**8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION : Not applicable**

Country	Application Number	Filing date	Name of the applicant	Title of the invention	IPC (as classified in the convention country)

**9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT) : Not applicable**

International application number	International filing date

**10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION: : Not Applicable**

Original (first) application No.	Date of filing of original (first) application

**11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT : Not Applicable**

Main application/patent No.	Date of filing of main application

**12. DECLARATIONS**

**(i) Declaration by the inventor(s) Not applicable**

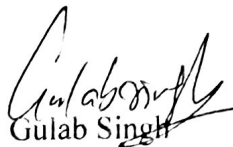
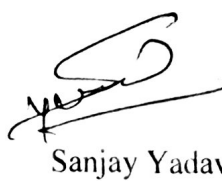
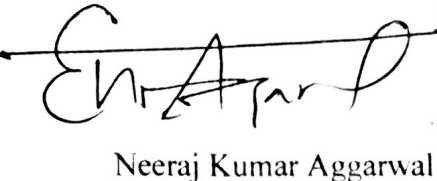
**(In case the applicant is an assignee:** the inventor(s) may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

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

(a) Date:..25/12/18..

(b) Signature(s).

(c) Name(s)



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Application number	Title	Applicant(s)	Inventor(s)	Filing date	Application status		
1	2021100311	SYSTEM AND METHOD FOR FUZZY-BASED CONTROL AND MEASUREMENT OF TEMPERATURE AND HUMIDITY FOR GREENHOUSE	B. Dadas, Anandrao; Baskaran, Balraj; Gautam, Ashu; Kamalanathan, C.; Kousalya, C. Gnana; Kumaraguru, K.; Marriwala, Nikhil DR; Panda, Sunita; Rahul, Shinde Suvarna; Rohini, G.; Saikumar, P. Janardhan	Marrowala, Nikhil; Gautam, Ashu; Kousalya, C. Gnana; Baskaran, Balraj; Saikumar, P. Janardhan; Rohini, G.; B. Dadas, Anandrao; Kamalanathan, C.; Panda, Sunita; Kumaraguru, K.; Rahul, Shinde Suvarna	2021-01-19	GRANTED	<input type="checkbox"/>

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1	<a href="#">2021101447</a>	A SYSTEM FOR DATA TRANSFER ROUTING IN WIRELESS BODY AREA NETWORK AND A METHOD THEREOF	Anarase-Jadhav, Deepali S; B.Mane, Sulakshana; Beriwal, Snehlata; Gautam, Ashu; Kumar, Suresh MR; <b>Marriwala, Nikhil</b> DR; Miya, Javed DR; Panda, Sunita DR; Sangwan, Aarti; Sharma, Avinash DR; Singh, Shekhar MR; Tamizhselvi, A DR; Varghese, Sam	<b>Marriwala, Nikhil</b> ; Panda, Sunita; Tamizhselvi, A.; Sharma, Avinash; Anarase-Jadhav, Deepali S.; Beriwal, Snehlata; Gautam, Ashu; Sangwan, Aarti; Varghese, Sam; B. Mane, Sulakshana; Miya, Javed; Kumar, Suresh; Singh, Shekhar	2021-03-21	<b>GRANTED</b>	<input type="checkbox"/>

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# CERTIFICATE OF GRANT INNOVATION PATENT

**Patent number:** 2021101073

The Commissioner of Patents has granted the above patent on 14 April 2021, and certifies that the below particulars have been registered in the Register of Patents.

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

Nikhil Marriwala of Assistant Professor and Head Electronics, and Communication Engineering Department Kurukshetra University Kurukshetra 136119 India

Anil Vohra of Professor, Electronic Science, Department Kurukshetra University Kurukshetra 136119 India

Reena Sharma of Associate Professor, Electrical and, Electronics Engineering Dept., Galgotias, College of Engineering and Technology Greater Noida , District- Gautam Buddha Nagar Uttar Pradesh India

Deepak Rathore of Assistant Professor, Dept. of ECE, School of Studies Engg. and Tech. Guru Ghasidas Vishwavidyala Bilaspur, CG India

P. Bachan of Assistant Professor, Dept. of ECE, GLA University Mathura UP India

Sunita Panda of Assistant Professor, Department of, Electrical, Electronics & Communication, Engineering, GITAM School of Technology, Bengaluru Campus Karnataka India

Deepali Shantilal Anarase of JJTU Research Scholar, Sr.Lecturer, JSPM Hadapsar Pune 28 India

Manjula Shanbhog of Associate Professor, IILM College of Engineering and Technology Greater Noida India

Rajshree Jodha of JIET Group of Institutions, Mogra Jodhpur Rajasthan 342802 India

Rahul Bhandari of JIET Group of Institutions, Mogra Jodhpur Rajasthan 342802 India

A. K. Sampath of Associate Professor Rizvi College of Engineering Mumbai India

Aditya Chandrakant Ghuge of Nashik Maharashtra India

Krishna Panday of Assistant Professor and Head, Electronics and Communication, Engineering Department Kurukshetra University Kurukshetra 136119 India

**Title of invention:**

Adaptive clustering Based Energy Efficient System for Intelligent Routing in Wireless Sensor Networks

**Name of inventor(s):**

Marriwala, Nikhil; Vohra, Anil; Sharma, Reena; Rathore, Deepak; Bachan, P.; Panda, Sunita; Anarase, Deepali Shantilal; Shanbhog, Manjula; Jodha, Rajshree; Bhandari, Rahul; Sampath, A. K.; Ghuge, Aditya Chandrakant and Panday, Krishna

**Term of Patent:**

Eight years from 27 February 2021



Dated this 14<sup>th</sup> 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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# CERTIFICATE OF GRANT INNOVATION PATENT

**Patent number:** 2021101073

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.



Dated this 14<sup>th</sup> day of April 2021

Commissioner of Patents

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Application number	Title	Applicant(s)	Inventor(s)	Filing date	Application status
1 2021103425	An IOT Based Portable System for Automatic Irrigation and Fertilizer.	Avtar, Ram; Badoni, Manoj Prasad DR; Chikte, Shubhangi Digamber DR; Gadgay, Baswaraj DR; Kumar, Amit; Kumari, Shabnam; Sakthivel, N. K. DR; Salam, Yusuf DR; Saroha, Jaipal DR; Subasree, S. DR	Salam, Yusuf; Avtar, Ram; Kumar, Amit; Saroha, Jaipal; Badoni, Manoj Prasad; Gadgay, Baswaraj; Subasree, S.; Chikte, Shubhangi Digamber; Sakthivel, N. K.; Kumari, Shabnam	2021-06-17	GRANTED <input type="checkbox"/>

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# CERTIFICATE OF GRANT INNOVATION PATENT

**Patent number:** 2021102150

The Commissioner of Patents has granted the above patent on 26 May 2021, and certifies that the below particulars have been registered in the Register of Patents.

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

Nikhil Marriwala of Assistant Professor & HOD, Electronics &, Communication Eng. Deptt, University Institute of Engineering & Technology Kurukshetra University, Kurukshetra Haryana India

Sunita Panda of Assistant Professor, Department of, Electrical, Electronics & Communication, Engineering, GITAM School of Technology Bengaluru Campus Karnataka India

Atla Sridhar of Assistant Professor GITAM Deemed to be University Hyderabad India

C. Kamalanathan of Associate Professor, Department of, Electrical, Electronics & Communication, Engineering, GITAM School of Technology Bengaluru Campus Karnataka India

V. Subba Ramaiah of Assistant Professor, Dept. CSE, Mahatma Gandhi Institute of Technology, Gandipet Hyderabad Telangana India

Ayalapogu Ratna Raju of Mahatma Gandhi Institute of, Technology, Gandipet Hyderabad Telangana India

Nafeesh Ahmad of Assistant Professor, ECE Department UIET, Kurukshetra University Kurukshetra Haryana India

Anusha R of Institute of Aeronautical Engineering Hyderabad India

Bhanu Sharma of Assistant Professor, Chitkara university Punjab India

Swarnjeet Kaur of Assistant professor, Coem, Rampura phul Punjabi University Patiala India

Kulwant Singh of Asst. Prof, Rampura phul Punjabi University Patiala India

Prashanth K Y of ECE Department Visvesvaraya Technological University India

Ayyanna Gurikar of Software Engineer, #996 Bcch Layout Vajarahalli Bangalore 560063 India

**Title of invention:**

Method and System for real-time decision-based carrier tracking for software defined radios

**Name of inventor(s):**

Marriwala, Nikhil; Panda, Sunita; Sridhar, Atla; Kamalanathan, C.; Ramaiah, V. Subba; Raju, Ayalapogu Ratna; Ahmad, Nafeesh; R., Anusha; Sharma, Bhanu; Kaur, Swarnjeet; Singh, Kulwant; K. Y., Prashanth and Gurikar, Ayyanna

**Term of Patent:**

Eight years from 22 April 2021



Dated this 26<sup>th</sup> day of May 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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# CERTIFICATE OF GRANT INNOVATION PATENT

**Patent number:** 2021102150

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.



Dated this 26<sup>th</sup> day of May 2021

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सत्यमेव जयते

**Renewal Certificate  
(Rule 80(4) of Patent Rules)**

**Government of India  
Patent Office**  
Intellectual Property Office Building,  
Plot No. 32, Sector 14, Dwarka,  
New Delhi-110075  
Phone- 011-28032253, 25300200  
Fax: 011-28034301, 28034302  
e-mail: delhi-patent@nic.in

RC Number : 61179

Patent Number: 377289

RC issue date: 26/Aug/2022

Application Number: 202111010011

Date of Application: 10/Mar/2021

Grantee : Dr. Sunil nain

Patentee (current assignee) : Kurukshetra University,

Certified that the patent number mentioned above has been renewed upon receipt of ₹800 vide CBR No. 32344 dated 26/Aug/2022 and continued for:

Year:	Amount:	Valid Upto:	Year:	Amount:	Valid Upto:
3 <sup>rd</sup> year	800	10/Mar/2024	12 <sup>th</sup> year		
4 <sup>th</sup> year			13 <sup>th</sup> year		
5 <sup>th</sup> year			14 <sup>th</sup> year		
6 <sup>th</sup> year			15 <sup>th</sup> year		
7 <sup>th</sup> year			16 <sup>th</sup> year		
8 <sup>th</sup> year			17 <sup>th</sup> year		
9 <sup>th</sup> year			18 <sup>th</sup> year		
10 <sup>th</sup> year			19 <sup>th</sup> year		
11 <sup>th</sup> year			20 <sup>th</sup> year		

Extension fee for Nil month(s) : ₹0

Additional fee for restoration : ₹0

Total fee : ₹800

Due date for next renewal is : 10/Mar/2024

Address for service : MEHTA & MEHTA ASSOCIATES, Mehta House, B-474, Sushant Lok – I, Sector-27, Gurgaon – 122002, NCR, India

Additional address for service :

(For Controller of Patents)



Australian Government

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# CERTIFICATE OF GRANT INNOVATION PATENT

Patent number: 2021105733

The Commissioner of Patents has granted the above patent on 3 November 2021, and certifies that the below particulars have been registered in the Register of Patents.

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

Amrinder Kaur of Assistant Professor, DCSA MDU Rohtak Haryana India

Sunil Saini of Research Scholar, CSE UCoE Punjabi University Patiala Punjab India

Rachit Garg of Assistant Professor, NMIMS Mumbai Maharashtra India

**Title of invention:**

A METHOD FOR EARLY PREDICTION OF DIABETES UTILIZING A NAÏVE BAYES ALGORITHM-BASED CLASSIFICATION MODEL

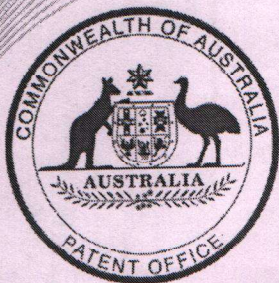
**Name of inventor(s):**

Kaur, Amrinder; Kumar, Rakesh; Garg, Rachit; Aggarwal, Himanshu and Saini, Sunil

**Term of Patent:**

Eight years from 18 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.



*[Signature]*  
Chairman  
Deptt. of Computer Science  
and Applications  
K.U. Kurukshetra

Dated this 3<sup>rd</sup> day of November 2021

Commissioner of Patents

**PATENTS ACT 1990**

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सत्यमेव जयते

भारत सरकार  
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पेटेंट कार्यालय  
THE PATENT OFFICE

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

क्रमांक : 011151881  
SL No :



पेटेंट सं. / Patent No. : 409906  
आवेदन सं. / Application No. : 202111009913  
फाइल करने की तारीख / Date of Filing : 09/03/2021  
पेटेंटी / Patentee : 1.Sardul Singh Dhayal 2.Dr Avnesh Verma 3.Dr Satya Dev  
4.Ms Sonu

प्रमाणित किया जाता है कि पेटेंटी को, उपरोक्त आवेदन में यथाप्रकटित MOOD MONITORING SYSTEM AND METHOD THEREOF नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख मार्च 2021 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 MOOD MONITORING SYSTEM AND METHOD THEREOF as disclosed in the above mentioned application for the term of 20 years from the 9<sup>th</sup> day of March 2021 in accordance with the provisions of the Patents Act,1970.



अनुदान की तारीख : 26/10/2022  
Date of Grant :

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सत्यमेव जयते

**Renewal Certificate  
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Grantee : MARRIWALA, Nikhil

Patentee (current assignee) : Kurukshetra University,

Certified that the patent number mentioned above has been renewed upon receipt of ₹800 vide CBR No. 32344 dated 26/Aug/2022 and continued for:

Year:	Amount:	Valid Upto:	Year:	Amount:	Valid Upto:
3 <sup>rd</sup> year	800	15/May/2023	12 <sup>th</sup> year		
4 <sup>th</sup> year			13 <sup>th</sup> year		
5 <sup>th</sup> year			14 <sup>th</sup> year		
6 <sup>th</sup> year			15 <sup>th</sup> year		
7 <sup>th</sup> year			16 <sup>th</sup> year		
8 <sup>th</sup> year			17 <sup>th</sup> year		
9 <sup>th</sup> year			18 <sup>th</sup> year		
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11 <sup>th</sup> year			20 <sup>th</sup> year		

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FORM 2

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THE PATENTS ACT, 1970  
(39 of 1970)

APP No. 2020/1024696

COMPLETE SPECIFICATION

Docket No. 20569

(See section 10 and rule 13)

01/03/2021

1. TITLE OF THE INVENTION

**Novel Hardware Accelerator Circuit for Bit-Level Operations in a Microcontroller**

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3. PREAMBLE TO THE DESCRIPTION

Complete Specification

The following specification describes invention

01-Mar-2021/20569/202011024696/Form 2 (Title Page)

FORM 2  
THE PATENTS ACT, 1970  
(39 of 1970)  
&  
The Patents [Amendment] Rules, 2014  
COMPLETE SPECIFICATION  
(See Section 10 and Rule 13)

**Novel Hardware Accelerator Circuit for Bit-Level Operations in a  
Microcontroller**

**Abstract:** A novel hardware circuit has been invented by the authors to perform Selective Bitwise Immediate Logical Operation (herein after SBILO) on Byte sized data in a microcontroller. The unique novelty of the invented hardware circuit is that any of four logical operations, viz, (Set, Clear, Complement, No Change) can be performed concurrently with others in any combination, on bits of the register in a microcontroller. The logical operation to be performed is specified in the microcontroller instruction for each bit individually. SBILO circuit manipulates the logic of each bit concurrently as per bit operation code in the instruction. The hardware circuit invented by the authors takes only one machine cycle to perform concurrent logical operation on all eight bits of byte sized register. Firstly, the invented hardware speeds up the logical operation by using only one instruction instead of multiple bit or byte level instructions. Secondly, the invented hardware circuit reduces the program memory space consumption by taking only one instruction space for selective concurrent manipulation of up to eight bits.

**Field of Invention**

This invention relates to development of a novel circuit to perform logical operation on multiple bits in a single machine cycle in the microcontroller. For this, the architecture of the circuit has been designed and simulated using Verilog Hardware Description Language on the Xilinx ISE platform. The architecture has been implemented in a FPGA & practically tested. The invention relates to development of a circuit to speed-up the operations on the Bits in a microcontroller. Bit represents the Binary Logic in all digital circuits. Bit is an integral part of a larger data pack like Nibble, Byte etc. Bits are grouped to make a single larger data. Data storage element is called as a Register. During execution, Microcontroller changes or reads the Logic Level of any Bit in any Register according to the Instruction. There are three logic operations on any Bit (Set, Clear, Invert). Authors invented a circuit to speed-up the Bit Logic change. Further, the circuit designed by authors has features that the Bits involved in Logic change are selected through instruction.

**Background of Invention**

Microcontroller has a CPU with on chip Peripherals & Memory (Program Memory & Data Memory). The CPU has an integrated circuit namely Arithmetic Logic Unit (ALU). Numerous microcontrollers have been designed in past. Their ALU has different capabilities in terms of Arithmetic & Logical Instructions supported by it. As well, microcontrollers have difference in the number & types of peripherals implemented on the chip. Some microcontrollers have general purpose architecture, some application specific microcontrollers also have been

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designed. The Mega Instructions Per Seconds (MIPS) is the performance measure unit of the execution speed of any microcontroller or microprocessor. To run any application, the program memory & data memory consumed, also, is an important factor in case of microcontrollers. Different Memory optimization techniques have been developed in past.

I. *Logic Level Operation*

The logic level in digital electronics has binary values, namely '1' and '0'. Usually, Voltage equal to Supply voltage at any node is marked as Logic '1' and voltage equal to Ground Voltage (Zero), is marked as Logic '0'. The logic at any node is either input or output of any digital component. Various digital components are Digital Gates (AND, OR, NOT, XOR, NOR, NAND), Flip-Flops (D, SR, JK, T), Multiplexer/ De-multiplexer, Counter, Shift Registers, Encoder/ Decoder, Digital Adder/ Subtractor. All the digital components have Transistors (BJT or FET) as basic Logic Level Translator/ Switcher.

II. The authors adopted the methodology to break the complex design in smaller Modules. Each Module had been created by writing a program in Verilog HDL. Top Level module encapsulated all the Modules. The Modules at same Hierarchy level had been interconnected using Digital BUS. Digital BUS also is an internal Library Component of Verilog HDL.

III. Every microcontroller has Register as digital data storage element. In any microcontroller, the Logic level of Register is changed either by Arithmetic Operation or Logical Operation. Authors have implemented the logic change by Logical operation, such that logic level of multiple bits can be changed simultaneously where logical operation code for every Bit of Register is supplied in instruction.

IV. *Logic Level Operation Types in Microcontroller*

In any micro controller, the Operations performed on any Bit are: Set, Clear or Invert. Set means the Logic is forced to '1' & Clear means Logic is forced to '0'. In a microcontroller, the operation to be performed on any Bit is specified in instruction. In traditional microcontroller, there are instructions for bit operations, which manipulate a single bit only. These instructions are called as Bit Level Instructions. Moreover, only one type of bit operation (Set, Clear, Invert) can be performed in any instruction in traditional Microcontrollers. Other type of instructions in traditional Microcontrollers is Byte Level Instructions. Though, programmers use Byte Level instructions to either Set or Clear or Invert multiple bits together, but the mixed operations are not possible with these instructions also.

**Previous work done in the field of Microcontroller**

Data Memory in a Microcontroller is partitioned in many banks. Variables are allocated different addresses in banks. It is essential to insert bank selection instructions in the application program. Bernhard Schools<sup>[1]</sup> developed an algorithm to optimize the number of bank selection instructions for partitioned memory for given block of instructions, in which the variables has already been allocated the bank location. The algorithm was tested to optimize for speed and size. To reduce no. of bank selection instructions, hardware based assistance is provided by implementing shared data memory locations. Frequently used variable are placed in shared memory. So, instructions are inserted in application program to allocate address in shared memory. Chunyang Gou<sup>[2]</sup> developed an algorithm to optimize number of bank selection instructions for shared memory. Many microcontrollers do not have banked data memory. To access non-banked data memory, linear addressing is required. Linear addressing needs full address storage in the instruction. The use of linear addressing increases the consumption of more Program Memory. Nash<sup>[4]</sup> developed a pseudo – linear scheme to avoid

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wrap around problem in segmented & banked memory. To reduce the consumption of Program Memory, instruction width is reduced by dividing the program address range in multiple pages. Page selection is provided through page selection bits in a register. Page selection instructions are inserted in the application program. Quing<sup>[3]</sup> developed an algorithm to optimize instructions for page selection. Jinpyo<sup>[5]</sup> used control-flow directed acyclic graph (DAG) to optimize memory for embedded systems & XU Chao<sup>[6]</sup> developed an algorithm to optimize variable allocation based on block architecture.

Along with data & program memory optimization, execution speed also is an important parameter for any microcontroller. To enhance overall execution speed, some operations are carried in specific hardware circuit instead of by software instructions. Frequent write operations to data memory creates a bottleneck to speed-up the processing. When, large data is stored in data memory, it consumes too much time to use one instruction for each write operation as well it consumes considerable program memory. So, hardware based assistance has been devised. James R<sup>[7]</sup> designed a circuit to write data less than the block size without intervention of software. To speed-up processing, pipeline architecture has been implemented in microcontrollers. In pipeline architecture, instructions are executed in parallel irrespective of category/type of instructions. Jean<sup>[8]</sup> implemented a hardware to do arithmetic & logical operations in parallel to CPU which can be broken down into multiple sequences.

When data is exchanged from microcontroller to external devices, configurable I/O ports are used. During an input instruction through PORT, data is sampled from the pin of Microcontroller. During write operations, some operations use Read-Modify-Write mechanism. Implementation of multiple ports increases the chip size. To resolve this issue, Shekhar Borkar<sup>[9]</sup> implemented a circuit to interface external bidirectional PORTS to microcontrollers on the same board. The external (Virtual) PORT worked exactly like the on chip PORT that all the ALU operations are possible on these. Charles<sup>[10]</sup> implemented a circuit to execute instruction in a single cycle. The I/O Read operation is done in the first phase of the clock. Write operation & Next Instruction Fetch is done in the second phase of the clock. So, the effective PORT I/O operation takes only one clock cycle. Stephan<sup>[11]</sup> focused on the problem of longer wait time for bulk data read / write to/from main memory by CPU or In-Out Control (IOC). The no. of cycles required for Read – Modify – Write operation were reduced. Robert<sup>[13]</sup> reduces the no. of instructions required to implement Atomic Read-Modify-Write instruction. To reduce the chip size, pin function sharing is implemented and pin function multiplexing hardware is implemented near the PORT. Further, during programming & during normal execution, same pins can be shared. Ray Allen<sup>[12]</sup> introduced a method to use the PORT pins as programming pins in microcontroller without need of special pins for programming mode. In some applications, it is required to protect the logic on any pin during write operation. Kevin<sup>[14]</sup> introduced a method to preserve the status of the bit which may be modified by the external device during RMW cycle. Peter<sup>[19]</sup> implements the method to speed up the read / write operation to/from memory so that maximum bus bandwidth is used. Mathew<sup>[23]</sup> describes memory read – modify – write speed up by using separate banks for each type of read or write. Ray Brown<sup>[24]</sup> explains the implementation of RMW functionality without using individual RMW circuit for each register & also registers to set/clear multiple bits in a register without affecting other bits.

With time, new microcontroller architectures were introduced, each architecture supporting some new instructions & operations. Kiran<sup>[20]</sup> describes about addition of new instructions to MCS-51 microcontroller & making a new family MCS-251 of microcontrollers with backward compatibility. James<sup>[21]</sup> describes the

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microcontroller architecture for general – purpose embedded applications & as well communication applications. Warner<sup>[22]</sup> describes the architecture to embed multiple programmable digital & analog blocks with programmable interconnection.

The ALU of microcontroller also was enhanced by different manufacturers & researchers. Bit manipulation & Byte write techniques have been updated. Kevin<sup>[25]</sup> describes the partial bit permutation with permutation code in a control register & result in the destination register. Further, Jon<sup>[26]</sup> explains the method to improve the efficiency of an ALU. The capability of Single – Cycle ALU & Pipelined ALU are utilized. Arithmetic operations are performed in two stages: First Stage produces separate SUM & CARRY in one cycle. Second Stage produces final SUM & CARRY in one or more cycles. The usable partial results thus produced every cycle, thus maintaining effective one operation per cycle. Parallel instruction execution also proved very much useful to speed-up the performance. There are different pipeline architectures devised. Jeffrey<sup>[27]</sup> explains the implementation of pipeline architecture by dividing the instruction execution in three cycles. When operation is done on the data, write to destination of previous instruction & read of source for next instruction can be done. Thus overall performance speed of the microcontroller is increased.

Application specific support also has been embedded in many microcontroller architectures to speed up the performance. Bruce<sup>[28]</sup> provides permutation instructions to perform software based cryptographic operations on data in multimedia, encryption etc. Ruby<sup>[29]</sup> has devised a method to perform permutations based of Butterfly Networks. Some algorithm use multiple addition or subtraction in a single operation, which can be executed faster in hardware than in software. James<sup>[30]</sup> has designed an ALU for simultaneous execution of dependent or Independent addition/subtraction logic.

## SUMMARY OF THE INVENTION

Authors have designed the circuit by hand. For the purpose of testing, a model was created using Verilog HDL, the design was Simulated using Xilinx ISE and for practical testing it was Implemented in a FPGA. The results of FPGA have been recorded using integrated logic analyzer in CHIPSCOPE software. Further for the purpose of testing the working of the claimed circuits, the authors designed and implemented a microcontroller architecture in FPGA.

### *V. SELECTIVE BITWISE IMMEDIATE LOGIC OPERATION CIRCUIT:*

Authors have designed a circuit to perform selective concurrent logical operation on the bits of a register in the microcontroller. The block diagram 100 of the designed circuit is shown in fig 1. The signal 105 controls the passage of signals either 101 or 108 through 11 upto 110. 10 is enabled by setting 105 in active state. When 10 is enabled, the logic at 108 is controlled by 103 and 104 jointly. Signal 106 is permanently kept at logic '1' and 107 at logic '0' in the architecture. When both the signals 103 and 104 are in de-active state, the 107 is passed upto 108. When, both the signals 103 and 104 are active, logic of the signal 106 is passed upto 108. When, the signal 103 is active and 104 is de-activated, the signal 102 is passed upto 108. When, signal 103 is de-active and signal 104 is active, the signal 109 is passed to 108. The logic at 109 is always complement of signal 102. The signals 101, 102, 103, 104, 105 are all controlled by the Control Unit of the Microcontroller during the execution of instruction. The circuit block 100, comprising of five inputs and one output, has been named as SBILO circuit by the authors. The combination of 103 and 104 for selection of any of 102, 106, 107 and 109 may be altered without affecting the complexity and performance, with change in the instruction code accordingly.

Authors have designed novel circuits using the circuit 100 as basic building brick. Fig 2 is the block diagram 200 of the octal group created by packing eight circuits of 100. The authors have used 100 to implement a novel features in ALU of the Microcontroller. The novel feature implemented enabled the selective and concurrent manipulation of bits of a register during the one instruction-execution time interval only. Authors classified the instructions in two categories, viz, Normal Instruction and SBILO instruction. During execution of Normal instruction, the SBILO circuit was kept disabled while during the execution SBILO instruction, SBILO circuit was-enabled to function.

The circuit 300, shown Fig 3 has been designed for implementation of SBILO based ALU in a Microcontroller by authors. 305 has been implemented as the 8-bit register of microcontroller. Signals output from 200 have been connected to 305. 301 has been used as the 18 bit wide instruction bus of the microcontroller designed by the authors. The instruction bus 301 has been connected to 103 and 104 of all 100 circuits in the right to left bitwise order. The signal 302 has been connected to 105 of all 100. 303 has been connected to 101 of all 100 circuits in right to left bit order sequentially. The data output of 200 was latched in 305 using 304 as clock. The output of 305 has been fed back to 102 of each 100 at corresponding position.

Circuit block 400 shown in Fig 4, has been designed to implement SBILO feature in data memory of a microcontroller. The data memory has been made capable to selectively and concurrently manipulate the contents of addressed location as per instruction. The data memory 408 has 304 as clock signal. Block 409 used to select the memory location address either from 401 or 407. When, SBILO type instruction executed, memory location selected by 401 for SBIL Operation. During Normal instruction, the data memory 408 functions to store data without any capability to manipulate. During SBILO instruction, the data of the addressed location fed-back to 102 bitwise to 100 of 200, manipulated according to 103 and 104 at each 100 during a single machine-cycle consisting of 4 (four) clock cycles only.

The results of SBILO based ALU, as shown in Fig 5, were practically captured using Chipscope software. 0x9B result is obtained after SBILO 10~N1N~1 instruction execution on 0x70 data in the Accumulator of Microcontroller. This SBILO instruction execution took only one machine cycle to perform mixed selective logical operations on Bits of Accumulator.

The functionality of SBILO was also implemented in data memory. The results of SBILO based data memory, as shown in Fig 6, were practically captured using Chipscope software. Initially 0x21, 0x35, 0x66, 0x92 were loaded at initial four locations. Next two instructions perform (11~N0~01~N) & (101NN0~1N) on Data\_memory location 1 & 0 respectively. As expected, the results 0x87 and 0xAC were obtained after SBILO. The SBILO instruction took one machine cycle to perform mixed selective logical operation on the data of addressed memory location.

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### Patent Search

Invention Title	VOLTAGE UNBALANCE REDUCTION IN WEAK MICROGRID
Publication Number	09/2021
Publication Date	26/02/2021
Publication Type	INA
Application Number	202111006932
Application Filing Date	19/02/2021
Priority Number	
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Priority Date	
Field Of Invention	ELECTRICAL
Classification (IPC)	H02J0003380000, H02M0007493000, H02M0007490000, D06F0037200000, H02M0001120000
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#### Abstract:

Our invention Voltage Unbalance Reduction in Weak Microgrid is a la weak microgrid which is constituted with small sources and resistive cable network, voltage unbalance occurs when Voltage source inverters (VSI) operated in parallel. Voltage unbalancing caused by the circulation of reactive power among the inverters. In non-identical circuit parameters are different which causes the circulation of current. Designed unbalance controller in addition to the main controller and auxiliary controller, mitigate the problem of phase voltage unbalancing.

#### Complete Specification

Our invention is related to a Voltage Unbalance Reduction in Weak Microgrid and also relates to microgrid droop control design field, especially relate to a kind of microgrid droop control optimization method controlled based on sliding mode control and the belongs to distributed power source control technology field in micro-grid system, relate to a kind of common bus Voltage unbalance inhibition method based on the parallel connection of many distributed power sources.

#### BACKGROUND OF THE INVENTION

Distributed power source and energy storage device (storage battery, high speed flywheel etc.) may be combined with into micro power network (abbreviation microgrid) together to critical load uninterrupted power supply in high quality. Microgrid both can as one independently system meet user side demand, again can with bulk power grid networking operation, improve power supply reliability, there is stronger flexibility and schedulability.

In order to meet the continual demand of microgrid internal user electricity consumption, microgrid needs to carry out freely seamless switching at

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### Patent Search

Invention Title	BATTERY MANAGEMENT SYSTEM (BMS) IN ELECTRIC VEHICLE (EV).	
Publication Number	31/2021	
Publication Date	30/07/2021	
Publication Type	INA	
Application Number	202111030021	
Application Filing Date	05/07/2021	
Priority Number		
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Priority Date		
Field Of Invention	ELECTRICAL	
Classification (IPC)	H02J0007000000, B60L0058220000, B60L0003000000, H01M0010440000, B60L0058120000	
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#### Abstract:

The active cell balancing is one of the most critical part of Battery Management System (BMS) in Electric Vehicle (EV). Active cell balancing increases the efficiency by reduced heat dissipation in passive elements while maintaining equal charge distribution in each series connected cell of Battery / Pack. In a system many cell balancer circuit can independently or synchronously.

#### Complete Specification

##### Claims:WE CLAIMS

1. The active cell balancing is one of the most critical part of Battery Management System (BMS) in Electric Vehicle (EV). Active cell balancing increases the efficiency by reduced heat dissipation in passive elements while maintaining equal charge distribution in each series connected cell of Battery / Pack. In a system many cell balancer circuit can work independently or synchronously.
2. According to claim1# the invention is to an Each cell need to be charged equally.
3. According to claim1,2# the invention is to a During balancing extra charge is transferred from strong (overcharged) cell to weak cell (under charged).
4. According to claim1,2,3# the invention is to a NTC-PTC provides natural charging and discharging control profile during balancing.
5. According to claim1,2,4# the invention is to a NTC-PTC combinations provide robust performance & eliminate the need of additional current sensor.
6. According to claim1,2,3# the invention is to a Paralleling of switches or NTC-PTC provide easy way to extended rating.
7. According to claim1,2,5# the invention is to a 'n' batteries are connected in conjugation with ultra-capacitor (UC) with different combinational switch
8. According to claim1,2,4# the invention is to a In any case, highly charged battery B-n, charges the UC with the switching of Sn, Sn-1 Q3 and Q6 Conduction with Further UC charge the least charge battery B2 with the switching combination of S3, S2, Q2 and Q5 with NTC. Hence keep all the batteries equally charged.

##### FIELD OF THE INVENTION

View Application Status

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(19) INDIA

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(54) Title of the invention : SYSTEMS AND METHODS FOR MEDICAL CLOUD DATA CLASSIFICATION MODEL FOR IOT AWARE SMART HEALTHCARE

(51) International classification	:A61B 5/00 A61B 5/145 A61B 5/0205	(71)Name of Applicant : 1)Priyanka Jangra Address of Applicant :Asstt. Prof, Department of Electronics and Communication Engineering University Institute of engineering and technology, Kurukshetra University, Kurukshetra, 136119, INDIA Haryana India 2)Ajay Jangra
(31) Priority Document No	:NA	(72)Name of Inventor :
(32) Priority Date	:NA	1)Priyanka Jangra
(33) Name of priority country	:NA	2)Ajay Jangra
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(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	

(57) Abstract :

The present invention provides a method for retrieving information in optimum and minimum time. The method comprising: coupling one or more microprocessors coupled to a non-transitory storage device and operable to execute the one or more routines, wherein the one or more routines performs: categorizing medical data of a human body into eight different sections; segregating the each of the section into three subparts; initiating the sensitivity measures to for data isolation; and mapping the division with the concerned storage techniques it outperforms on a large scale to optimize and increase the probability to retrieve the appropriate information in minimum time quantum.

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(51) International classification	:A61K 9/127 C07D 239/94 G01N 30/06	(71)Name of Applicant : 1)Lovely Professional University, Address of Applicant :Lovely Professional University, Delhi Jalandhar GT road Phagwara- 144411. Punjab India
(31) Priority Document No	:NA	(72)Name of Inventor : 1)KAPOOR, Bhupinder
(32) Priority Date	:NA	2)GULATI, Monica
(33) Name of priority country	:NA	3)SINGH, Sachin Kumar
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(87) International Publication No	:NA	6)SHARMA, Mamta
(61) Patent of Addition to Application Number	:NA	7)CHHIBBER, Priyanka
Filing Date	:NA	
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

The present invention describes the novel formulation of sulfapyridine, solubility studies, partition coefficient, characterization of vesicles and antibacterial studies. The said novel formulation of liposome enhance the potency and bioavailability of the sulfapyridine.

No. of Pages : 13 No. of Claims : 3



Director (UIET)  
Kurukshetra University  
KURUKSHETRA-136119

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202011034396 A

(19) INDIA

(22) Date of filing of Application :11/08/2020

(43) Publication Date : 11/09/2020

(54) Title of the invention : A COMPLETE, LOW COST, DISINFECTANT, ECONOMICAL LAUNDRY SYSTEM

(51) International classification :A61L0002180000,  
D06F0095000000,  
D06F0039000000,  
C11D0003480000,  
D06F0035000000

(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

**(71)Name of Applicant :**

- 1)Yogesh Paul**  
Address of Applicant :#64, 65 Ram Nagar, Kansapur Road,  
Yamunanagar Haryana India
- 2)Vineet Kumar**
- 3)Bhupender Singh**
- 4)Vijay Kumar Garg**
- 5)Archit Sharma**

**(72)Name of Inventor :**

- 1)Yogesh Paul**
- 2)Vineet Kumar**
- 3)Bhupender Singh**
- 4)Vijay Kumar Garg**
- 5)Archit Sharma**

**(57) Abstract :**

A method and system for washing and disinfecting the cloth and water used for washing the cloth in order to remove infectious agents like bacteria; virus and, fungi spores etcetera. Earlier, these micro-organism were getting discharged into the sewage and then to rivers directly. The presented disclosed the related invention. The presented system also consists of a multifold laundry basket system and an ironing table, the essential parts of laundering, and therefore making it to the complete laundry system.

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

Director (UIET)  
Kurukshetra University  
KURUKSHETRA-136119



Office of the Controller General of Patents, Designs & Trade Marks  
Department of Industrial Policy & Promotion,  
Ministry of Commerce & Industry,  
Government of India



### Application Details

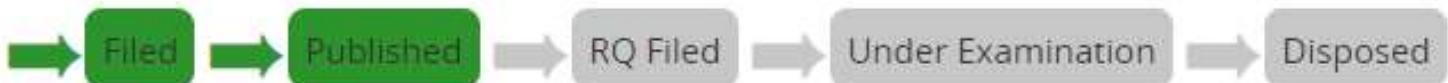
APPLICATION NUMBER	201911000953
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	09/01/2019
APPLICANT NAME	1 . YOGESH PAUL 2 . VIJAY KUMAR GARG 3 . VINEET KUMAR
TITLE OF INVENTION	VEHICLE TREMBLING UTILIZER
FIELD OF INVENTION	ELECTRONICS
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	yogeshpaul@gmail.com
E-MAIL (UPDATED Online)	yogeshpaul@gmail.com,vkgarg2015@kuk.ac.in
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	28/08/2020

### Application Status

APPLICATION STATUS

Awaiting Request for Examination

[View Documents](#)





<b>FORM 1</b> <b>THE PATENTS ACT 1970</b> <b>(39 of 1970)</b> <b>&amp;</b> <b>The Patents rules, 2003</b> <b>APPLICATION FOR GRANT OF PATENT</b> <b>[See section 7, 54 &amp; 135 and rule 20 (1)]</b>	<b>(FOR OFFICE USE ONLY)</b> <b>Application No:</b> <b>Filing Date:</b> <b>Amount of Fee Paid:</b> <b>CBR No:</b> <b>Signature:</b>																				
<b>1. APPLICANT'S REFERENCE / IDENTIFICATION</b> <b>NO. (AS ALLOTTED BY OFFICE)</b>																					
<b>2. TYPE OF APPLICATION [Please tick (√) at the appropriate category]</b>																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Ordinary (√)</td> <td colspan="2">Convention ( )</td> <td colspan="2">PCT-NP ( )</td> </tr> <tr> <td>Divisional ( )</td> <td>Patent of Addition ( )</td> <td>Divisional ( )</td> <td>Patent of Addition ( )</td> <td>Divisional ( )</td> <td>Patent of Addition ( )</td> </tr> </table>		Ordinary (√)		Convention ( )		PCT-NP ( )		Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )								
Ordinary (√)		Convention ( )		PCT-NP ( )																	
Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )																
<b>3. (3A) APPLICANT</b>																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Name</th> <th style="width: 10%;">Nationality</th> <th style="width: 10%;">Country of Residence</th> <th style="width: 40%;">Address</th> </tr> </thead> <tbody> <tr> <td>1. Dr. Abhay Kumar Agarwal</td> <td style="text-align: center;">IN</td> <td style="text-align: center;">IN</td> <td>Department of Computer Science and Engineering, Kamla Nehru Institute of Technology, Sultanpur, U.P.</td> </tr> <tr> <td>2. Dr. Kanta Prasad Sharma</td> <td style="text-align: center;">IN</td> <td style="text-align: center;">IN</td> <td>Department of Computer Science and Engineering, GL Bajaj Group of Institutions, Mathura U.P.</td> </tr> <tr> <td>3. Dr. Chander Kant</td> <td style="text-align: center;">IN</td> <td style="text-align: center;">IN</td> <td>Department of Computer Science and Applications, Kurukshetra University Kurushetra, India.</td> </tr> <tr> <td>4. Alka Choudhary</td> <td style="text-align: center;">IN</td> <td style="text-align: center;">IN</td> <td>Department of Computer Engineering, J.C. Bose university of Science and Technology, Faridabad, India.</td> </tr> </tbody> </table>		Name	Nationality	Country of Residence	Address	1. Dr. Abhay Kumar Agarwal	IN	IN	Department of Computer Science and Engineering, Kamla Nehru Institute of Technology, Sultanpur, U.P.	2. Dr. Kanta Prasad Sharma	IN	IN	Department of Computer Science and Engineering, GL Bajaj Group of Institutions, Mathura U.P.	3. Dr. Chander Kant	IN	IN	Department of Computer Science and Applications, Kurukshetra University Kurushetra, India.	4. Alka Choudhary	IN	IN	Department of Computer Engineering, J.C. Bose university of Science and Technology, Faridabad, India.
Name	Nationality	Country of Residence	Address																		
1. Dr. Abhay Kumar Agarwal	IN	IN	Department of Computer Science and Engineering, Kamla Nehru Institute of Technology, Sultanpur, U.P.																		
2. Dr. Kanta Prasad Sharma	IN	IN	Department of Computer Science and Engineering, GL Bajaj Group of Institutions, Mathura U.P.																		
3. Dr. Chander Kant	IN	IN	Department of Computer Science and Applications, Kurukshetra University Kurushetra, India.																		
4. Alka Choudhary	IN	IN	Department of Computer Engineering, J.C. Bose university of Science and Technology, Faridabad, India.																		
<b>3B. CATEGORY OF APPLICANT [Please tick (√) at the appropriate category]</b>																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 30%;">Natural Person (√)</td> <td colspan="3">Other than Natural Person</td> </tr> <tr> <td>Small Entity ( )</td> <td>Start up ( )</td> <td>Others ( )</td> </tr> </table>		Natural Person (√)	Other than Natural Person			Small Entity ( )	Start up ( )	Others ( )													
Natural Person (√)	Other than Natural Person																				
	Small Entity ( )	Start up ( )	Others ( )																		

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202111005723 A

(19) INDIA

(22) Date of filing of Application :10/02/2021

(43) Publication Date : 19/02/2021

(54) Title of the invention : AN IOT BASED AUTONOMOUS FIREFIGHTING DRONE THROUGH MACHINE LEARNING

(51) International classification	:B64C0039020000, G08B0017120000, B64D0047080000, A62C0003020000, G05D0001000000	(71)Name of Applicant : <b>1)Dr. Abhay Kumar Agarwal</b> Address of Applicant :Department of Computer Science and Engineering, Kamla Nehru Institute of Technology, Sultanpur, U.P. Uttar Pradesh India <b>2)Dr. Kanta Prasad Sharma</b> <b>3)Dr. Chander Kant</b> <b>4)Alka Choudhary</b>
(31) Priority Document No	:NA	(72)Name of Inventor : <b>1)Dr. Abhay Kumar Agarwal</b> <b>2)Dr. Kanta Prasad Sharma</b> <b>3)Dr. Chander Kant</b> <b>4)Alka Choudhary</b>
(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	

(57) Abstract :

The present invention is related to an autonomous drone (100) for firefighting. The drone 5 (100) is capable of flying to a high altitude and extinguishing the fire present in the highrise buildings. The autonomous drone (100) comprises of the high-definition camera (104) and the thermal imaging camera (106) which are used for capturing the visuals in real-time. The thermal imaging camera (106) can enable the drone (100) to see through the wall of smoke and identify the exact location of the fire. The hydrant material stored 10 in the storage tank (108) is sprayed upon the location of the fire using the nozzle (110) which is a high-pressure nozzle (110). The drone (100) is capable of communication with the person flying the drone (100) through a microcontroller present in the control unit (114).

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

(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application : 26/10/2021

(21) Application No. 202111048903 A

(43) Publication Date : 05/11/2021

(54) Title of the invention : A SYSTEM OF META-HEURISTIC MODEL OF FEATURE SELECTION FOR SENTIMENT ANALYSIS

(51) International classification : G06N0020000000, G06K0009620000, G06Q0030020000, G06F0040300000, G06N0005000000  
(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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Address of Applicant : PH.D. SCHOLAR, DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS, KURUKSHETRA UNIVERSITY, KURUKSHETRA -----

2) Dr PARDEEP KUMAR  
3) Dr KANWAL GARG

Name of Applicant : NA

Address of Applicant : NA

(72) Name of Inventor :

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Address of Applicant : PH.D. SCHOLAR, DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS, KURUKSHETRA UNIVERSITY, KURUKSHETRA -----

2) Dr PARDEEP KUMAR

Address of Applicant : ASSOCIATE PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS, KURUKSHETRA UNIVERSITY, KURUKSHETRA -----

3) Dr KANWAL GARG

Address of Applicant : ASSISTANT PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS, KURUKSHETRA UNIVERSITY, KURUKSHETRA -----

(57) Abstract :  
A huge proportion of electronic data is produced with elevated accessibility to computerized information. Accumulation of this huge amount of data although arouses the problem of scalability, yet persuade researchers to critically analyze the data with aim of extracting utmost benefits in view of wiser decisiveness. This research focuses on superintending the problem of scalability for extrication of accurate sentiment interpretations from massive content over Twitter using supervised machine learning algorithm. Towards this end, first requirement is curtailing of text to a better structured format by pre-processing of data collected through Twitter Streaming API. For this research, raw data at step of pre-processing is filtered with fine sieve of two processes i.e. cleaning and transformation. Further, it was observed that feature extraction, dimensionality reduction and feature selection were three major phases of producing reduced set of attributes. But, all three had some limitations in tackling enormous set of features. Therefore, a hybrid meta-heuristic model collaborating extraction, reduction and selection is suggested as second phase of sentiment analysis in this paper. Thereafter, for third phase of experimentation, five supervised machine learning classifiers named NB, Random Forest, SVM, Decision Tree and (LR) Logistic Regression models were applied over three secondary training datasets. First being Mixed dataset of movie reviews and news, second being Airline dataset and the final one was dataset of Amazon product reviews. Results demonstrated 52.07%, 45.63% and 50.3% reduction in feature subset for Mixed, Airline and Amazon dataset respectively without compromising the accuracy. Ultimately, Support Vector Machine which is observed to be outperforming other four classifiers for all three datasets provides a scrutiny of sentiments over tweets related to Taliban Government.

No. of Pages : 28 No. of Claims : 8

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The Patent Office Journal No. 45/2021 Dated 05/11/2021

52101



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Department of Industrial Policy & Promotion,  
Ministry of Commerce & Industry,  
Government of India



Application Details

APPLICATION NUMBER	202111043123
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	23/09/2021
APPLICANT NAME	1 . Dr. Randeep Singh 2 . Dr. Ashish Kumar Sharma 3 . Ravinder Singh Madhan 4 . Prof.(Dr). R.K Bathia 5 . Nida Rahat 6 . Dr. Ramesh Kait 7 . Gurpreet Singh 8 . Ms. Nirmal Kaur 9 . Dr. Ashish Manohar Urkude 10 . Dr. Shilpi Kulshrestha 11 . Dr. A. Suphalakshmi 12 . Mrs. Gayathri Devi S
TITLE OF INVENTION	INTELLIGENT SYSTEM AND METHOD FOR PROVIDING A VIRTUAL CONSULTATION SERVICE BASED ON ARTIFICIAL INTELLIGENCE
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	patentpublication@gmail.com
ADDITIONAL-EMAIL (As Per Record)	
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	15/10/2021

Chairman  
Deptt. of Computer Science  
and Applications  
K.U. Kurukshetra



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Department of Industrial Policy & Promotion,  
Ministry of Commerce & Industry,  
Government of India



Application Details

APPLICATION NUMBER	202111050627
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	03/11/2021
APPLICANT NAME	1. Prof (Dr) R.K. Bathla 2. Dr. Ramesh Kait 3. Dr. Surender Kumar 4. Prof. Sunil Kr Pandey 5. Dinesh Kumar 6. Dr. Suman Gullia 7. Deepak Garg 8. Er. Amanpreet Singh 9. Rajinder Kumar 10. Er. Gaganjot Kaur 11. Er. Kulwant Singh 12. Pranshu Saxena
TITLE OF INVENTION	SYSTEM AND METHOD FOR GENERATING TRAFFIC HEAT MAP IN SMART CITY THROUGH CLOUD COMPUTING APPROACH
FIELD OF INVENTION	COMMUNICATION
E-MAIL (As Per Record)	patentpublication@gmail.com
ADDITIONAL-EMAIL (As Per Record)	patentpublication@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	26/11/2021

Chairman  
Deptt. of Computer Science  
and Applications  
K.U. Kurukshetra

(12) PATENT APPLICATION PUBLICATION  
(19) INDIA  
(22) Date of filing of Application :28/07/2020

(21) Application No.202011018223 A  
(43) Publication Date : 11/06/2021


(54) Title of the invention : OPTICAL LIGHT ASSISTED MICRO GRIDLINE BED FOR MANUAL SCREEN PRINTING SYSTEM TO ACHIEVE BETTER REGISTRATION IN MULTILAYER PRINTING OF CIRCUITS AND DEVICES

(51) International classification	:G03F0009000000, B33Y0050020000, H05K0003040000, B41M0003000000, G06K0015100000
(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

(71)Name of Applicant :  
**1)Sandeep Kumar**  
 Address of Applicant :H. No. 1282/4, Rohtash Nagar, Rohtak  
 (Haryana) Haryana India  
**2)Chandra Charu Tripathi**  
 (72)Name of Inventor :  
**1)Sandeep Kumar**  
**2)Kapil Bhatt**  
**3)Chandra Charu Tripathi**

(57) Abstract :  
 Registration is the major issue in the case of multilayer printing of functional circuits and devices. To overcome the registration issue, the alignment of successive masks in printing should be so perfect that upon printing both layers overlap, perfectly. In the case of an automatic roll-to-roll printing system, highly sophisticated mask alignment techniques such as image processing are being used to achieve layers™ registration. While in the case of a sheet to sheet printing it is impossible to achieve good registration which limits the fabrication of multilayer device prototype with precise geometry at laboratory scale. Here, we propose a screen printing system to achieve a high level of registration for multilayer pattern printing on transparent as well as opaque substrates. It consists of an optical light-assisted screen printing bed along with a micro-scale gridline for the perfect alignment of mask and successive printed line. The system can be utilized to print both graphics and electronic devices with very high registration. The range of registration can be a few microns depending upon the gridline resolution.

No. of Pages : 8 No. of Claims : 11

  
 Director (UIET)  
 Kurukshetra University  
 KURUKSHETRA-136119

(54) Title of the invention : AN MODEL ENGAGEMENT FOR ELECTRICAL FITTING VIRTUAL ITEM PROVIDING WITH FLANGELESS OF HUMAN CONNECTOR BODY

(51) International classification	:H02G0003060000, H01R0013740000, H02G0003180000, H01R0013533000, G06T0017100000	(71)Name of Applicant : <b>1)S ARUN</b> Address of Applicant :SUBRAMANIYA BHARATHI ST ,BALAJI NAGAR NAGAR , ANAKAPUTHUR ,CHENNAI Tamil Nadu India
(31) Priority Document No	:NA	<del>2)Prof.(Dr.) Monika Verma,Chaudhary Devi Lal University</del>
(32) Priority Date	:NA	<b>3)Prof.(Dr.) Avnesh Verma,Kurukshetra University</b>
(33) Name of priority country	:NA	<del>4)Dr. Charan Singh,Guru Kashi University</del>
(86) International Application No	:PCT//	<b>5)Ms.Sharone Verma,</b>
Filing Date	:01/01/1900	(72)Name of Inventor :
(87) International Publication No	: NA	<b>1)Prof.(Dr.) Monika Verma,Chaudhary Devi Lal University</b>
(61) Patent of Addition to Application	:NA	<b>2)Prof.(Dr.) Avnesh Verma,Kurukshetra University</b>
Number	:NA	<b>3)Dr. Charan Singh,Guru Kashi University</b>
Filing Date	:NA	<b>4)Ms.Sharone Verma,</b>
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

## (57) Abstract :

Abstract In this invention electrical fitting a virtual thing utilizing a human body model and a framework for offering a fitting support of a virtual thing are given, the technique including deciding if a client is situated in an encounter region, loading a three-dimensional (3D) standard symbol comparing to setting data contribution by the input when the client is situated in the preliminary region, getting a profundity picture of the client relating to a preset stance, changing the 3D standard symbol into a client symbol reflecting body attributes of the client, utilizing a profundity picture of the client, fitting a virtual thing chose by the client to the client symbol, and applying a movement of the client changing continuously to the client symbol to which the virtual thing is fitted. A snap commitment electrical fitting for tying down electrical links or channel to an electrical board or junction box. The fitting highlights a flangeless round connector body holding ring encompassing its driving end. The connector body and snap fit holding fit are electrically conductive. The snap fit incorporates an internal coordinated retainer tang for getting the snap ring to the connector body. At least one tangs are cantilevered outwards radially from the snap ring and incorporate locking tangs and establishing tangs. The locking tangs snap draw in and lock the electric connector gathering to a take out in a board or intersection box when it is squeezed in that and give strain alleviation to forestall simple withdrawal of the connector in this manner. The establishing tangs set up great electrical coherence or ground between the connector gathering and the board or intersection box when it is associated thereto. The connector body is flangeless to diminish cost of development. The establishing tang incorporates an indispensable leg parcel that is twisted outwards from the principle body of the establishing tang to give broad surface contact between the establishing tang and the board or intersection box to set up great electrical congruity and diminish the millivolt drop between the electric connector gathering, the link, and the junction box.

No. of Pages : 8 No. of Claims : 5



Australian Government

IP Australia

# CERTIFICATE OF GRANT INNOVATION PATENT

**Patent number:** 2021105736

The Commissioner of Patents has granted the above patent on 19 January 2022, and certifies that the below particulars have been registered in the Register of Patents.

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

Suresh Kumar of Bharat Institute of Pharmacy, Pehladpur, Babain Kurukshetra Haryana India

Renu Saharan of Maharishi Markandeshwar (Deemed to be University), Mullana Ambala Haryana 133207 India

Abhishek Tiwari of Department of Pharmacy, Devsthali Vidyapeeth College of Pharmacy Lalpur, Rudrapur, U.S. Nagar Uttarakhand India

Varsha Tiwari of Department of Pharmacy, Devsthali Vidyapeeth College of Pharmacy Lalpur, Rudrapur, U.S. Nagar Uttarakhand India

Sunil Singh of Department of Pharmaceutical Chemistry, Shri Sai College of Pharmacy Handia, Prayagraj Uttar Pradesh India

Biswa Sahoo of Roland Institute of Pharmaceutical Sci. Berhampur Odisha India

Manish Kumar of M.M. College of Pharmacy, Maharishi Markandeshwar (Deemed to be University), Mullana Ambala, Haryana India

Navneet Verma of Director & Dean, Pharmacy Academy, IFTM University Moradabad Uttar Pradesh India

Prabhat Upadhyay of Institute of Pharmaceutical Research, GLA University Mathura Uttar Pradesh India

Sukhbir Lal of Institute of Pharmaceutical Sciences, Kurukshetra University Kurukshetra Haryana India

Jagdish Kumar Sahu of Assistant Professor, School of Pharmacy and Technology Management, SVKM's NMIMS (Deemed to be University), Shirpur Dhule Maharashtra India

Shailendra Bhatt of Professor, Department of Pharmaceutics, GD Goenka University, GD Goenka Education City, Sohna Gurgaon Road Sohna Haryana India

**Title of invention:**

Synthesis, characterization and biological evaluation of Cyclo-octapeptide, Cyclogossine B (77)

**Name of inventor(s):**

Kumar, Suresh; Saharan, Renu; Tiwari, Abhishek; Tiwari, Varsha; Singh, Sunil; Sahoo, Biswa; Kumar, Manish; Verma, Navneet; Upadhyay, Prabhat; Lal, Sukhbir; Sahu, Jagdish Kumar and Bhatt, Shailendra

**Term of Patent:**

Eight years from 18 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.



Dated this 19<sup>th</sup> day of January 2022

Commissioner of Patents

PATENTS ACT 1990

The Australian Patents Register is the official source, and should be referred to for any details concerning this Patent





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Department of Industrial Policy & Promotion,  
Ministry of Commerce & Industry,  
Government of India



### Application Details

APPLICATION NUMBER	202211010516
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	28/02/2022
APPLICANT NAME	Kurukshetra University
TITLE OF INVENTION	APOPTOSIS INDUCING COMPOSITION OF BROMO-METHOXYPHENYL-PHENYLSULFONYL-TRIAZOL-BENZENESULFONAMIDE
FIELD OF INVENTION	BIOTECHNOLOGY
E-MAIL (As Per Record)	mehta@mehtaip.com
ADDITIONAL-EMAIL (As Per Record)	rkm@mehtaip.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	28/04/2022
PUBLICATION DATE (U/S 11A)	13/05/2022

### Application Status

APPLICATION STATUS

**Application Awaiting Examination**

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In case of any discrepancy in status, kindly contact [ipo-helpdesk@nic.in](mailto:ipo-helpdesk@nic.in)

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202211010594 A

(19) INDIA

(22) Date of filing of Application :28/02/2022

(43) Publication Date : 02/09/2022

(54) Title of the invention : APOPTOSIS INDUCING COMPOSITION OF CHLOROPHENYLPHENYLSULFONYL-TRIAZOL-BENZENESULFONAMIDE.

(51) International classification :A61K0039395000, C07D0513040000, C07D0471040000, C07K0014470000, C12N0015110000

(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 :

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Address of Applicant :Kurukshetra University, Kurukshetra-136119, Haryana -----

Name of Applicant : NA

Address of Applicant : NA

(72)Name of Inventor :

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**3)Amit Kumar**

Address of Applicant :Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA -----

**4)Harish Panchal**

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**5)Jitender Kumar Bhardwaj**

Address of Applicant :Department of Zoology, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA -----

**6)Rajiv Kumar**

Address of Applicant :Ch. Mani Ram Godara Government College for Women, Bhodia Khera, Fatehabad-125050, Haryana, INDIA -----

(57) Abstract :

There is provided an apoptosis inducing composition comprising chlorophenyl-phenylsulfonyl-triazol-benzenesulfonamide, and pharmaceutical composition, and a method of preparation thereof, and a method of use thereof.

No. of Pages : 30 No. of Claims : 7



Office of the Controller General of Patents, Designs & Trade Marks  
Department of Industrial Policy & Promotion,  
Ministry of Commerce & Industry,  
Government of India



### Application Details

APPLICATION NUMBER	202211024040
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	23/04/2022
APPLICANT NAME	Kurukshetra University
TITLE OF INVENTION	CARBOXYMETHYLCELLULOSE ESTER BASED DRUG DELIVERY SYSTEM
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	mehta@mehtaip.com
ADDITIONAL-EMAIL (As Per Record)	rkmipr@kuk.ac.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	23/04/2022
PUBLICATION DATE (U/S 11A)	29/04/2022
REPLY TO FER DATE	15/11/2022

### Application Status

APPLICATION STATUS	Reply Filed. Application in amended examination
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Ministry of Commerce & Industry,  
Government of India



### Application Details

APPLICATION NUMBER	202211024337
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	25/04/2022
APPLICANT NAME	Kurukshetra University
TITLE OF INVENTION	POLY-URONIC ACID ESTER OF DRUG AS SUSTAINED RELEASE DRUG DELIVERY SYSTEM (PUAE-DDS) FOR LIVER.
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	mehta@mehtaip.com
ADDITIONAL-EMAIL (As Per Record)	rkmipr@kuk.ac.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	29/04/2022

### Application Status

APPLICATION STATUS

**Awaiting Request for Examination**

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Ministry of Commerce & Industry,  
Government of India



### Application Details

APPLICATION NUMBER	202211024595
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	26/04/2022
APPLICANT NAME	Kurukshetra University
TITLE OF INVENTION	SUCCINIC ACID CROSS-LINKED $\beta$ -CYCLODEXTRIN-CURCUMIN DRUG DELIVERY SYSTEM
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	mehta@mehtaip.com
ADDITIONAL-EMAIL (As Per Record)	rkmipr@kuk.ac.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	29/04/2022

### Application Status

APPLICATION STATUS	Awaiting Request for Examination
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Government of India



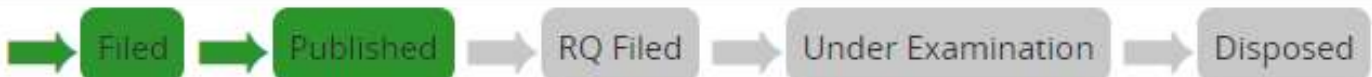
### Application Details

APPLICATION NUMBER	202211024608
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	26/04/2022
APPLICANT NAME	Kurukshetra University
TITLE OF INVENTION	PHTHALIC ACID CROSS-LINKED $\beta$ -CYCLODEXTRIN-CURCUMIN DRUG DELIVERY SYSTEM
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	mehta@mehtaip.com
ADDITIONAL-EMAIL (As Per Record)	rkmipr@kuk.ac.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	29/04/2022

### Application Status

APPLICATION STATUS	Awaiting Request for Examination
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Government of India



### Application Details

APPLICATION NUMBER	202211025341
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	29/04/2022
APPLICANT NAME	Kurukshetra University
TITLE OF INVENTION	CATHEPSIN B INHIBITORS AND A PHARMACEUTICAL COMPOSITION THEREOF2.
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	mehta@mehtaip.com
ADDITIONAL-EMAIL (As Per Record)	rkmipr@kuk.ac.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	06/05/2022

### Application Status

APPLICATION STATUS	Awaiting Request for Examination
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### Application Details

APPLICATION NUMBER	202211025344
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	29/04/2022
APPLICANT NAME	Kurukshetra University
TITLE OF INVENTION	CATHEPSIN B INHIBITORS AND A PHARMACEUTICAL COMPOSITION THEREOF1.
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	mehta@mehtaip.com
ADDITIONAL-EMAIL (As Per Record)	rkmipr@kuk.ac.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	06/05/2022

### Application Status

APPLICATION STATUS	Awaiting Request for Examination
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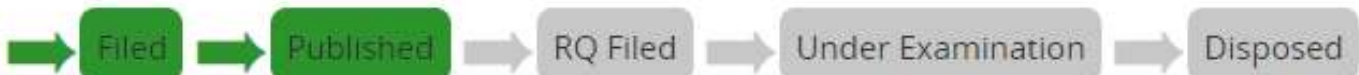
### Application Details

APPLICATION NUMBER	202211025366
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	29/04/2022
APPLICANT NAME	Kurukshetra University
TITLE OF INVENTION	CATHEPSIN B INHIBITORS AND A PHARMACEUTICAL COMPOSITION THEREOF3.
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	mehta@mehtajp.com
ADDITIONAL-EMAIL (As Per Record)	rkmipr@kuk.ac.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	06/05/2022

### Application Status

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### Application Details

APPLICATION NUMBER	202211025376
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	29/04/2022
APPLICANT NAME	Kurukshetra University
TITLE OF INVENTION	CATHEPSIN B INHIBITORS AND A PHARMACEUTICAL COMPOSITION THEREOF4.
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	mehta@mehtaip.com
ADDITIONAL-EMAIL (As Per Record)	rkmipr@kuk.ac.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	06/05/2022

### Application Status

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### Application Details

APPLICATION NUMBER	202211033843
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	13/06/2022
APPLICANT NAME	Kurukshetra University
TITLE OF INVENTION	A-AMYLASE INHIBITOR COMPOSITION OF THIAZOLIDINONE DERIVATIVE OF SPIROPYRROLIDINE AND TRIAZOLE HAVING METHYL- AND NITRO- SUBSTITUTIONS
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	mehta@mehtaip.com
ADDITIONAL-EMAIL (As Per Record)	rkmipr@kuk.ac.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	13/06/2022
PUBLICATION DATE (U/S 11A)	24/06/2022

### Application Status

APPLICATION STATUS	FER Issued, Reply not Filed
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Government of India



### Application Details

APPLICATION NUMBER	202211033854
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	14/06/2022
APPLICANT NAME	Kurukshetra University
TITLE OF INVENTION	A-AMYLASE INHIBITOR COMPOSITION OF THIAZOLIDINONE DERIVATIVE OF SPIROPYRROLIDINE AND TRIAZOLE HAVING METHYL- AND METHOXY- SUBSTITUTIONS
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	mehta@mehtaip.com
ADDITIONAL-EMAIL (As Per Record)	rkmipr@kuk.ac.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	14/06/2022
PUBLICATION DATE (U/S 11A)	24/06/2022

### Application Status

APPLICATION STATUS	FER Issued, Reply not Filed
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(12) PATENT APPLICATION PUBLICATION

(21) Application No.202211043012 A

(19) INDIA

(22) Date of filing of Application :27/07/2022

(43) Publication Date : 05/08/2022

(54) Title of the invention : A-AMYLASE INHIBITOR COMPOSITION (AIC) OF THIAZOLIDINONE DERIVATIVE OF SPIROPYRROLIDINE AND TRIAZOLE HAVING METHOXY- AND NITRO- SUBSTITUTIONS

(51) International classification :C07D0277140000, A61K0031426000, A61K0031427000, C07D0249080000, A61K0031497000

(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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**4)Rahul Singh**

Address of Applicant :Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA Kurukshetra ---

(57) Abstract :

a-Amylase Inhibitor Composition (AIC) of Thiazolidinone Derivative of Spiropyrrolidine and Triazole having Methoxy- and Nitro-Substitutions. The present invention relates to a novel a-amylase inhibitor composition (AIC) comprising: a thiazolidinone derivative of spiropyrrolidine and triazole, wherein the composition is characterized by essentially comprising a combination of: (a) thiazolidinone moiety; (b) spiropyrrolidine moiety; and (c) triazole moiety; and wherein the thiazolidinone derivative of spiropyrrolidine and triazole has a structural Formula-I, wherein a methoxy - (-OCH<sub>3</sub>) group substitution is in para- position at position 13; and a nitro- (NO<sub>2</sub>) group substitution is in para- position at position 34: Formula-I In one embodiment, the present invention relates to a pharmaceutical composition comprising the a-amylase inhibitor composition (AIC) of the present invention as a main active ingredient of the pharmaceutical composition and optionally a pharmaceutically acceptable excipient.

No. of Pages : 14 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202211043381 A

(19) INDIA

(22) Date of filing of Application :28/07/2022

(43) Publication Date : 05/08/2022

(54) Title of the invention :  $\alpha$ -Amylase Inhibitor Composition (AIC) of Thiazolidinone Derivative of Spiropyrolidine and Triazole having Methyl- Substitution at Terminal Phenyl Groups.

(51) International classification :C07D0277140000, C07D0249080000, A61K0031427000, C07D0417040000, C07K0005020000

(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 :

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Name of Applicant : NA

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**3)Meenakshi Duhan**

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**4)Rahul Singh**

Address of Applicant :Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA Kurukshetra ---

-----

(57) Abstract :

The present invention relates to a novel  $\alpha$ -amylase inhibitor composition (AIC) comprising: a thiazolidinone derivative of spiropyrolidine and triazole, characterized in that the thiazolidinone derivative of spiropyrolidine and triazole comprises a combination of: (a) thiazolidinone moiety; (b) spiropyrolidine moiety; and (c) triazole moiety; and wherein the thiazolidinone derivative of spiropyrolidine and triazole has a structural Formula-I, wherein both terminal phenyl rings are essentially substituted by a methyl- (-CH<sub>3</sub>) group in a para-position at positions numbered as 13 and 34: Formula-I In one embodiment, the present invention relates to a pharmaceutical composition comprising the  $\alpha$ -amylase inhibitor composition (AIC) of the present invention as a main active ingredient of the pharmaceutical composition and optionally a pharmaceutically acceptable

No. of Pages : 15 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202211043805 A

(19) INDIA

(22) Date of filing of Application :31/07/2022

(43) Publication Date : 05/08/2022

(54) Title of the invention : APOPTOSIS INDUCING COMPOSITION COMPRISING TRIAZOLOTHIAZOLYL-TRIAZOLE DERIVATIVE OF BENZENESULFONAMIDE.

(51) International classification :C07D0471040000, A61K0031560000, C07D0209120000, A61K0031585000, C22C0038000000

(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 :

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Address of Applicant :Kurukshetra-136119, Haryana Kurukshetra -----

Name of Applicant : NA

Address of Applicant : NA

(72)Name of Inventor :

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Address of Applicant :Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA Kurukshetra ---

**3)Dr. Jitender Kumar Bhardwaj**

Address of Applicant :Reproductive Physiology Laboratory, Department of Zoology, Kurukshetra University, Kurukshetra, Haryana. 136119, India Kurukshetra -----

**4)Ms. Prerna Bikal**

Address of Applicant :Reproductive Physiology Laboratory, Department of Zoology, Kurukshetra University, Kurukshetra, Haryana, 136119, India Kurukshetra -----

(57) Abstract :

The present invention relates to a novel apoptosis inducing composition comprising: a triazolothiazolyl-triazole derivative of benzenesulfonamide, wherein the triazolothiazolyl-triazole derivative of benzenesulfonamide comprises a combination of: (a) triazolothiazole moiety; (b) triazole moiety; and (c) benzenesulfonamide moiety; and wherein the triazole moiety is substituted by a methyl- (-CH<sub>3</sub>) group; and wherein the triazolothiazole moiety is substituted by a phenyl ring provided with a nitro- (-NO<sub>2</sub>) group in a meta- position, and a pharmaceutical composition thereof, and having a structural Formula-I: Formula-I In one embodiment, the present invention relates to method of using apoptosis inducing composition comprising the riazolothiazolyl-triazole derivative of benzenesulfonamide of the present invention for the treatment of cancer.

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

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202211043808 A

(19) INDIA

(22) Date of filing of Application :31/07/2022

(43) Publication Date : 26/08/2022

(54) Title of the invention : APOPTOSIS INDUCING COMPOSITION COMPRISING TRIAZOLOTHIAZOLYL-TRIAZOLE DERIVATIVE OF BENZENESULFONAMIDE2.

(51) International classification :C07D0471040000, A61K0031560000, C07D0209120000, C07D0413100000, C07D0209820000

(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)Kurukshetra University**

Address of Applicant :Kurukshetra-136119, Haryana

Kurukshetra -----

Name of Applicant : NA

Address of Applicant : NA

(72)Name of Inventor :

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**2)Lalit Vats**

Address of Applicant :Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA Kurukshetra ---

**3)Dr. Jitender Kumar Bhardwaj**

Address of Applicant :Reproductive Physiology Laboratory, Department of Zoology, Kurukshetra University, Kurukshetra, Haryana, 136119, INDIA Kurukshetra -----

**4)Ms. Prerna Bikal**

Address of Applicant :Reproductive Physiology Laboratory, Department of Zoology, Kurukshetra University, Kurukshetra, Haryana, 136119, INDIA Kurukshetra -----

(57) Abstract :

The present invention relates to a novel apoptosis inducing composition comprising: a triazolothiazolyl-triazole derivative of benzenesulfonamide, wherein the triazolothiazolyl-triazole derivative of benzenesulfonamide comprises a combination of: (a) triazolothiazole moiety; (b) triazole moiety; and (c) benzenesulfonamide moiety; and wherein the triazole moiety is substituted by a phenyl- (C6H5) group; and wherein the triazolothiazole moiety is substituted by a phenyl ring provided with fluoro- (-F) group in a para- position, and a pharmaceutical composition thereof, and having a structural Formula-I: Formula-I In one embodiment, the present invention relates to method of using apoptosis inducing composition comprising the riazolothiazolyl-triazole derivative of benzenesulfonamide of the present invention for the treatment of cancer.

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



(12) PATENT APPLICATION PUBLICATION

(21) Application No.202211043810 A

(19) INDIA

(22) Date of filing of Application :31/07/2022

(43) Publication Date : 26/08/2022

(54) Title of the invention : APOPTOSIS INDUCING COMPOSITION COMPRISING TRIAZOLOTHIAZOLYL-TRIAZOLE DERIVATIVE OF BENZENESULFONAMIDE3.

(51) International classification :C07D0471040000, A61K0031560000, C07D0209120000, A61K0038190000, C07D0209820000

(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 :

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Address of Applicant :Kurukshetra-136119, Haryana Kurukshetra -----

Name of Applicant : NA

Address of Applicant : NA

(72)Name of Inventor :

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Address of Applicant :Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA Kurukshetra ---

**2)Lalit Vats**

Address of Applicant :Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA Kurukshetra ---

**3)Dr. Jitender Kumar Bhardwaj**

Address of Applicant :Reproductive Physiology Laboratory, Department of Zoology, Kurukshetra University, Kurukshetra, Haryana, 136119, INDIA Kurukshetra -----

**4)Ms. Prerna Bikal**

Address of Applicant :Reproductive Physiology Laboratory, Department of Zoology, Kurukshetra University, Kurukshetra, Haryana, 136119, INDIA Kurukshetra -----

(57) Abstract :

The present invention relates to a novel apoptosis inducing composition comprising: a triazolothiazolyl-triazole derivative of benzenesulfonamide, wherein the triazolothiazolyl-triazole derivative of benzenesulfonamide comprises a combination of: (a) triazolothiazole moiety; (b) triazole moiety; and (c) benzenesulfonamide moiety; and wherein the triazole moiety is substituted by a phenyl- (C6H5) group; and wherein the triazolothiazole moiety is substituted by a phenyl ring provided with nitro- (NO<sub>2</sub>-) group in a para- position, and a pharmaceutical composition thereof, and having a structural Formula-I: Formula-I In one embodiment, the present invention relates to method of using apoptosis inducing composition comprising the riazolothiazolyl-triazole derivative of benzenesulfonamide of the present invention for the treatment of cancer.

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

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## Patent Search

Invention Title	Antimicrobial Composition Comprising Cu-Complex of Triethoxybenzaldimine derivative of O-Carboxymethyl Chitosan.
Publication Number	35/2022
Publication Date	02/09/2022
Publication Type	INA
Application Number	202211048491
Application Filing Date	25/08/2022
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	POLYMER TECHNOLOGY
Classification (IPC)	C08B0037080000, A01N0043160000, C07D0251180000, A61L0031040000, A61K0031555000

### Inventor

Name	Address	Country	Nationality
Dr. Sohan Lal	Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA	India	India
Dr. Parvin Kumar	Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA	India	India
Ms. Shikha Rani	Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA	India	India
Dr. Sanjiv Arora	Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA	India	India

Applicant

Name	Address	Country	Nationality
Kurukshetra University	Kurukshetra-136119, Haryana	India	India

**Abstract:**

The present invention relates to a novel antimicrobial composition comprising a triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound and a pharmaceutical composition thereof, and a method of preparation thereof, and wherein the active compound has the following structural formula: Triethoxybenzaldimine derivative of O-carboxymethyl chitosan The present invention also relates to a novel antimicrobial composition comprising a metal complex of the triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, and a pharmaceutical composition thereof, and a method of preparation thereof, and wherein the active compound has the following structural formula: Cu-complex of the triethoxybenzaldimine derivative of O-CMC

**Complete Specification**

**TECHNICAL FIELD OF THE INVENTION:**

The present invention primarily relates to antimicrobial composition comprising a triethoxybenzaldimine derivative of O-carboxymethyl chitosan or a Cu-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, and a pharmaceutical composition thereof.

Particularly, the present invention relates to antimicrobial composition comprising a triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, wherein the active compound of the composition comprises a product obtained by reacting: (a) O-carboxymethyl chitosan moiety (O-CMC) and (b) triethoxybenzaldehyde moiety which results in formation of the triethoxybenzaldimine derivative of O-carboxymethyl chitosan; and a pharmaceutical composition thereof.

More particularly, the present invention relates to antimicrobial composition comprising Cu-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, wherein the active compound of the composition comprises a product obtained by reacting: (a) O-carboxymethyl chitosan moiety and (b) triethoxybenzaldehyde moiety in first step resulting in formation of a triethoxybenzaldimine derivative of O-carboxymethyl chitosan followed by reacting with (c) a metal salt moiety in second step resulting in formation of the Cu-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan; and a pharmaceutical composition thereof.

In one embodiment, the present invention relates to method of preparation of the active compounds of the antimicrobial compositions of the present invention.

In another embodiment, the present invention relates to method of using the antimicrobial compositions of the present invention as antimicrobial drug formulation, or as antimicrobial drug formulation and/or as antifungal drug formulation.

BIOLOGICAL MATERIAL

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## Patent Search

Invention Title	ANTIMICROBIAL COMPOSITION COMPRISING NI-COMPLEX OF TRIETHOXYBENZALDIMINE DERIVATIVE OF O-CARBOXYMETHYL CHITOSAN		
Publication Number	35/2022		
Publication Date	02/09/2022		
Publication Type	INA		
Application Number	202211048572		
Application Filing Date	25/08/2022		
Priority Number			
Priority Country			
Priority Date			
Field Of Invention	POLYMER TECHNOLOGY		
Classification (IPC)	C08B0037080000, A61K0047360000, C08L0005080000, A61K0047610000, C07F0015040000		
Inventor			
<b>Name</b>	<b>Address</b>	<b>Country</b>	<b>Nationality</b>
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Ms. Shikha Rani	Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA	India	India
Dr. Sanjiv Arora	Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA	India	India
Applicant			

Name	Address	Country	Nationality
Kurukshetra University	Kurukshetra-136119, Haryana	India	India

**Abstract:**

The present invention relates to a novel antimicrobial composition comprising a nickel (Ni) complex of a triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound and a pharmaceutical composition thereof, and a method of preparation thereof, and wherein the triethoxybenzaldimine derivative of O-carboxymethyl chitosan has the following structural Formula-1, and the nickel (Ni) complex of a triethoxybenzaldimine derivative of O-carboxymethyl chitosan has the following structural Formula-2: Formula-1 Ni-complex of the triethoxybenzaldimine derivative of O-CMC

**Complete Specification****TECHNICAL FIELD OF THE INVENTION:**

The present invention primarily relates to antimicrobial composition comprising a triethoxybenzaldimine derivative of O-carboxymethyl chitosan or a Ni-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, and a pharmaceutical composition thereof.

Particularly, the present invention relates to antimicrobial composition comprising a triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, wherein the active compound of the composition comprises a product obtained by reacting: (a) O-carboxymethyl chitosan moiety (O-CMC) and (b) triethoxybenzaldehyde moiety which results in formation of the triethoxybenzaldimine derivative of O-carboxymethyl chitosan; and a pharmaceutical composition thereof.

More particularly, the present invention relates to antimicrobial composition comprising Ni-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, wherein the active compound of the composition comprises a product obtained by reacting: (a) O-carboxymethyl chitosan moiety and (b) triethoxybenzaldehyde moiety in first step resulting in formation of a triethoxybenzaldimine derivative of O-carboxymethyl chitosan followed by reacting with (c) a metal salt moiety in second step resulting in formation of the Ni-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan; and a pharmaceutical composition thereof.

In one embodiment, the present invention relates to method of preparation of the active compounds of the antimicrobial compositions of the present invention.

In another embodiment, the present invention relates to method of using the antimicrobial compositions of the present invention as antimicrobial drug formulation, or as antibacterial drug formulation and/or as antifungal drug formulation.

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## Patent Search

Invention Title	Antimicrobial Composition Comprising Fe-Complex of Triethoxybenzaldimine derivative of O-Carboxymethyl Chitosan.
Publication Number	35/2022
Publication Date	02/09/2022
Publication Type	INA
Application Number	202211048649
Application Filing Date	26/08/2022
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	POLYMER TECHNOLOGY
Classification (IPC)	C08B0037080000, A61K0033260000, A61L0031160000, A61K0047610000, G03G0009090000

### Inventor

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Ms. Shikha Rani	Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA	India	India
Dr. Sanjiv Arora	Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA	India	India

### Applicant



Name	Address	Country	Nationality
Kurukshetra University	Kurukshetra-136119, Haryana	India	India

**Abstract:**

The present invention relates to a novel antimicrobial composition comprising an iron (Fe) complex of a triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound and a pharmaceutical composition thereof, and a method of preparation thereof, and wherein the triethoxybenzaldimine derivative of O-carboxymethyl chitosan has the following structural Formula-1, and the iron (Fe) complex of a triethoxybenzaldimine derivative of O-carboxymethyl chitosan has the following structural Formula-2: Formula-1 Fe-complex of the triethoxybenzaldimine derivative of O-CMC

**Complete Specification**

**TECHNICAL FIELD OF THE INVENTION:**

The present invention primarily relates to antimicrobial composition comprising a triethoxybenzaldimine derivative of O-carboxymethyl chitosan or a Fe-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, and a pharmaceutical composition thereof.

Particularly, the present invention relates to antimicrobial composition comprising a triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, wherein the active compound of the composition comprises a product obtained by reacting: (a) O-carboxymethyl chitosan moiety (O-CMC) and (b) triethoxybenzaldehyde moiety which results in formation of the triethoxybenzaldimine derivative of O-carboxymethyl chitosan; and a pharmaceutical composition thereof.

More particularly, the present invention relates to antimicrobial composition comprising Fe-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, wherein the active compound of the composition comprises a product obtained by reacting: (a) O-carboxymethyl chitosan moiety and (b) triethoxybenzaldehyde moiety in first step resulting in formation of a triethoxybenzaldimine derivative of O-carboxymethyl chitosan followed by reacting with (c) a metal salt moiety in second step resulting in formation of the Fe-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan; and a pharmaceutical composition thereof.

In one embodiment, the present invention relates to method of preparation of the active compounds of the antimicrobial compositions of the present invention.

In another embodiment, the present invention relates to method of using the antimicrobial compositions of the present invention as antimicrobial drug formulation, or as antibacterial drug formulation and/or as antifungal drug formulation.

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## Patent Search

Invention Title	ANTIMICROBIAL COMPOSITION COMPRISING ZN-COMPLEX OF TRIETHOXYBENZALDIMINE DERIVATIVE OF O-CARBOXYMETHYL CHITOSAN		
Publication Number	35/2022		
Publication Date	02/09/2022		
Publication Type	INA		
Application Number	202211048650		
Application Filing Date	26/08/2022		
Priority Number			
Priority Country			
Priority Date			
Field Of Invention	POLYMER TECHNOLOGY		
Classification (IPC)	C08B0037080000, C07D0487040000, A61K0047360000, C07F0003000000, A61K0047610000		

### Inventor

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Ms. Shikha Rani	Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA	India	India
Dr. Sanjiv Arora	Department of Chemistry, Kurukshetra University, Kurukshetra-136119, Haryana, INDIA	India	India

### Applicant

Name	Address	Country	Nationality
Kurukshetra University	Kurukshetra-136119, Haryana	India	India

**Abstract:**

The present invention relates to a novel antimicrobial composition comprising a zinc (Zn) complex of a triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound and a pharmaceutical composition thereof, and a method of preparation thereof, and wherein the triethoxybenzaldimine derivative of O-carboxymethyl chitosan has the following structural Formula-1, and the zinc (Zn) complex of a triethoxybenzaldimine derivative of O-carboxymethyl chitosan has the following structural Formula-2: Formula-1  
Formula-2

**Complete Specification**

**TECHNICAL FIELD OF THE INVENTION:**

The present invention primarily relates to antimicrobial composition comprising a triethoxybenzaldimine derivative of O-carboxymethyl chitosan or a Zn-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, and a pharmaceutical composition thereof.

Particularly, the present invention relates to antimicrobial composition comprising a triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, wherein the active compound of the composition comprises a product obtained by reacting: (a) O-carboxymethyl chitosan moiety (O-CMC) and (b) triethoxybenzaldehyde moiety which results in formation of the triethoxybenzaldimine derivative of O-carboxymethyl chitosan; and a pharmaceutical composition thereof.

More particularly, the present invention relates to antimicrobial composition comprising Zn-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan as an active compound, wherein the active compound of the composition comprises a product obtained by reacting: (a) O-carboxymethyl chitosan moiety and (b) triethoxybenzaldehyde moiety in first step resulting in formation of a triethoxybenzaldimine derivative of O-carboxymethyl chitosan followed by reacting with (c) a metal salt moiety in second step resulting in formation of the Zn-complex of triethoxybenzaldimine derivative of O-carboxymethyl chitosan; and a pharmaceutical composition thereof.

In one embodiment, the present invention relates to method of preparation of the active compounds of the antimicrobial compositions of the present invention.

In another embodiment, the present invention relates to method of using the antimicrobial compositions of the present invention as antimicrobial drug formulation, or as antibacterial drug formulation and/or as antifungal drug formulation.

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### Application Details

APPLICATION NUMBER	202111004841
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	04/02/2021
APPLICANT NAME	Kurukshetra University, Kurukshetra, Haryana India
TITLE OF INVENTION	MAKING OF ECO-FRIENDLY NUTRI-POTS AND NUTRI-CHIPS FROM RURAL ORGANIC WASTE
FIELD OF INVENTION	MECHANICAL ENGINEERING
E-MAIL (As Per Record)	mehta@mehtaip.com
ADDITIONAL-EMAIL (As Per Record)	
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	19/07/2021
PUBLICATION DATE (U/S 11A)	06/08/2021

### Application Status

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## Design Application Details

### Application Number:

356427-001

### Cbr Number:

211879

### Cbr Date:

10/01/2022 15:05:22

### Applicant Name:

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3. Mr. Rachit Garg

4. Mr. Anshul Gupta

5. Dr. Monika

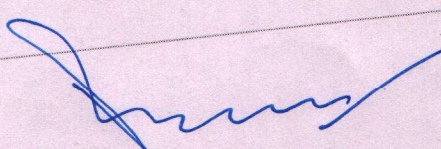
## Design Application Status

### Application Status:

Design Accepted and Published, Journal No is 13/2022 and Journal Date is 01/04/2022

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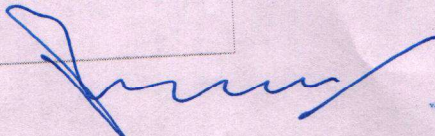
  
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Ministry of Commerce & Industry,  
Government of India

### Application Details

APPLICATION NUMBER	202111013003
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	25/03/2021
APPLICANT NAME	1 . Shilpa Garg 2 . Dr. Sumit Mittal 3 . Dr. Pardeep Kumar
TITLE OF INVENTION	TIME AND SPACE EFFICIENT FACE RECOGNITION SYSTEM BY USING GENDER PREDICTION
FIELD OF INVENTION	COMPUTER SCIENCE
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E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
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3)Dr. Sunil Nain

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(51) International classification :C08L0009020000, A23K0010260000, B28B0003020000, C04B0028000000, C04B0026020000

(86) International Application No :NA  
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Filing Date :NA(62) Divisional to Application Number :NA  
Filing Date :NA

(57) Abstract :

The brake friction composite prepared with fly ash-an industrial waste, white ark shell powder- a sea waste, reinforcing fiber, binder and the friction modifiers comprises composition of Phenol formaldehyde 18-20% by wt.; a glass fiber forming 3-5% by wt.; a Al<sub>2</sub>O<sub>3</sub> 5-8% by wt.. Fly ash 25-30 % by wt.; a CNSL powder 8-10 % by wt., Graphite 3-5 % by wt., Nitrile Butadiene Rubber (NBR) 3-5 % by wt., White ark shell powder 6-11 % by wt., Barium Sulphate 15-20 % by wt. The composition is expected to satisfy most of the performance criteria. Besides, it can also offer less release of wear dust during braking, negligible heat transfer at the backing plate to avoid the risk of backing plate detachment, and less noise and vibrations. The use of more than 40 wt. % of waste materials can increase the waste material utilization as well as reduce the overall cost of development of the product.

No. of Pages : 13 No. of Claims : 15

  
Director (UIET)  
Kurukshetra University  
KURUKSHETRA-136119

The Patent Office Journal No. 01/2022 Dated 07/01/2022



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**(Rule 80(4) of Patent Rules)**

RC Number : 55945

RC issue date: 26/Aug/2022

Patent Number: 370740

Application Number: 439/CHE/2015

Date of Application: 30/Jan/2015

Grantee : NIKHIL MARRIWALA

Patentee (current assignee) : Kurukshetra University,

Certified that the patent number mentioned above has been renewed upon receipt of ₹2400 vide CBR No. 33962 dated 26/Aug/2022 and continued for:

Year:	Amount:	Valid Upto:	Year:	Amount:	Valid Upto:
3 <sup>rd</sup> year	800	30/Jan/2018	12 <sup>th</sup> year		
4 <sup>th</sup> year	800	30/Jan/2019	13 <sup>th</sup> year		
5 <sup>th</sup> year	800	30/Jan/2020	14 <sup>th</sup> year		
6 <sup>th</sup> year	800	30/Jan/2021	15 <sup>th</sup> year		
7 <sup>th</sup> year	2400	30/Jan/2022	16 <sup>th</sup> year		
8 <sup>th</sup> year	2400	30/Jan/2023	17 <sup>th</sup> year		
9 <sup>th</sup> year	2400	30/Jan/2024	18 <sup>th</sup> year		
10 <sup>th</sup> year			19 <sup>th</sup> year		
11 <sup>th</sup> year			20 <sup>th</sup> year		

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Due date for next renewal is : 30/Jan/2024

Address for service : M/S. Dr. Ramesh Kumar MEHTA, Honorary Professor, IPR & Technology Transfer Kurukshetra University, Kurukshetra-136119; and Advocate & Registered Patent Attorney (Regn. No. IN/PA-267) of: MEHTA & MEHTA ASSOCIATES, Mehta House, B-474, Sushant Lok - I, Sector-27, Gurgaon - 122002, NCR, India Email: mehta@mehtaip.com and rkmipr@kuk.ac.in Cell No.: 0-9871941381 Ph. Nos.: +91-124-4108474, +91-124-4108475 Fax: +91-124-4108476

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