2022 - 2023

ENVIRONMENTAL SCIENCES AND SUSTAINABILITY

(GE 3451)

For B.E. / B.Tech., IV Semester Common to All Branches

As per the Latest Syllabus of Anna University, Chennai
(Regulations - 2021)

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by Dr. G. VENKATESAN, M.E., Ph.D.,
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1a.

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The Overview of Sustainable Technologies for the Treatment of Industrial Wastewater and its Potential for Reuse

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2. Department of Civil Engineering, SSM Institute of Engineering and Technology, Dindigul

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ABSTRACT:

Industrial wastewater has been discharged into the environment as a result of industrial operations, which comprises organic/inorganic/toxic compounds that have been present in the form of dissolved/suspended matter. The amount and quality of industrial effluent vary greatly based on the type of industry that produces it. Depending on wastewater composition, it could be highly biodegradable/non-biodegradable, or include chemicals that are resistant to treatment. The growing prevalence and diversity of synthetic chemicals is a major problem with industrial wastewater. During wastewater treatment, highly complex, putrescible organic particles are partially removed and partially decomposed into mineral or fairly stable organic substances. Conventional treatment methods often need significant energy inputs, extensive land expanses, and high operating and maintenance expenses. Recently, improved wastewater treatment techniques such as membrane technology, electrochemical processes, and oxidation processes have been developed and the treated water from these systems may be reused in a variety of applications, including irrigation and landscaping. In this study, a variety of industrial wastewater sources, treatment methods, and reuse techniques are explored.

Keywords:

Industrial wastewater, Nano technology, Biochemical Oxidation, Activated sludge process

INTRODUCTION:

The Disparate behavior of industrial effluent treatment is used to adjust the pH in the treated Water, removal of oily nature substances like grease particles, removal of metals, biodegradable pollutants and other hazardous substances. The various industries like chemical, pharmaceutical,textile, mining, fertilizer manufacturing, pulp and paper industry, distillery, food processing industries are still suffering the wastewater treatment process because of removal of

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COAGULATION-FLOCCULATION SEQUENTIAL WITH SOLAR PHOTOCATALYTIC PROCESSES USING CCRD FOR DAIRY WASTEWATER TREATMENT

Selvabharathi Gopal[a] and S. Sheik Dawood[b]

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Abstract

The aim of present work focus on Treatment of dairy wastewater by coagulation and solar photocatalytic process using CCRD. Dairy industry uses much volume of water and release large quantities of wastewater to the environment. The dairy industry is the largest source of food processing which, total amount of from living area. The sample of dairy wastewater is collected from "Amman PaalPannai", Vattapaarai, Dindigul. The characterization of the dairy wastewater includes pH, hardness, electrical conductivity, TSS, TDS, COD and BOD. Dairy wastewater is treated by using natural coagulants such as Cicerarietinum and Moringaoleifera and TiO_2 (Titanium dioxide) using coagulation and solar photocatalytic process respectively.The combined coagulation process, removal efficiency from cicerarietinum 86%, moringaolifera 85% was done by the effective results obtained from the natural coagulants 92% of removal efficiency and for solar photocatalytic process and the obtained COD removal efficiencies varied from 31% to 69% and colour removal from 36% to 78% and the predicted values from the model matched these experimental results satisfactory.

Keywords---Dairy Wastewater, Natural Coagulation, Central Composite Design, Colour Removal, Chemical Oxygen Demand Reduction and Solar Photo Catalytic Process.

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SOLID WASTE MANAGEMENT – A CASE STUDY OF ATTUR MUNICIPALITY

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Abstract

Accelerated Urbanization and transformative life style have led to the origination and generation of enormous amount of garbage and waste in urban areas, resulting in serious problems on public health and continuously challenging the global sustainability. Municipal Solid Waste Management in India has been continued to be a severe problem not only because of environmental and aesthetic concerns but also because of its generation in massive quantities every day. Studies on the Solid Waste Management systems adopted in Attur Municipality, Salem , from collection of waste to disposal of wastes. Other than Composting, efffective disposal and treatment methods on waste can be implemented in Attur to avoid the environmental threats like surface and ground water contamination. Integrated Solid Waste management hierarchy can be followed thereby resulting in minimization of Green House Gas emissions, minimizing the environmental impacts.

Keywords---Municipal Solid Waste; Solid Waste Management, Composting, Pollution Free Environment.

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National Conference and Exhibition on Rural Innovations

ENVIRONMENTAL IMPACTS OF IMPROPER SOLID WASTE MANAGEMENT

V. Praveen Jesuraj*[a], Dr. V. Sreevidya[b], M. Muthamizh Selvan[c], K. Sri Karan[c], M. Mukesh Chellam[c], S. Ragunath Boopathi[c]

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Abstract

The damps caused by solid waste are having a devastating impact on the conditions in disadvantaged countries. It is easy to see that improper disposal of solid waste has a negative impact on the ecology in any nation that is experiencing economic growth. Since there is insufficient proper planning and funding, the situation regarding the management of solid waste is deteriorating at an alarming rate. a problem in the management of solid waste as a result of rapid industrialization, growing urbanisation, and a limited budget. Because of the incorrect disposal of solid waste, infectious diseases are spreading across the study area. According to the findings of the research, inefficient solid waste management systems may be linked back to a number of issues. These problems include rapid population growth, increases in the formation rate of solid waste, management defects, a lack of legislative implementation, and inadequate funding. The unintentional invasion of the city, harsh weather conditions, lack of social awareness or community participation, inappropriate resources, particularly inappropriate equipment, and a lack of money are the key causes of inadequate municipal solid waste management systems. A municipal solid waste management system that is inefficient may be the cause of serious environmental issues, including the spread of infectious diseases, the contamination of land and water, the clogging of sewers, and the reduction of biodiversity.

Keywords---Solid Waste Management, Environmental Impacts, Land Pollution.

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PERFORMANCE OF LATEST SANITATION TECHNOLOGIES IN TAMIL NADU, INDIA

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Abstract

Sanitation is intended to reduce the spread and burden of diseases transmitted from excreta. Pathogen reduction from excreta before sludge or effluent discharge to the environment would seem a logical and useful performance indicator for sanitation systems. However, the relative magnitudes of pathogen release from common sanitation technologies are not well understood. We, therefore, investigated the feasibility of performance measurement of different sanitation technologies in Tamil Nadu, India in reducing the release of the pathogen indicator Escherichia coli (E. coli). After conducting users' surveys and technical assessments of the locally prevalent sanitation systems, we classified them into 7 distinct categories (based on both observed physical characteristic and usage) within a widely-accepted physical typology. Faecal sludge and wastewater samples were collected and analysed for E. coli and total solids from 136 household systems, 24 community systems, and 23 sanitary sewer oveflows. We estimated the average volumetric release rates of wastewater and faecal sludge from the different sanitation technologies. Average daily per capita E. coli release was computed, and used as one indicator of the public health performance of technologies. We found that on-site installations described by owners as "septic systems" included diverse forms of tanks and pits of uncertain performance. We observed a statistically significant difference in the average daily per capita E. coli release from different sanitation technologies ($p = 0.00001$). Pathogen release from the studied on-site sanitation technologies varied by as much as 5 orders of magnitude from "lined pits" (5.4 Log10 E. coli per person per day) to "overflowing sanitary sewers" and "direct discharge pipes" (10.3–10.5 Log10 E. coli per person per day). Other technologies lay between these extremes, and their performances in E. coli removal also varied significantly, in both statistical and practical terms. Our results suggest that although faecal sludge management along the sanitation service chain is important, sanitation planners of the observed systems (and probably elsewhere)

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SHEAR BEHAVIOUR OF HYBRID FIBER ENRICHED GEOPOLYMER CONCRETE

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Abstract

The main objective of the study is to look into the shear behaviour of hybrid fibre reinforced geopolymer concrete beams. Test specimens of 1200×150×150 mm size were used for the study. 10% of Fly ash by the mass was replaced by GGBS. The variable used were percentage of steel fibre volume fraction viz. 0.0%, 0.25%, and 0.5%, and polypropylene fibre volume fraction viz. 0.0%, 0.25%,and 0.5% .The concentration of sodium hydroxide was 10Molar in geopolymer concrete. The geopolymer specimens were cured by using steam curing chamber. The specimens were cured after the rest period of three days. For curing, temperature was fixed as 600 C for 24 hours. The specimens were tested after the age of 28 days.Test results shows that first crack load, ultimate load, energy absorption capacity, experimental shear strength and ductile characteristic of FGHGPC geopolymer concrete specimens.

Keywords---Cement, Carbon Dioxide, Geopolymer, Shear Behavior, Hybrid Fiber.

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CLOUD BASED IOT SYSTEM FOR INDUSTRIAL WASTE WATER MAGANMENT

S. Suganya[a], A. Aldo Tenis[b], M. Moohambikai[c], K. Sureka[d], J. Dhanalakshmi[d]

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Abstract

Waste water treatment is the most important process for reducing pollutants in waste water to levels that nature can cope with. At many Sewages treatment plants, industrial wastes cause more difficulties in the treatment process than any other single problem where the plant operators must deal with. The plants should not be implemented to handle the wastes and the accelerated deterioration of sewage treatment plant structures. The proposed system monitors the power of hydrogen (pH) and temperature parameters from waste water in let which will be treated in Wastewater treatment plant and avoid impermissibleindustrialwastewaterwhich theplantcannotdeal. Monitoring the waste water outlet from industry. Monitoring the water quality using pH sensor. Observe the impurity level in waste water. Sendingregulardata touserbyIoTwebpage.The industrial waste water can be sensed by sensor like pH sensor, Turbidity sensor, flow sensor. These sensors data can be updated to user using IoT module. This is needed to change the path of the water to the industrial waste water treatment plant that can done using valve when abnormal condition found in the wastage water.

Keywords—Ph Sensors, Turbidity Sensors, Internet of Things, Industrial Internet of Things IOT(IIOT), Flow Sensor, Industrial Waste Water and Cloud based IOT.

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A SURVEY ON SMART WATER MANAGEMENT SYSTEMS FOR CONTEMPORARY WORLD AND GREAT BEYOND

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Abstract

Water management has become a pressing issue in today's world, as climate change, population growth, and pollution have created new challenges in ensuring the availability and quality of water resources. To address these challenges, leading technologies are being used to manage water resources more efficiently and sustainably. Smart water management systems are one of the key technologies being used in water management today. These systems use sensors, data analytics, and automation to monitor and control water use in real-time. By identifying leaks, optimizing water use, and reducing water waste, smart water management systems help conserve water resources and reduce costs. Precision irrigation is another technology being used in water management today. This technology uses sensors and weather data to optimize the amount of water delivered to crops, reducing water waste and improving crop yields. Advanced water treatment technologies, like reverse osmosis, ultrafiltration, and UV disinfection, ensure removing contaminants from water as safe for human consumption.

Rainwater harvesting is another technology that gains popularity in water management. By capturing rainwater, this technology reduces the demand for municipal water supplies and provides a source of water for non-potable uses, such as irrigation or toilet flushing. Desalination, which is the process of removing salt and other minerals from seawater, can provide a source of drinking water in coastal regions where fresh water is scarce. Technological advances help desalination more efficient and cost-effective. Water sensors and analytics are also being used to manage water resources more effectively. These technologies can provide real-time data on

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DETECTING OBJECT AND TEXT- CONVERTING TO SPEECH

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Abstract

According to estimates by the World Health Organization, about 285 million people suffer from some kind of visual disability, of whom 39 million are blind, resulting in 0.7% of the world population. Blindness is often used to describe some form of visual impairments or vision loss. There is a great dependency for the blind people navigation or walking in any unfamiliar area. They depend on any persons to help them or they use their natural senses such as touch or sound for identification or Navigation. Most learning and recognition of objects around us is accomplished using the eye This device, the virtual smart glass assists them in their ways without the need of human help and help them walk independently. The device is installed on the glass frame and these glasses help to figure out the surroundings. The object detection technology is given as input to the microcontroller, to find out if there is any obstacle in front of it. If there is an obstacle, the device will produce an audio and alert the user. The object detection methodologies can be useful for detecting the object in their navigation path. We also going to recognize text captured from an video and convert it to speech Text detection is achieved using the OpenCV software and open source Optical Character Recognition (OCR) tools Tesseract and Efficient and Accurate Scene Text Detector (EAST) based on Deep Learning techniques. The recognized text is further processed by Google's Text to Speech (gTTS) API to convert to an audible signal for the user. The recognized video is further processed by MobilenetV3 which is predefined deep learning algorithm in TensorFlow and predict the objects in front of them and converts that into a audio

Keywords---Deep Learning, Object Detection, Text Conversion.

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DEEP LEARNING BASED POULTRY DISEASE DETECTION

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Abstract

Poultry farming is an essential sector of the agricultural industry that plays a significant role in food production and the economy. However, the poultry industry is prone to various diseases that can cause significant losses, including reduced productivity, increased mortality rates, and economic losses. Therefore, early detection and effective management of diseases are crucial to maintain a healthy poultry population and ensure sustainable poultry production. This paper presents an innovative approach to poultry disease detection based on action recognition algorithms. By analyzing the actions performed by the birds, such as respiratory distress, decreased appetite, and decreased egg production, we can detect and identify diseases such as avian influenza, Newcastle disease, and coccidiosis. The algorithm uses deep learning techniques; including convolution neural networks (CNNs), to extract relevant features from the video data and classify the actions performed by the birds. The benefits of early detection of poultry diseases include reduced economic losses, improved animal welfare, and the ability to prevent the spread of diseases to other birds. However, the failure to detect diseases can result in reduced productivity, negative impacts on the reputation of the farm, and potential health risks to consumers. This paper provides an overview of the advantages and challenges of using action-based detection algorithms for poultry disease detection. The potential of this technology to revolutionize the poultry industry by enabling early detection and management of diseases, improving animal welfare, and ensuring sustainable poultry production.

Keywords---Deep Learning, CNN, Disease Detection.

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19

Design of spider web spaced antenna for medical applications

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19a

Design of Spider Web Spaced Antenna for Medical Applications

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Abstract--

In field of wearable technology one challenging improvement is wearable textile antenna. Primary requirement for wearable textile antennas are flexible construction materials which includes fabric with planar structure. Properties of the textile antenna such as bandwidth, efficiency, input impedance etc. depend upon type of substrate materials used. These properties are mostly determined by the substrate dielectric constant. Fabric material dielectric constant accurate value is to be calculated from resonant frequency of patch antenna.In this project, we presented a simulation-based study on a wearable textile (jeans) antenna for wireless technologies with parametric analysis. Optimum lengths of dimensions for the antenna is present for best return loss,gain and VSWR, radiation efficiency and freespace path loss. The radiating element for patch and ground plane is made from thin- film copper foil.

Keywords : Antenna; Microchip; Bandwidth; Design; Simulator

I. INTRODUCTION

Generally communication is simply the act of exchanging information from one place to another. In the ever growing world we are networked with communication which may be either wired or wireless. Wireless communication involves the transmission of information over a distance without the help of wires, cables or any other forms of electricalconductors [1]. Wireless communication is a broad term that incorporates all procedures and forms of connecting and communicating between two or more devices using a wireless signal through wireless communication technologies and devices. The early wireless systems had a base station with a high-power transmitter and served a largearea. Each base station could serve only a minimum number of users and it was costly too [2]. The systems were isolated from each other and only some of them communicate with the public switched telephone networks. Today, the cellularsystems have a cluster of base stations with low-power radio transmitters. Each base station serves a small cell within a large area [3].

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An Adaptive Scheduling Based Communication in 5G Network

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Abstract--

In recent days, communication networks are rapidly evolving, to meet the growing demands of the mobile user with advanced wireless technologies like 5G, SDN and HetNets. In the wireless era, the mobile end users expect seamless services and interference-free communication over broadband wireless networks. In 2020, 5G wireless technology is meant to be commercialized for the outside world. Currently, Wireless interoperability for Microwave Access (WiMAX), Long Term Evolution (LTE), Long Term Evolution-Advanced (LTE-A) are the prominent technologies in networks, which are moving towards 5G HetNets. The network vendors are adding more features towards building the smart cities where Quality of Service (QoS) has to be maintained. In the dense network, more users are simultaneously approaching services with the lack of QoS. To meet the user requirements, more mobile station deployment is required. When users transmit the data simultaneously with a continuous flow of information, network interference occurs. For reducing this network interference, a modification in network deployment strategy is required.

Key Words: LTE , QoS, Massive MIMO ,Scheduling , adaptive algorithm.

I. INTRODUCTION

Today the wireless communication has attracted around two third of world population due to its linear development both in technology as well as increase in user demand. Wireless communication a fast growing technology not only attracted the consumer but also the developing business man, research students and enthusiastic engineers all around the globe. The advances in mobile telephony can be traced in successive generations from the early "0G" services like Mobile Telephone Service (MTS), to first generation "1G" analog cellular network, second generation "2G" digital cellular networks, third generation "3G" broadband data services to the current state of the art, fourth generation "4G" native-IP networks. Fifth generation, "5G" will bring us perfect real world wireless are called World Wide Wireless

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A Low SAR Beam Steering Slotted Array Antenna for mmWave 5G Mobile Handsets

M. Manikandan ; S. Karthigai Lakshmi All Authors

Abstract:A beam steering array antenna, which reduces SAR value for mm-wave 5G mobile handset is proposed. The proposed design is based on the model of i Phone 6s plus back panel ... **View more**

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Abstract:
A beam steering array antenna, which reduces SAR value for mm-wave 5G mobile handset is proposed. The proposed design is based on the model of i Phone 6s plus back panel which consists of fully metal covered back cover and LCD shielding. The metal cover has two sub arrays; one formed at the back side, consists of 8 rotated L shaped slots, can be used in talk mode and another formed on the top of the metal frame, consist of 8 rotated rectangular slots can be used in data mode. The proposed antenna array exhibits good reflection coefficient and from the evidence of radiation pattern measured at different scan angles, the structure has acceptable beam steering property. The maximum achievable gain is 16. S5dBi with bandwidth of 3.4 GHZ. The proposed L shaped slotted rectangular sub array reduces SAR to 0.0609 W/Kg and 0.653 W/Kg for 0° and 40° Scan angles respectively.

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Viable methods adopted for reducing SAR value in mobile phone antenna: A Review

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Viable Methods Adopted for Reducing SAR Value in Mobile Phone Antenna: A Review

M. Manikandan & S. Karthigai Lakshmi

Conference paper | First Online: 18 August 2023

Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 1040)

Abstract

This article presents a detailed review of different methods adopted from earlier to recent years to achieve low Specific Absorption Rate (SAR) value for mobile phone antennas. SAR value should be within the limit according to the available standards. The human fraternity should limit the use of mobile phone. In order to limit this, some proven biological effects caused due to heavy radiation exposure of

of international conference on advances in computing & communication engineering (ICACCE-2019). IEEE, Sathyamangalam

35. Mahesh M, Anil N, Shankar D (2019) Low specific absorption rate antenna using electromagnetic band gap structure for long term evolution band 3 application. Prog Electromag Res M 80:23–34

36. Munde M, Nandgaonkar A, Deosarkar S (2021) Performance optimization of dual-feed UWB annular ring antenna with circular DGS and EBG for SAR reduction. Prog Electromag Res C 115:51–64

37. Munde MM, Nandgaonkar AB, Deosarkar SB (2022) Ultra-wideband circular microstrip antenna with hybrid EBG for reduced SAR. Adv Electromag (AEM) 11(1):51–57

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Design of Circular Ring Shaped UWB Antenna for BANs and MI Applications

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Abstract: In this work presents a lightweight ultra wide band (UWB) antenna with a high fidelity factor (FF) for healthcare applications. In order to obtain the greatest degree of ... **View more**

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Abstract:
In this work presents a lightweight ultra wide band (UWB) antenna with a high fidelity factor (FF) for healthcare applications. In order to obtain the greatest degree of FF in all the field, the design strategy examines the return loss, antenna gain, and group delay throughout the UWB spectrum in each design stage. The final design is an elliptic ground plane with a size of 1620 mm2 and a circular antenna having six rings in the radiating component. In terms of S11and FF, simulations are made in free space and on the body show that it performs admirably within the bandwidth of 3.1 to 10.6 GHz. The results demonstrate that the antenna is capable of identifying malignant tumours and benign tumours.

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Contents

UWB is widely used in a variety of areas and applications. Healthcare imaging and monitoring is one of the applications that has gained popularity recently. MI technology and BANs have got a lot of interest in UWB healthcare applications [1]. Breast cancer affects most women around the world today. Microwaves can be used as an alternative in imaging approach for detecting cancers in their early stages. Using brief UWB electromagnetic pulses, it finds and detects notable dispersed signals. The large bandwidth is helpful in penetrating sufficiently and approving manuscript. Breast cancer imaging approach is for detecting cancers in early stages. It finds and locates dispersed signals by short UWB signals [2].

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Figures

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Investigation on Simulation Based Specific Absorption Rate in Ultra-Wideband Antenna for Breast Cancer Detection

Intelligent Intravenous Syringe Pump

D. Gopinath ; R. Deiva Nayagam ; G. Sivakumar ; S. Karthik ; P. Deepak Chakravarthi All Authors

Abstract: Convenient and independent siphons are in basic interest for ease point-of-care testing (POCT) applications in microfluidic fields. In microfluidic research facilities, b... **View more**

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Abstract:
Convenient and independent siphons are in basic interest for ease point-of-care testing (POCT) applications in microfluidic fields. In microfluidic research facilities, business siphons (e.g., needle siphons, pressure siphons, or peristaltic siphons) are broadly utilized for exact liquid conveyance. The ceaseless checking of the glucose level is hard for medical attendants and guardians as they lamentably neglect to see because of their bustling timetable that prompts the risk of the patient. The extensive utilization intravenous (IV) dosage forms, weight-based tiny dosages, numerous calculations, and dilutions make the medication-usage procedure in Neonatal Intensive Care Unit is particularly difficult. Medicine blunders in ICU are normal bringing about tolerant injury and conceivable demise, expanded stay, and critical extra expenses. For amending these kinds of manual errors, the following framework is proposed. A de engine-driven needle siphon is planned to utilize a microcontroller board with important driver hardware. Here Armature voltage of the DC servo engine is fluctuated to produce distinctive stream rates. Here microcontrollers and timers are utilized to control the progression of medications. By programming the time in the microcontroller, it can consequently be infused with the glucose drip.

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Contents

An intensive care unit (ICU) is a specialised healthcare division whose main goal is to provide care for patients with serious illnesses. There are three parts to it. In contrast to a conventional ward, a section 1 ICU is outfitted to offer non-invasive monitoring, oxygen delivery, and more extensive nurse care. However, section 2 critical care facilities treat patients who only require intrusive observation and basic treatment for a short period of time. The complete range of observation (screening) and lifesaving technologies is available in a level three ICU. The current ICU department has a wide range of medical devices made by different manufacturers, which has an individual impact.

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Figures

References

Keywords

Metrics

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26

26

IoT based Smart U-Turn Vehicle Accident Prevention System

G Pradeepkumar ; G Praveen Santhoshkumar ; C Rohith Bhat ; M Jeyalakshmi ; T Muthukumar ; Neelam Sanjeev Kumar All Authors

Abstract: Unintentional deaths occur at a very high rate in developing countries. Curved roads have significantly more fatalities than straight roads. This occurs mainly on U-turns... **View more**

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Abstract:

Unintentional deaths occur at a very high rate in developing countries. Curved roads have significantly more fatalities than straight roads. This occurs mainly on U-turns, hairnin turns, and narrow mountain roads. Drivers in this position cannot see the vehicle approaching from the opposite direction. As a result, thousands of people are killed in car accidents every year. The best way to avoid further accidents is to alert the car driver approaching from the side. Place the ultrasonic range detection sensor on one side of the road before the bend and the light indicator system on the opposite side after the bend. When a vehicle approaches from afar, an ultrasonic sensor on one side of the road sends a signal to the other side of the road via a light system. In response to a warning, the driver may stop the car until the other vehicle has passed. A buzzer will also be used to warn the driver of the car that is approaching.

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This is to certify that Prof./Dr. S.Keerthana, Department of ECE, SSM Institute of Engg & Tech presented a paper on Study on Basic Laws of Electromagnetics Aiding Scientific Applications in medicine and Healthcare in the NATIONAL CONFERENCE AND EXHIBITION ON RURAL INNOVATIONS (NCERI-23) Organized by Unnat Bharat Abhiyan SSM Institute of Engineering and Technology, Dindigul on 24th and 25th March 2023.

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STUDY ON BASIC LAWS OF ELECTROMAGNETICS AIDING SCIENTIFIC APPLICATIONS IN MEDICINE AND HEALTHCARE

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Abstract

The topic of electromagnetism can be both confusing and controversial, yet it is intriguing and fascinating. The history of electromagnetic field (EMF) applications and research has been mired in secrecy and suspicion. Here usage of EMF in medicine and health care is described with important fundamentals terms and parameters. This paper presents natural exposures to a variety of electromagnetic phenomena and proper consideration of electromagnetic hygiene measures. The basics laws of electromagnetics like coulomb's law, ampere's law, electric flux density in two-dimensional simulation and electric flux density, electromagnetic waves in three dimensional simulations had been demonstrated using MATLAB. The mentioned basic laws had been studied relating it's the practical use in medicine and health care.

Keywords—Electromagnetic Field, Electromagnetic Waves, Coulombs Law, Ampere's Law, Electric Flux Density, Electromagnetic Spectrum, Medical Treatments.

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TELEMEDICINE IN RURAL INDIA

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Abstract:

In rural communities, there are gaps in describing the design and effectiveness of technology interventions fortreating diseases and addressing determinants of health. The aim of this study is to evaluate literature on currentapplications, therapeutic areas, and outcomes of telehealth interventions in rural communities in India. Among 15included studies, 9 studies analysed telehealth interventions in patients, 3 in health care professionals, and 3 in bothpatients and health care professionals. The included studies reported positive outcomes and experiences of telehealthuse in rural populations including acceptability and increased satisfaction; they also noted that technology isconvenient and efficient. Other notable benefits included decreased direct and indirect costs to the patient (travelcost and time) and health care service provider (staffing), Telehealth models were associated with positive outcomesfor patients and health care professionals, suggesting these models are feasible and can be effective. Futuretelehealth interventions and studies examining these programs are lower onsite health care resource utilization,improved physician recruitment and retention, improved access to care, and increased education and training ofpatients and health care professionals. Warranted, especially in rural communities, and future research shouldevaluate the impact of increased telehealth use as a result of the COVID-19 pandemic.

Keywords---Telehealth, Telemedicine, Rural Health, Health Outcomes, Social Determinants of Health, E-health, Healthcare Accessibility.

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SMART WATER MANAGEMENT SYSTEM IN URBAN AREA USING LORA TECHNOLOGY

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Abstract

Due to excess wastage of water globally, it has become imperative to make effective use of it. Hence, smart systems are one of the solutions that need to be implemented to prevent wastage of water. This paper aims to monitor and control the flow of water using electronic sensors and transmit the sensor data via LoRa technology. The data traversed will be monitored by the central authorities continuously and the user will be updated on a real-time basis. The update will include the amount of water usage, the cost related to it and also alerts based on any excess usages. These updates will be provided directly to the user through the application layer of the LoRa network. The basic blocks used in the process are sensors (water flow/amount detecting sensor, solenoid valve), LoRa module and a control unit. It transmits the data collected to a LoRa cloud database and according to the database results, the water supply for a user will be monitored and controlled using the user's permission.

Keywords---Lora, Smart Water Meter, Wireless, Internet of Things, Cloud-Based Server, The Things Network.

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National Conference and Exhibition on Rural Innovations

APPLICATION OF DRONE IN RURAL AGRICULTURE DEVELOPMENT

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Abstract

The population is increasing tremendously and with this increase the demand of food. The traditional methods which were used by the farmers were not sufficient enough to fulfil these requirements. Thus, new automated methods (Drone technology) were introduced. These new methods satisfied the food requirements and also provided employment opportunities to billions of people. Drones technologies saves the excess use of water, pesticides, and herbicides, maintains the fertility of the soil, also helps in the efficient use of man power and elevate the productivity and improve the quality. The objective of this paper is to review the usage of Drones in agriculture applications. Based on the literature, we found that a lot of agriculture applications can be done by using Drone. In the methodology, we used a comprehensive review from other researches in this world. This paper summarizes the current state of drone technology for agricultural uses, including crop health monitoring and farm operations like weed management, Evapotranspiration estimation, spraying etc. The research article concludes by recommending that more farmers invest in drone technology to better their agricultural outputs.

Keywords---Drone, Crop Health Monitoring, Evapotranspiration, Spraying.

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CLOUD BASED AGRICULTURE MONITORING

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Abstract

Through the millennia, agriculture has been crucial to the growth of human civilizations. However, it is one of the fields that requires technology assistance. The agriculture market has not yet benefited from cutting-edge technologies like the Internet of Things. The farmer can make sure that the finest practices are utilized in her or his farm and thus assure maximum output and yield by applying intelligent monitoring techniques and enabling autonomous sensing of the circumstances on a farm. The study proposes a low-cost system that can provide updates on any farm-related problems as well as information about the environmental conditions around the plants, and it can recommend the optimal crop demands based on the sensor data. The suggested system is a monitoring system based on IoT.

Keywords---GSM, Internet of Things, Thing Speak.

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REMOTE PATIENT HEALTH MONITORING SYSTEM FOR RURAL AREAS

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Abstract

Healthcare is a field that is rapidly developing in technology and services. A recent development in this area is remote monitoring of patients which has many advantages in a fast-aging world population with increasing health complications. With relatively simple applications to monitor patients inside hospital rooms, the technology has developed to the extent that the patient can be allowed normal daily activities at home while still being monitored with the use of modern communication and sensor technologies. Sensors for monitoring essential vital signs such as electrocardiogram reading, heart rate, respiration rate, blood pressure, temperature, blood glucose levels and neural system activity are available today. The range of remote healthcare varies from monitoring chronically ill patients, elders, premature children to victims of accidents. These new technologies can monitor patients based on the illness or based on the situation. The technology varies from sensors attached to body to ambient sensors attached to the environment and new breakthroughs show contactless monitoring which requires only the patient to be present within a few meters from the sensor. Fall detection systems and applications to monitor chronic ill patients have already become familiar to many. This study provides a review of the recent advances in remote healthcare and monitoring in both with-contact and contactless methods. With the review, the authors discuss some issue.

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ADVANCEMENT IN AGRICULTURE USING 5G TECHNOLOGY

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Abstract

Smart farming and precision agriculture rely on the different components of IOT, such as sensors, drones and robotic devices. IOT in agriculture is the network of interconnected devices that corresponds in real time, simultaneously, to gather, analyse and transfer the data which, ultimately, generate a decision to be taken by the farmer. The availability of 4G/3G does not support the precision practices in real time due to the bandwidth, connectivity and the speed of the data-transfer issues. Further, 5G technology in the agriculture sector has put its greater influence in real time monitoring, unmanned aerial vehicle, virtual consultation and predictive maintenance, artificially intelligent robotics, and data analytics and cloud repositories. Conclusively, the speed, connectivity, scalability and processing power, and limitations can be made with the availability of 5G structures.

Keywords---5G, Precision Agriculture, 6G, Real-Time Monitoring.

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SURVEY ON TELEHEALTH AND ALLERGY SERVICES INRURAL AND REGIONAL LOCATIONS

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Abstract

Tele-allergy services have emerged as a critical tool for healthcare providers todeliver allergy care to patients in rural and remote areas. These services offer patients a rangeof benefits, including improved access to care, reduced wait times, and improved patientoutcomes.To promote the use of tele-allergy services, healthcare providers and organizationsmust work together to address the challenges of providing specialty care in rural and remoteareas. This may involve investing in digital technology, improving access to broadbandinternet, and training community-based healthcare providers to deliver allergy care.Anothercritical aspect of promoting tele-allergy services is to ensure that patients are aware of theseservices and have access to the necessary resources. This may involve developing educationalmaterials and outreach programs to inform patients about the benefits of tele-allergy servicesand how they can access them.Overall, tele-allergy services have the potential torevolutionize the delivery of allergy care, particularly in rural and remote areas. By workingtogether, healthcare providers and organizations can ensure that patients receive the care theyneed, regardless of where they live, and promote better health outcomes for all.

Keywords---Telehealth, Rural, Regional, Allergy, School, Telemedicine.

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A CASE STUDY OF UTILIZING TELEHEALTH TO EXTEND SERVICES AND PRESERVE THE HEALTH AND SAFETY OF PATIENTS AND EMPLOYEES AT A RURAL HEALTHCARE INSTITUTION

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Abstract

In this case study, a remote healthcare facility's use of a telemedicine programmed during the COVID-19 epidemic was examined. As the number of COVID-19 cases increased, an action research methodology was implemented to enhance the usage of telehealth. Data were gathered from a review of the literature, a look at the documents already in existence, a gap and SWOT analysis assessment, and a look at the staffing plans. This assisted in ensuring that sufficient resources were available to begin and maintain the use of telehealth. As the programmed moved through its various implementation phases, a review of the entire procedure was also carried out. These statistics guided cycles of improvement in the telehealth programmed through careful analysis and reflection. challenges related to the programme.

Keywords---COVID-19, Rural Health, Pandemics, Telemedicine, Leadership, Healthcare.

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MENTAL HEALTH PREDICTION USING MACHINE LEARNING

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Abstract

Mental health conditions can have significant negative impacts on wellbeing and healthcare systems. Despite their high prevalence worldwide, there is still insufficient recognition and accessible treatments. Mobile apps for mental health are beginning to incorporate artificial intelligence and there is a need for an overview of the state of the literature on these apps. The purpose of this scoping review is to provide an overview of the current research landscape and knowledge gaps regarding the use of artificial intelligence in mobile health apps for mental health. In parallel, there is now a developing evidence base that includes meta-analyses demonstrating reductions in symptoms of depression and anxiety, and reduction in suicidal ideation. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) and Population, Intervention, Comparator, Outcome, and Study types (PICOS) frameworks were used to structure the review and the search. PubMed was systematically searched for randomised controlled trials. 1,022 studies were identified in the initial search and 4 were included in the final review. The mobile apps investigated incorporated different artificial intelligence and machine learning techniques for a variety of purposes (risk prediction, classification, and personalisation) and aimed to address a wide range of mental health needs (depression, stress, and suicide risk). The studies' characteristics also varied in terms of methods, sample size, and study duration. Overall, the studies demonstrated the feasibility of using artificial intelligence to support mental health apps, but the early stages of the research and weaknesses in the study designs highlight the need for more research into artificial intelligence- and machine learning-enabled mental health apps and stronger evidence of their effectiveness. This research is essential and urgent, considering the easy availability of these apps to a large population.

Keywords: PICOS, PRISMA-SCR.

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TRUE WIRELESS AUTOMATIC WATER LEVEL CONTROLLER

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Abstract

This paper presents the design and implementation of a True wireless Automatic Water Level Controller that uses an ultrasonic sensor and ESP microcontrollers on both the sender and receiver sides, ESP-NOW protocol for wireless communication, and a solar panel for power. The system is designed to reduce water wastage and is equipped with a 128 x 64 display to show the current water level of the tank on the receiver side. The use of ESP deep sleep on the sender side ensures power savings, and the wireless communication using ESP-NOW protocol ensures accurate and real-time data transmission between the two sides. The system has been tested and found to be highly effective and reliable in operation. The paper concludes with potential areas for further development and improvement of the system.

Keywords---Water Level Controller, ESP-NOW.

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REVERSE VENDING MACHINE BASED ON AUTOMATIC REWARD POINT SYSTEM

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Abstract

To encourages the people to interchange their used plastic bottles, beverage cans for reward point using Reverse Vending Machine (RVM). In this RVM machine generally automates containers, plastic bottles to recycling by accepting it directly from the consumer and depends on the weight the reward point or refund amount will deposit to the consumer. The system is based on Arduino, sensor, Servo motor. The individual consumer information, weight of crushed plastic/cans is identified using sensors and the equivalent reward point deposited to consumer. Consumer can claim their reward point using RFID card. Microcontroller used to control the above mentioned process. In order to implement the system in small streets, transportation, educational institution, sports event and etc. To improve the waste management system and motivate the people for recycling by providing reward points.

Keywords---Reverse Vending Machine (RVM), RFID, Waste Management.

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OBSTACLE AVOIDANCE ROBOT USING ARDUINO

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Abstract

The project is design to build an obstacle avoidance robotic vehicle using ultrasonic sensors for its movement. A microcontroller (ATmega328) is used to achieve the desired operation. A robot is a machine that can perform task automatically or with guidance. The project proposes robotic vehicle that has an intelligence built in it such that it directs itself whenever an obstacle comes in its path. This robotic vehicle is built, using a micro-controller of AT mega 328 family. An ultrasonic sensor is used to detect any obstacle ahead of it and sends a command to the micro-controller. Depending on the input signal received, the micro-controller redirects the robot to move in an alternate direction by actuating the motors which are interfaced to it through a motor driver. Some of the project is built with the IR sensors has its own application so in our project those application is not compactable so we are using ultrasonic sensor.

Keywords---Arduino UNO, Motor Shield L293d, Ultrasonic Sensor HC-SR04, DC Motor, Servo Motor.

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AUTOMATIC PLANT WATERING SYSTEM

A. Geetha*, M. Muthuvel, R. Naveen kumar, J. J. Robin, R. Muruganadham
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Abstract---An automatic plant watering system is a technology that helps to alleviate the challenges of manual watering of plants. This system involves using sensors, controllers, and actuators to monitor and adjust the amount of water plants receive based on their needs. This abstract will discuss the design and implementation of an automatic plant watering system, including the use of soil moisture sensors, a microcontroller, and a water pump. The system's benefits include saving time and water, reducing plant stress, and ensuring consistent and optimal plant growth.

Keywords---Automatic Plant Watering System, Capacitive Soil Moisture Sensors, Microcontroller, Water Pump, Sustainable Gardening.

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National Conference and Exhibition on Rural Innovations

BIO ENERGY AND SOLAR ENERGY

Dr. M. Jeyalakshmi[*a], J. Margrate Sneka[b], S. Madhu Bala[c]
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Abstract---Bioenergy is the most common renewable energy worldwide making up about 70% or all primary renewable energy supply. This chapter gives an overview of the role bioenergy plays in the transition to low-carbon future and discusses its opportunities and challenges. The chapter starts with a general introduction of some of the main aspects of bioenergy, followed by some specific case studies giving an insight into specific feedstocks, technology, and applications. The focus will be on greenhouse gas emissions, wider environmental socioeconomic and sustainable implication. Solar energy is the radiant light and heat from the sun that has been harnessed by humans since ancient times using a range of ever-evolving technologies. Solar irradiation data is needed at all levels of solar power development, from initial government planning through to large-scale project development or the calculations needed to size smaller systems.

Keywords---Bioenergy, Climate Change Mitigation, Greenhouse Gas Emissions, Carbon Balance, Sustainability.

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AUTOMATIC SOLAR POWER MULTIPURPOSE AGRICULTURE ROVER USING LORA

Senthil kumar. R[a], Shalini. S[b], Sharmila Srinithi. R[c], Ranjani. M[d], Yamini. R[e]

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Abstract

In this project that is, one of the cattle fodder, weed crop and fertilization pesticide application, all these are implemented with one tool. This technological development for making efficient and cost effective grass cutter. Our aim is to study the various developments in the grass cutter machines and their performance. Current technology commonly used for cutting the grass by the manually handled device From the survey we found that various types of grass cutter available in market which are run by means of solar, electric and internal combustion engine. Grass cutters are available in market having some limit to cut grass at some height. We are trying to make the new innovative concept mainly used in agricultural field. We are going to fabricate the grass cutting ,fertilization and pesticide machine for the use of agricultural field, to cut the crops in the field as well as to cut the grass.

Keywords---Grass Cutter, Solar, Electric and Internal Combustion Engine.

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GENERATION OF BIODIESEL USING PERFORMANCE ANALYSIS FROM WATERMELON SEED AND JULIFLORA SEED

M. Muthukannan[1], S. Aravind[2], R. Karventhan[3], J. Krishnakanth[4], V. Dinesh Kumar[5]

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Abstract

Due to urbanization and rising human population, solid waste has been gradually increasing over the past few years. Solids include waste from industry, agriculture, forestry, and biotechnology. 10% of the energy produced worldwide comes from bio-energy, which is energy derived from biomass, which includes plants, animals, and organic waste. In some seeds, such as water melon and juliflora seeds in order to create biodiesel and evaluate its effectiveness, seed oils were produced and combined. The study also compares the physical and chemical characteristics of the created biodiesel to those of traditional diesel, including pH value, viscosity, density, flash point, fire point, and acid values. The research showed that the characteristics of biodiesel are remarkably similar to those of normal diesel.

Keywords---Energy, Diesel, Bio-Energy, Juliflora Seeds.

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This is to certify that Prof./~~Dr.~~ V. kandavel, Department of Mechanical Engg., SSM Institute of Engg. & Tech. presented a paper on Modeling and Comparative Analysis of Conventional Airfoil and Whale Fin Profile Blade in Wind Mill in the NATIONAL CONFERENCE AND EXHIBITION ON RURAL INNOVATIONS (NCERI-23) Organized by Unnat Bharat Abhiyan SSM Institute of Engineering and Technology, Dindigul on 24th and 25th March 2023.

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MODELING AND COMPARATIVE ANALYSIS OF CONVENTIONAL AIRFOIL AND WHALE FIN PROFILE BLADE IN WIND MILL

V. Kandavel[+a], M. Muthukannan[b], P. Shankar Kannan[c]

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Abstract---The objective of the present numerical investigation is to find out the difference between flow over conventional aero foil and whale fin profile blade for same operating condition and comparing the results. In the present numerical investigation, the comparison has been done with leading edge tubercles versus the conventional airfoil at different velocities and different angles of attack. Parameters which are observed are co Coefficient of drag (C_d), Co-efficient of lift (C_l), Pressure contour and Velocity vector. The commercial package CATIA is used for modeling purpose. ANSYS ICEM CFD meshing software is used for meshing complicated design and FLUENT is used for analyzing the fluid flow. Pressure based solver, K-epsilon Turbulence model, steady state method and second order upwind scheme has been adopted for numerical investigation. It is found out that, wing with tubercles shows increase in lift by 20.6% and increase in drag by 11.7% for low speed and for high speed it shows increase in lift by 14.4% and decrease in drag by 30%. The increased lift of the wing with tubercles arises from higher pressure along the bottom surface. The tubercles delay, or reduce flow separation at higher angles of attack and this leads to decrease in drag. The increased lift of the wing with tubercles arises from higher pressure along the bottom surface. The tubercles delay, or reduce flow separation at higher angles of attack and this leads to decrease in drag.

Keywords—Whale Fin Profile Blade, Conventional Blade, Lift Force; Dragforce.

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Removal of NI (II) Ion using Low Cost Carbonaceous Sorption - A Descriptive Study

K. Thara ; A. Jansi Priya ; M. S. Dheenadayalan

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View Article

Abstract

In the past decades, water pollution is the important aspect due to heavy metal ion that present in the water bodies. Among the various types heavy metal, presence of nickel (II) is commonly found in industrial effluent. NI (II) creates many unwanted effects in our ecosystem. It menace not only the ecosystem also human beings. In the research of heavy metal removal by adsorption, activated carbon is commonly used as an adsorbent. Activated carbon is a costly component of the water treatment process. Heavy metals must, however, be removed from industrial water. The use of a low-cost adsorbent as an alternative to commercially available activated carbon compounds [illegible] help in the quest for less priced adsorbents. This research compares experiments on Nickel removal by adsorption on Corn Ash (CA) and Straw Ash (SA) (SA). These adsorbents are low-cost, non-conventional materials that can be employed in adsorption to treat water and waste water. The activation procedure was discovered to boost the high surface area and adsorption capacity of the material. This project aims to present data for the construction of a cost-effective waste water treatment plant for effluent released from a variety of industries. Contact time, adsorbent dosage, and solution PH are claimed to be experimental parameters that determine the degree of heavy metal adsorption. The impact of these variables on the amount of NI (II) ions removed by adsorption on CA and SA has been investigated. The metal removal investigations revealed that the varying operating conditions had a significant impact on their removal.

Keywords: Activated carbon; corn ash; straw ash; heavy metal; nickel (II) Ion

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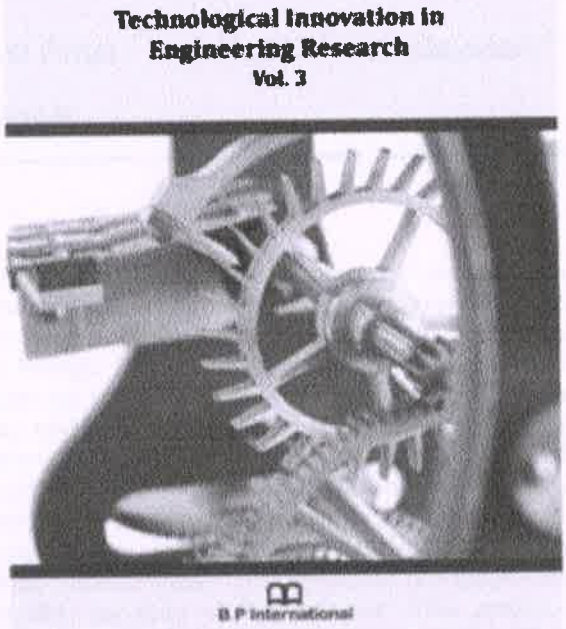

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This book covers key areas of Engineering Research. The contributions by the authors include Stretching surface, Eckert number, suction/injection parameter, viscous dissipation, Fiber optic sensors, modeling of fiber optic sensor, optimization method, prototype design of fiber optic sensors, ray tracing model, Phase Frequency Detector, fuzzy sets, Fuzzy Translation,