3.3.2 - Number of research papers per teacher in the Journals notified on UGC website during the year.

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Title of paper	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
An efficient design and demonstration of fault-effects in full-adder circuits based on quantum-dot computing circuits	Mukesh Patidar	Electronics and Communication	Elsevier ScienceDirect	2023	2214-7853	https://www.sciencedirect.com/science/article/abs/pii/S2214785323014207
An efficient design and implementation of a reversible logic CCNOT (Toffoli) gate in QCA for nanotechnology	Mukesh Patidar	Electronics and Communication	Elsevier ScienceDirect	2023	2214-7853	https://www.sciencedirect.com/science/article/abs/pii/S2214785323014190
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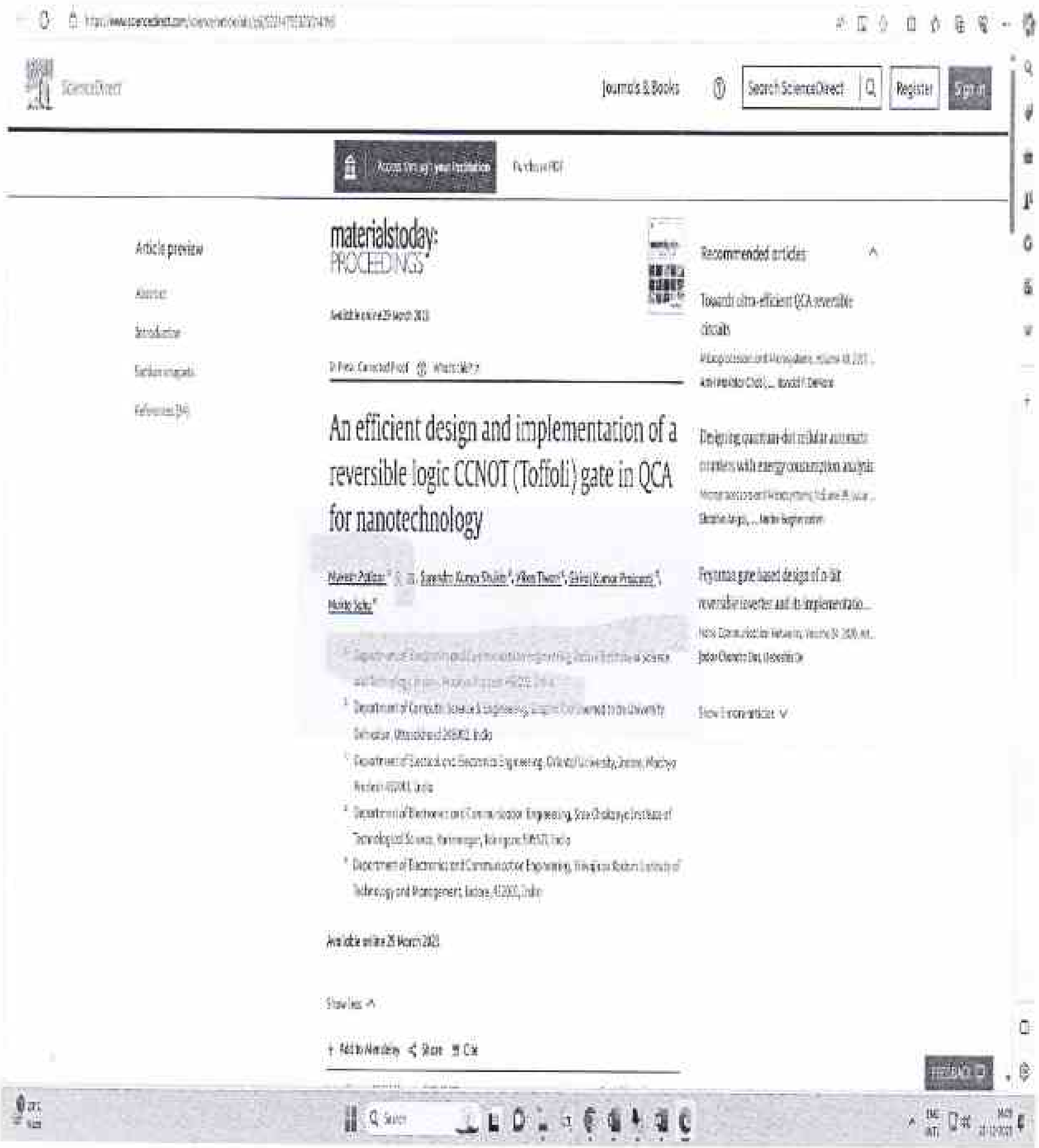

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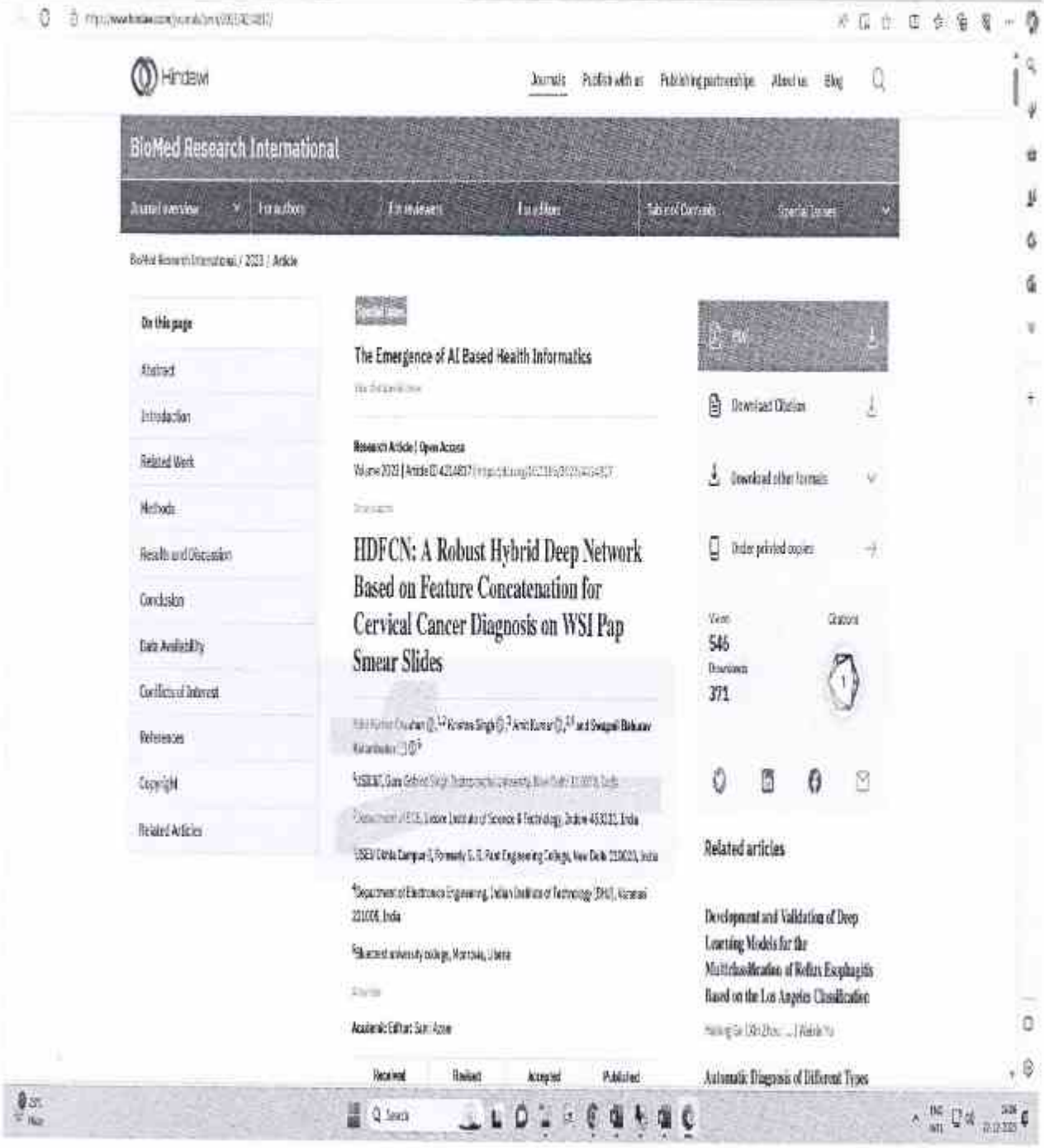

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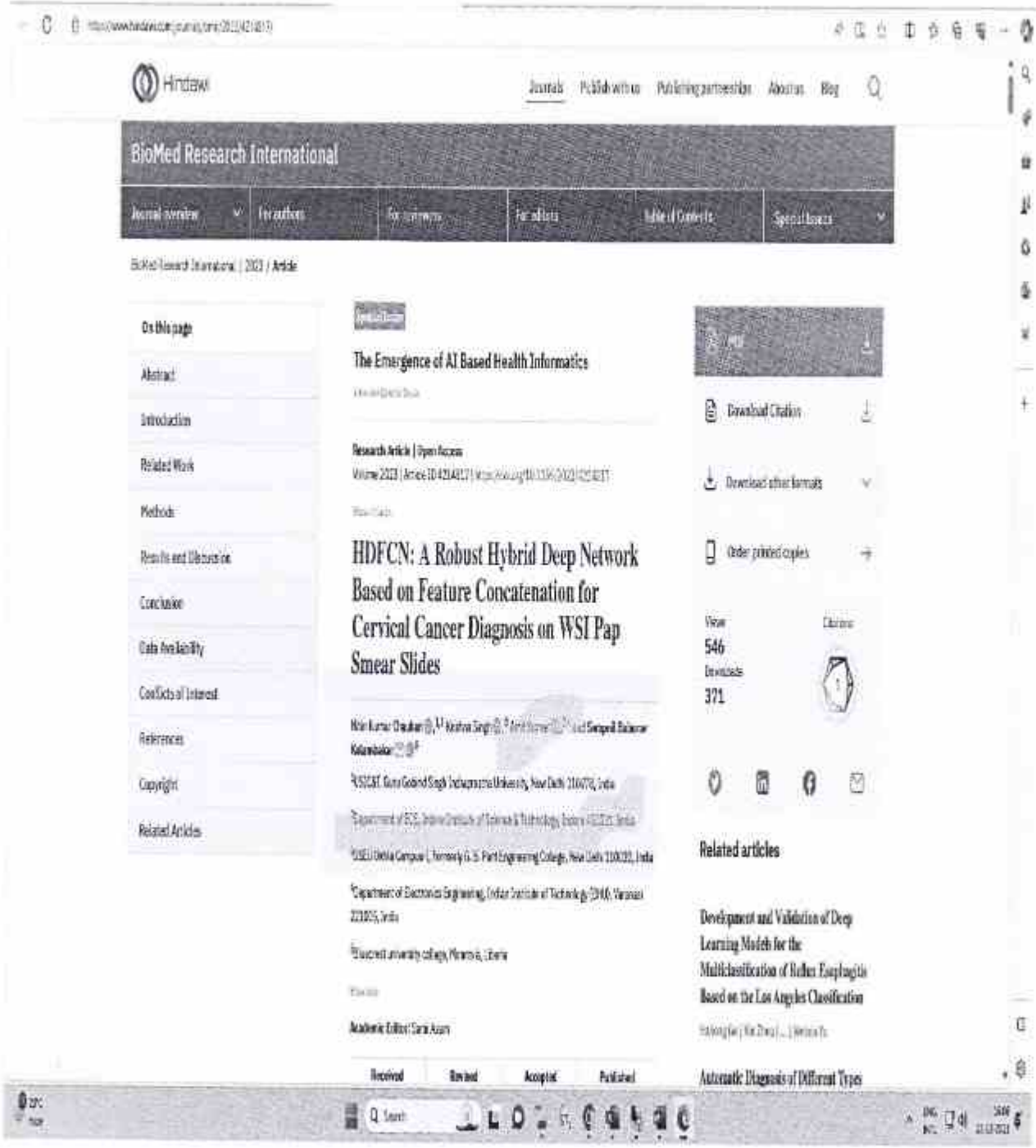

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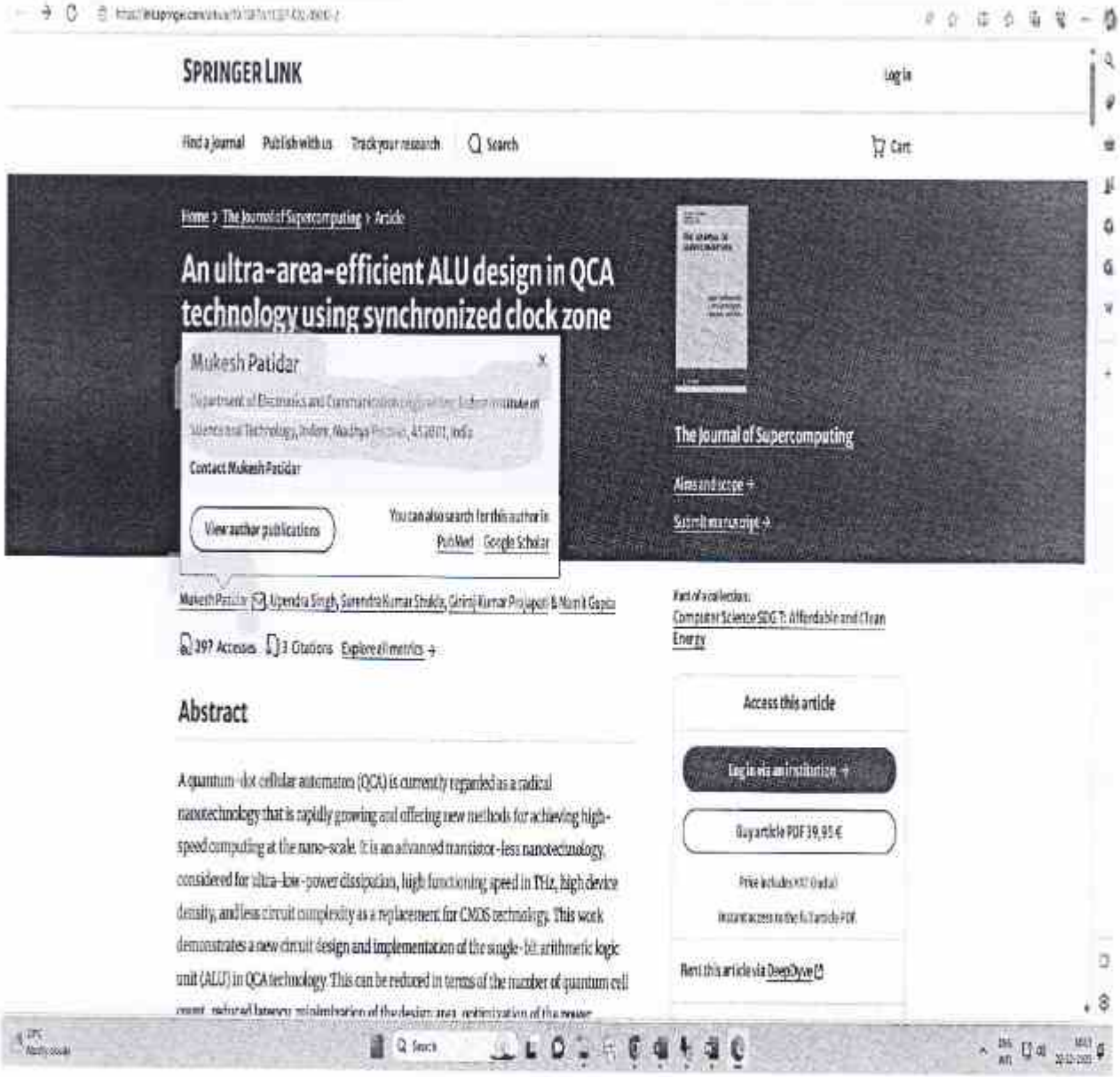

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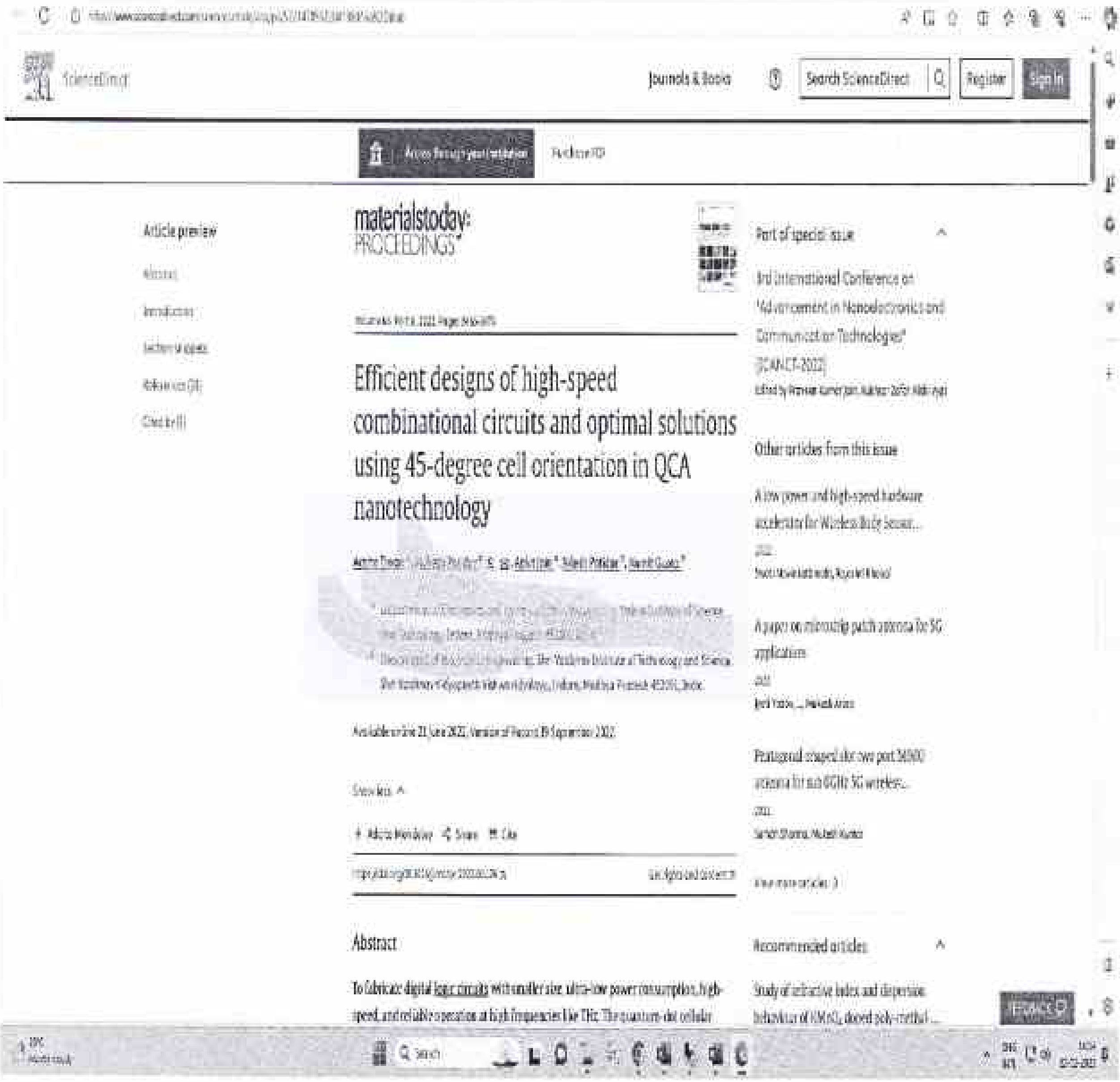

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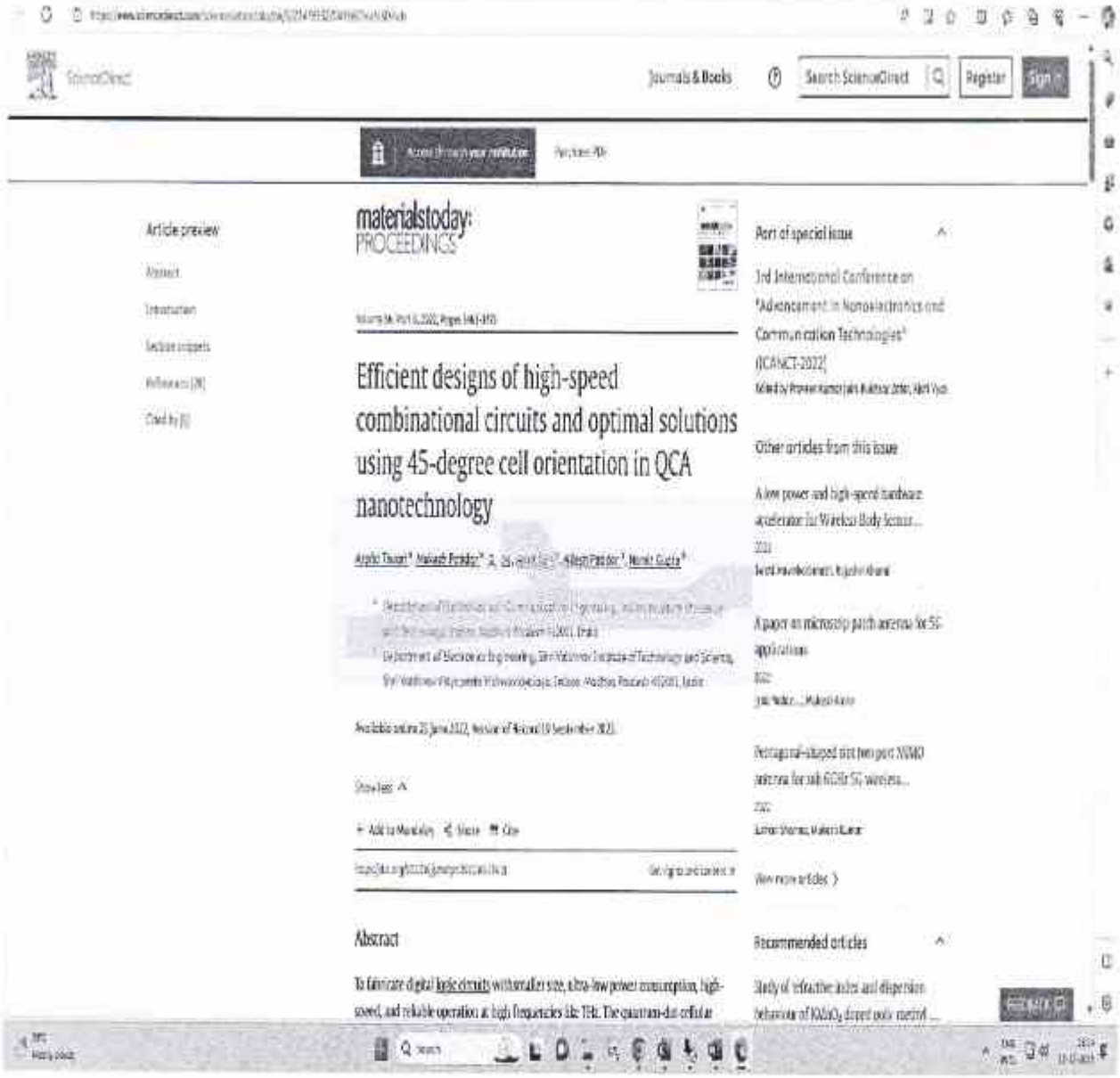

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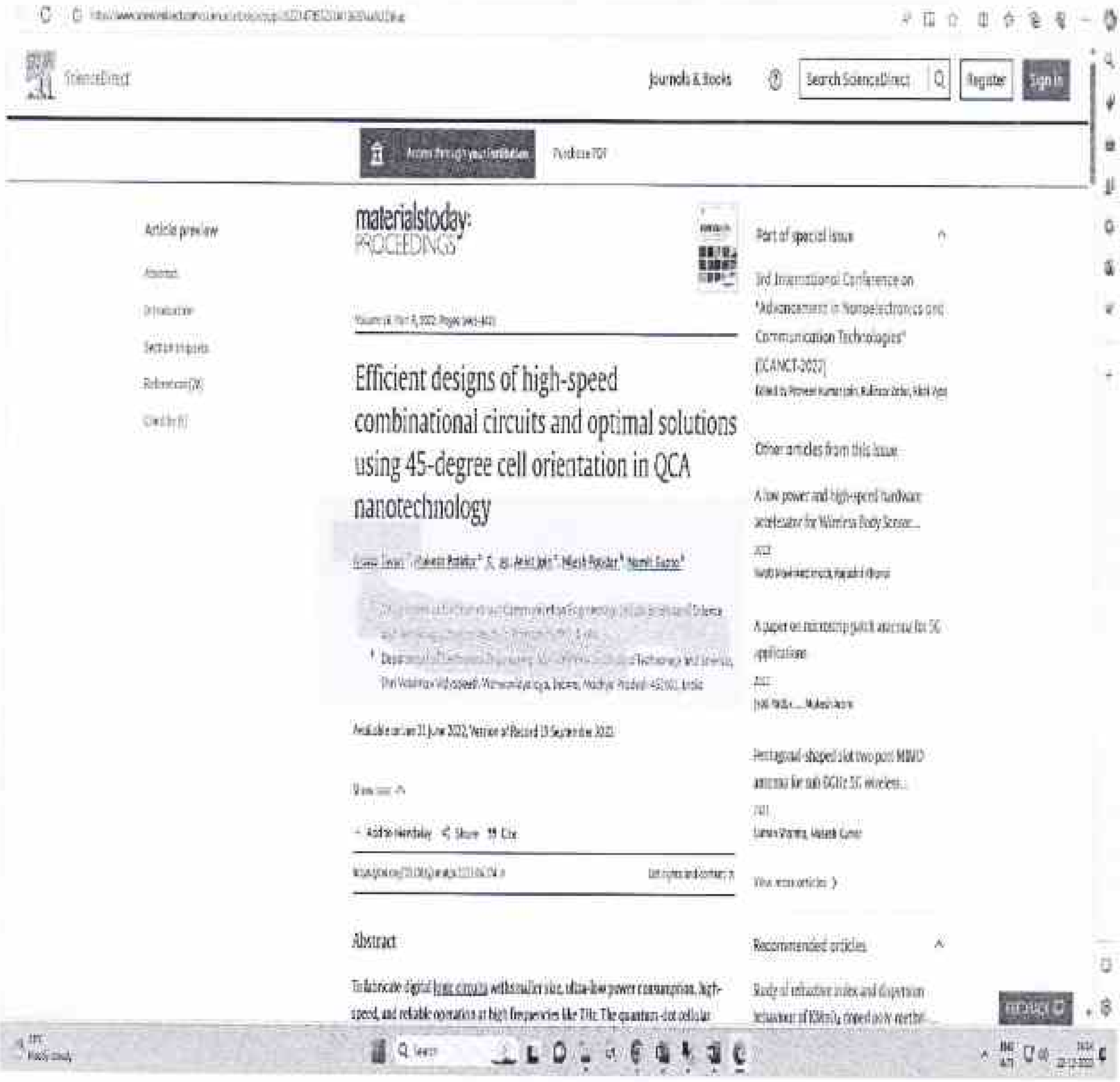

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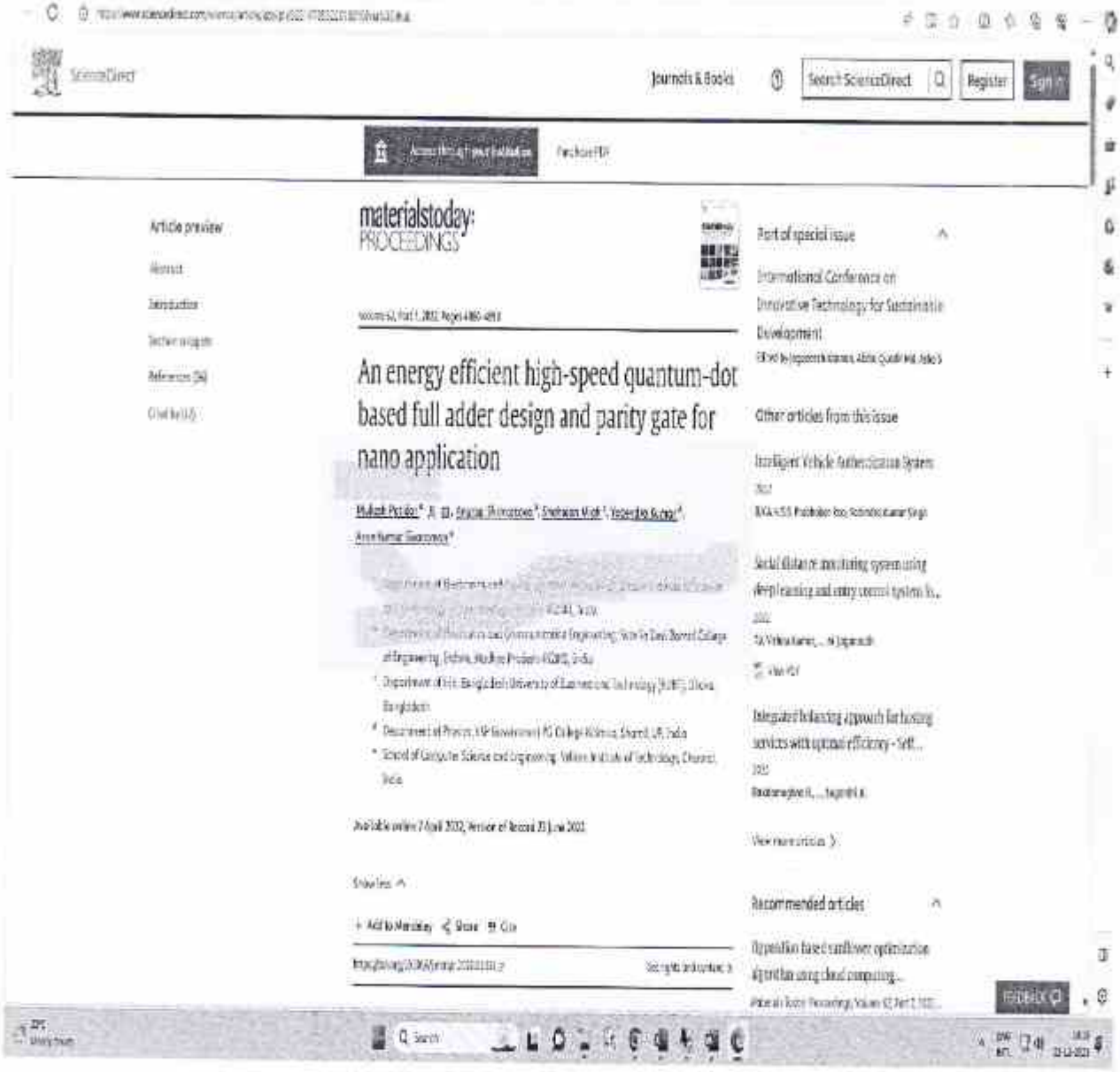

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Optimization of Smart Antenna Performance Using GA and PSO

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ABSTRACT: The smart antennas are antenna arrays with smart signal processing algorithms used to identify spatial signal signature such as the direction of arrival (DOA) of the signal, and one of the most important processes is beam forming. In the most important function in beam forming is changing beam pattern of antenna for a particular angle with minimize side lobe level . Particle Swarm Optimization algorithm is use for the beam forming. In the particle Swarm Optimization algorithm, a set of position and velocity for angles and amplitudes of antenna currents has been generated to optimized solution in desired direction. By using this method the side lobe interference will be reduced. The implementation result shows that the system a good performance.

KEYWORDS: Smart antenna, PSO, Phase angle, DOA, etc

I. INTRODUCTION

The advent of technology and recent developments in communication, wireless communication has reached to new level. Recent updates in wireless communication were not possible without application of smart antennas. Use of smart antennas is one of the vital characteristic that has led to third and fourth generation standard developments. However, smart antenna theory is always driven by the Antenna array and so do the wireless communication. With antenna pattern synthesis there comes speed and robustness to the existing system thereby improvising transmission

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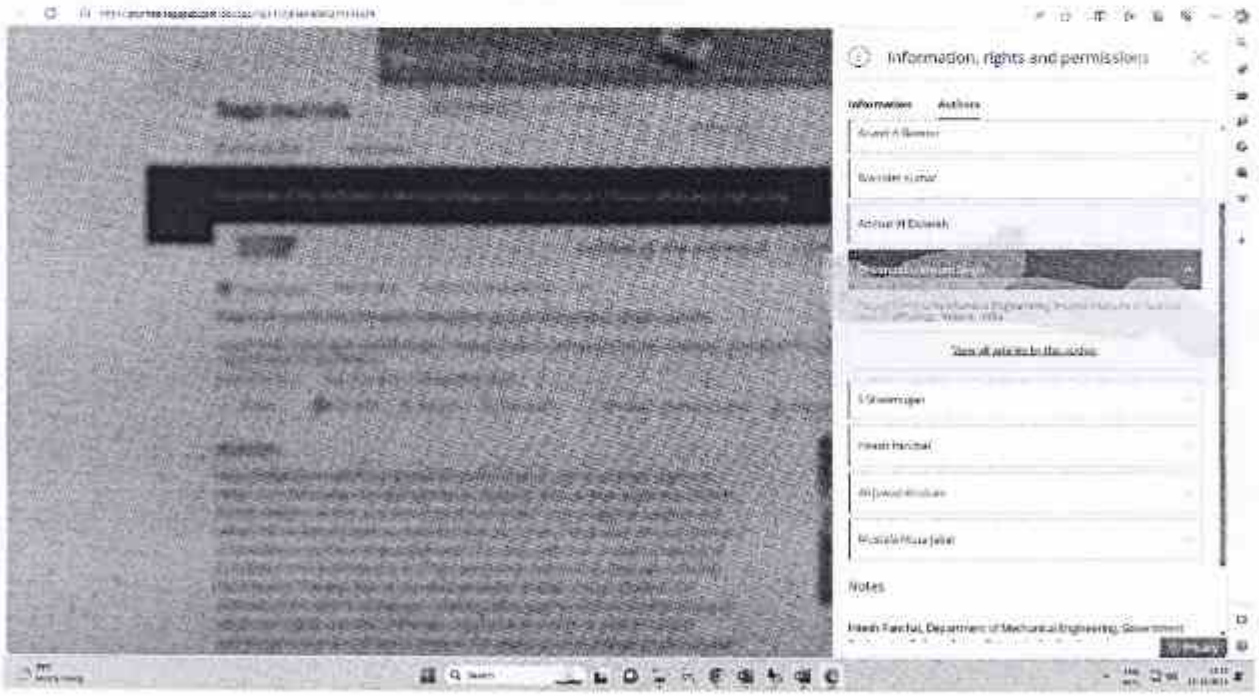

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Abstract
Supersonic ejectors are broadly utilized in a scope of applications such as aviation, impetus and refrigeration. The essential inspiration of this task about is to set up dependable hydrodynamics demonstrate of a supersonic ejector which may be amplified to refrigeration applications. From the early 1990s, Supersonic Ejectors have been utilized in cooling/refrigeration applications. This project shows the results of computational fluid dynamics (CFD) simulations of a supersonic ejector for use in a refrigeration system. The proposed model was applied to a geometry corresponding to an experimental apparatus that operates using R141b, R152a, R134a. The impact of varying operating conditions pressure, velocity, density, the temperature was investigated in the different refrigerants. The results show that CFD is a useful tool in the design of ejectors for refrigeration applications.

Key Words

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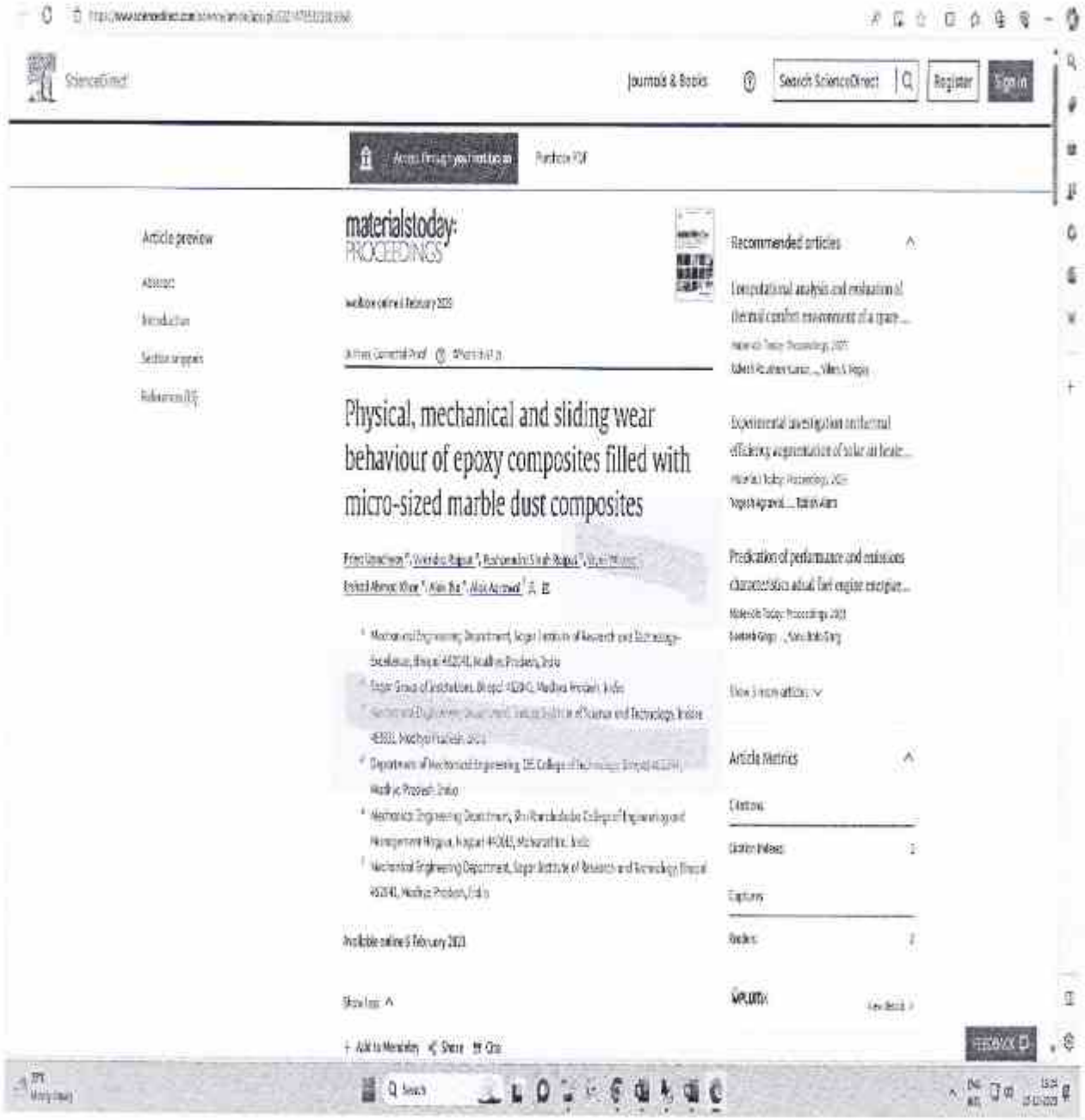

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Modeling and Analysis of Differential Gear Box using Ansys.

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Modeling and analysis of Differential gear box using Ansys

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Abstract
The differential is a component of the rear axles, along with the wheels, bearings, and the inner axle housing assembly. Transmission gears in the differential link the rear wheels to the engine, which in turn powers the propeller. When turning, a car's differential gear arrangement creates a speed difference between the left and right driving axles. Outside wheels have further to travel in a turn than inside wheels. To provide this torque variation, a differential gear system constructed from a variety of materials using a refined 3-D model of the gear system is an option. Additionally, it transmits the power from the propeller shaft to each wheel hub. It takes a differential gear system at each wheel hub for an all-wheel drive system, whereas a rear-wheel drive system only needs one at the back.

INTRODUCTION

Gears are an integral part of nearly every mechanical device. Gears are a fundamental component of machinery, just as springs, nuts, and bolts. Gears have come a long way from their first uses, both in terms of materials and design. Aristotle, writing in the fourth century B.C., discovered the reversible rotation of gears and the transmission of motion from one wheel to another. Then, gears found their way into water wheels, clocks, and other devices. After that point, nothing changed for quite some time, until the 17th century, when the need for conjugate profiles began to increase. The significance of involute profiles emerged as a result. The modern form of these curves as used in gear toothing was developed, however, by Professor Robert Willis of Cambridge University. Hobbing equipment, including hob cutters, made its debut. Numerous advancements followed, and we're now in the present day.

Simply put, a gear is any component with teeth whose purpose is to transmit or receive motion via a mesh of successively engaged teeth. Because of its positive nature, the gear drive is superior to friction drives such as friction drums and belts. Gears can be found in a wide variety of vehicles and machines including cars, tractors, rolling mills, naval engines, forklifts, and metal-cutting machine tools. They're simple to operate, take up little space, consistently deliver on their promises, and are incredibly efficient. However, specialised equipment and materials are required to make them. Tooth milling flaws might also create operational vibration and noise. Gears on parallel shafts and gears on shafts with axes crossing at right

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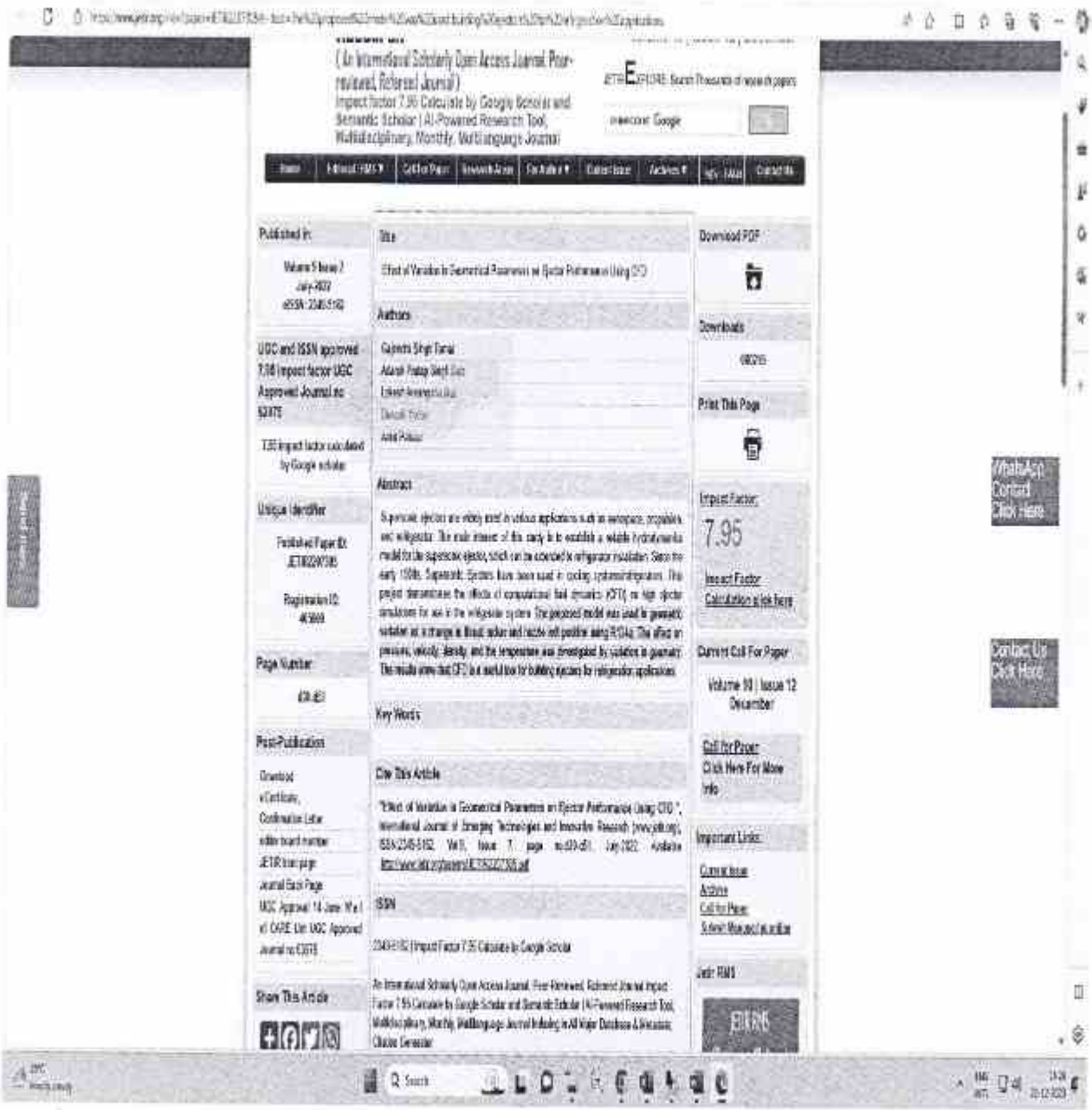

Structural And Thermal Analysis of Steam Turbine Casing Using Ansys

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JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

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STRUCTURAL AND THERMAL ANALYSIS OF STEAM TURBINE CASING USING ANSYS

Mayur Malanjpure[1], Nitesh Khaturker[2], Aditya Yadav[3], Ayush Suryawanshi[4], Lokesh Aurangabadkar[5]

[1,2,3,4]Student, Mechanical Engineering, Indore Institute of Science & Technology

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Abstract— Steam turbine is an excellent prime mover to convert heat energy of steam to mechanical energy. In power generation mostly steam turbine is used because of its greater thermal efficiency and higher power-to-weight ratio. Because the turbine generates rotary motion, it is particularly suited to be used to drive an electrical generator – about 80% of all electricity generation in the world is by use of steam turbines. In addition, the realization of critical turbine components need improved design and materials, which offer all possibilities for a cost effective and flexible service. High thermal stress gradients were found at the region of casing where fatigue cracks were detected during engine operation. In this work the thermal mechanical analysis of steam turbine casing will be established by finite element method. In this work the temperature and stress distributions for turbine inner casing were calculated by finite element analysis. The three-dimensional model of the Steam Turbine Casing was created using the SOLIDWORKS software. Boundary conditions were given on the finite element model through ANSYS.

Index Terms— 3D CAD model, Ansys Analysis, Comparing Results, Designs

1 Introduction

The steam energy is converted mechanical work by expansion through the turbine. The expansion takes place through a series of fixed blades (nozzles) and moving blades each row of fixed blades and moving blades is called a stage. The moving blades rotate on the central turbine rotor and the fixed blades are concentrically arranged within the circular turbine casing which is substantially designed to withstand the steam pressure.

- To analyse steam turbine casing geometry using Ansys for different materials.
- To obtain the various contour in the form of temperature, pressure, velocity and heat flux.
- To Observe the effect of turbine Material on the performance of system.
- Result comparison for both materials

Steam turbines consist essentially of a casing to which stationary blades are fixed on the inside and a rotor carrying moving blades stresses and the moving blades must be fitted to the rotor securely to withstand the high centrifugal forces. Where the shaft of the rotor passes through the ends of the casing, a seal is required to prevent steam leakage. Also, within the casing, seals are required to prevent steam from leaking around the blades rather than passing through them. Turbine seals are of the labyrinth type where there is no mechanical contact between the fixed and rotating parts. Leakage is thus not really eliminated but merely controlled to minimal amounts. The shafts of the rotors are carried on bearings and are linked together and to the electrical generator. Bearings must be properly aligned to accommodate the natural gravitational bending of the shaft. Allowance must also be made for differential expansion between the rotors and the casings during thermal transients.

2 Methodology

Initially, we have gone through the literature and read some articles

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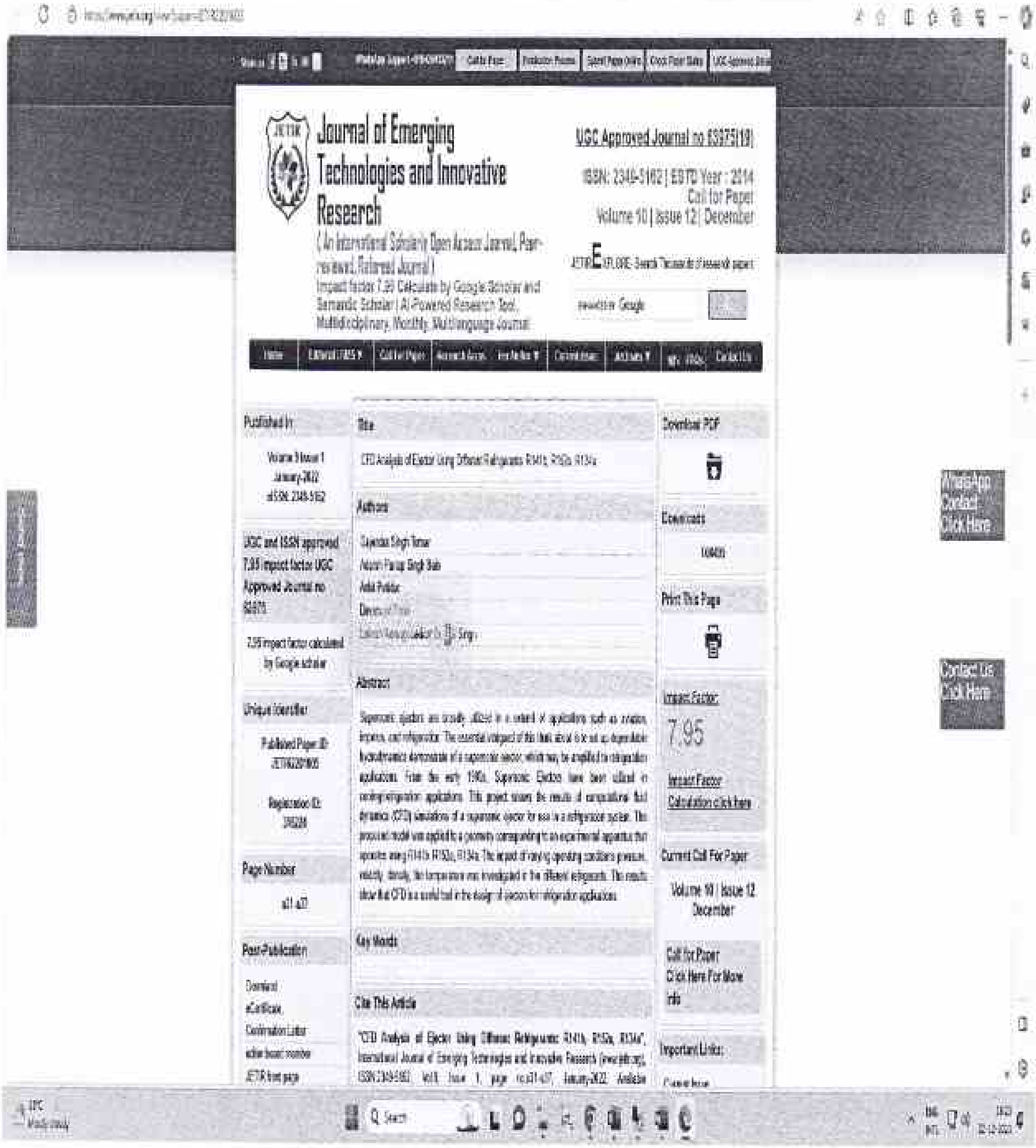

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Title: CFD Analysis of Ejector Using Different Refrigerants: R141b, R152a, R134a

Authors: Gajendra Singh Tomar, Anand Pratap Singh Bais, Ankit Patidar, Devendra ..., ...

Abstract: Supersonic ejectors are broadly utilized in a variety of applications such as aviation, ... and refrigeration. The essential intention of this thesis is to set up dependable hydrodynamics demonstrate of a supersonic ejector, which may be amplified to refrigeration applications. From the early 1990s, Supersonic Ejectors have been utilized in cooling/refrigeration applications. This project shows the results of computational fluid dynamics (CFD) simulations of a supersonic ejector for use in a refrigeration system. The proposed model was applied to a geometry corresponding to an experimental apparatus that operates using R141b, R152a, R134a. The impact of varying operating conditions pressure, velocity, density, the temperature was investigated in the different refrigerants. The results show that CFD is a useful tool in the design of ejectors for refrigeration applications.

Key Words:

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Obstacle Detection in Self-Controlled Cars

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Obstacle Detection in Self-Controlled Cars

Shivangi Patidar[1], Shivam Patel[2], Shubham Dwivedi[3], Vikas Ojha[4], Sourav Chandra Dubey[5]
[1, 2, 3, 4]*UG Student, [5] Assistant Professor, Department of Mechanical Engineering, IIST, Indore, India*

Abstract: ***An autonomous car is a vehicle that can guide itself without human command and control. It is also known as a driverless car, self-driving car, unmanned vehicle, or robot car. Autonomous vehicles can perceive their surroundings (obstacles and track) and commute to their destination with the help of a combination of sensors, cameras, and radars. There is a basic need for a system that can detect obstacles and move in a pre-computed path, a system that can detect the obstacles that appear suddenly which may cause accidents.***

Therefore, the automatic obstacle avoidance vehicle is designed for obstacle detection and collision avoidance. The ultrasonic sensor is tuned to enable the real-time obstacle avoidance system for wheeled robots, allowing the robot to continuously sense its environment, avoid obstacles and move to its target area. The design requires an ultrasonic sensor (hcsr04) to detect the obstacle and determine its distance.

This sensor module is placed on the front of the vehicle and mounted on a servo motor rotating in the direction of the sensor. The system includes a motor driving module and four dc wheel motors which are used to move the vehicle forward, reverse, left, right, and stop. The Arduino Uno microcontroller is mainly used to control the vehicle and achieve the desired detection and prevention

Keywords: Arduino Uno, ultrasonic sensor, DC motor, servo motor, motor driver module

I. INTRODUCTION

With the development of automation technology, automation begins to develop from simple system control to complex system control and advanced intelligent control, and that too in various fields.

An intelligent car is based on the automobile as the background, including automatic control, sensor technology, computer, machinery, and other disciplines of design.

An intelligent car integrates a complex integrated system, which can realize environment perception, self-planning, and self-decision functions. It can make full use of computers, sensors, information, communication, artificial intelligence, automatic control technology, and high-tech complex technology.

As demand for autonomous projects increases, the use of the sensor increases. The sensor is a complex device that converts physical parameters (e.g. temperature, pressure, humidity, speed, etc.) to a signal that can be electrically measured. They are very important to robots. It offers robot remote access and decisions about the desired environment.

The project is designed to build an obstacle avoidance robotic vehicle using ultrasonic sensors that will move according to the code assigned and will a free space, navigating from any obstacle on its way.

The so-called obstacle avoidance system is made to use the advanced range finding device in front of the autonomous car. When the car faces an obstacle, it can locate and respond to the location sensor and enter the Arduino through the data transmission starting the core processing.

Ultrasonic sensors are known for their reliability and great versatility in the industry. Ultrasonic sensors can be used to solve the most difficult tasks involving object detection or level measurement with millimeter accuracy because the measuring method works reliably in almost all conditions.

In this project, a robotic vehicle that moves in different directions like forward, backward, left, and right are designed and built to avoid the obstacle when it receives the sensor input that the object is detected.

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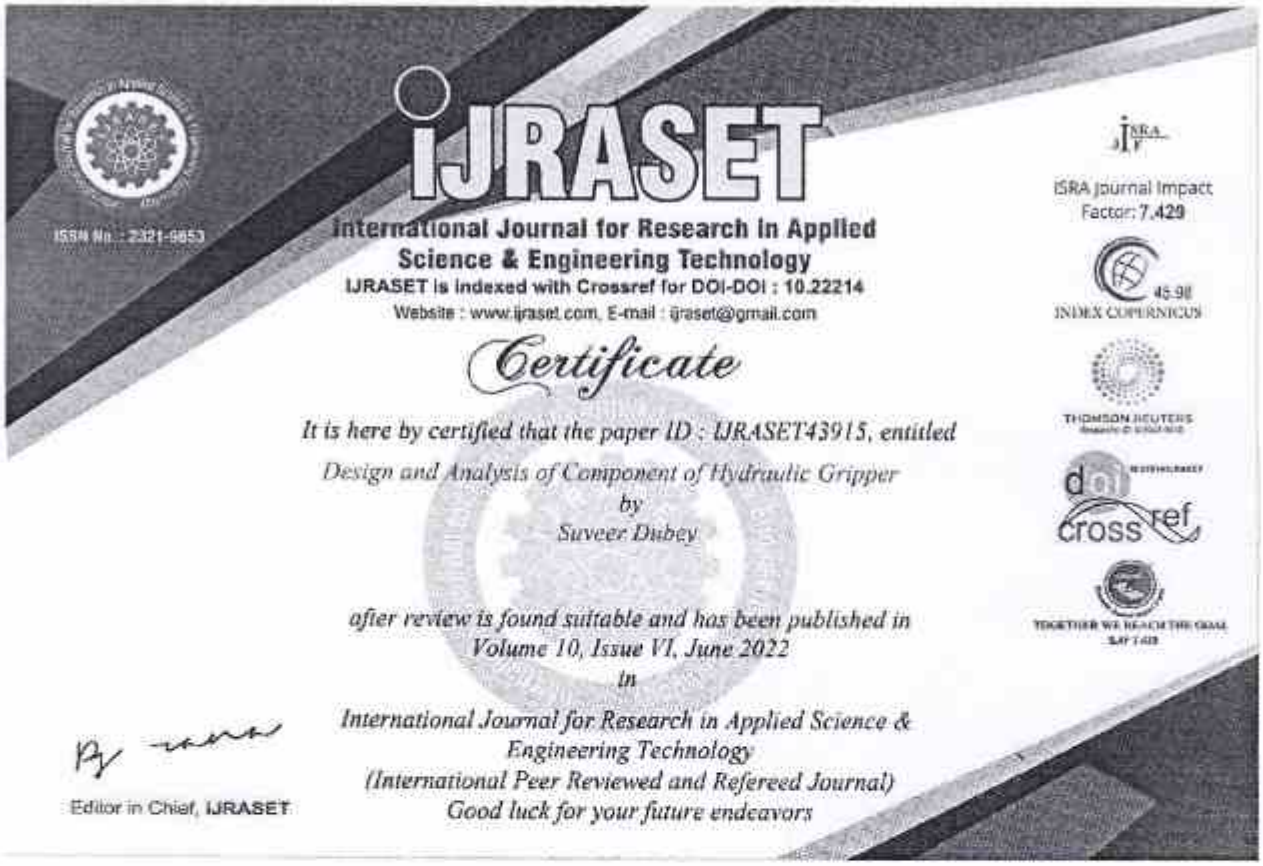

Life cycle assessment (LCA) of lead, chromium, and cadmium removal from water through electrocoagulation

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Life Cycle Assessment (LCA) of the lead, chromium, and cadmium removal from water through electrocoagulation

Vikas Choudhary [a], Hemant Goyal [b], Anil Kumar Varma [c], Ravi Shankar [d], Sankar Chakma [e], Pankaj Malviya [a,f], Lokendra Singh Thakur [a,*]

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Lead
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ABSTRACT

Presence of lead, chromium, and cadmium metals in drinking water poses serious health risks to living beings around the world. Hence, the simultaneous treatment of these pollutants from water using electrocoagulation (EC) technology is a promising development. The current study is focus to evaluate the environmental impact of EC and its sludge management by conducting Life Cycle Assessment using GaBi software. The electricity consumption in EC-reactor (Global warming potential, GWP: −46% and Acidification potential, AP: −41%) and sintering of bricks (GWP:−35% and AP:−31%) are found major contributor to total environmental impacts. The total GWP and AP are found to be 62.8 Kg.CO_2-eq. and 0.09ms kg.SO_2-eq.

1. Introduction

Due to the variety of contemporary human-made and natural activities, including rapid industrialization, the amount of heavy metals in water is rising frequently [1]. Drinking water tainted with heavy metals can seriously harm a person's health. The wastewater contains heavy metals such as chromium, cadmium, lead, arsenic, silver, selenium, nickel, cobalt, and mercury etc. Long-lasting environmental contaminants like lead, chromium, and cadmium are typically released by the battery,pesticide, metal plating, fertilizer, electroplating, leather, tanning, and glass industries [2]. One of the most hazardous metals in the environment is recognized to be lead [3]. The occurrence of lead in drinking water contributes to a number of illnesses that affect the nerve, brain, and renal systems [4]. Chromium is required in small amounts for the tissue of the liver, kidneys, and nerves [5]. However, excessive chromium consumption raises the risk of lung cancer and causes skin allergies [6]. Cadmium has been found to be the most frequently occurring pollutant in the industrial wastewater [7]. Testicular shrinkage, renal disturbances, and hypertension are all major cadmium-related health problems [8]. According to WHO and IS the acceptable guideline value of lead, cadmium and chromium in drinking water are 0.01, 0.003 and 0.05 mg/L, respectively [9,10].

Numerous techniques have been proposed and explored to remove hazardous heavy metals from water bodies. Whereas, this has been accomplished with the use of coagulation, solvent extraction, chemical precipitation, ion exchange, evaporation, filtration, and membrane techniques [2,11–15]. However, each of these methods has its own benefits and drawbacks. Adsorbent must be pretreated, and the procedure takes a long time. High amounts of sludge are produced through precipitation, coagulation, and chemical treatment, which cause environmental problems. When compared to the methods stated above, the electrocoagulation (EC) procedure is shown to be the most effective for removing the heavy metals. No additional chemicals are required since the in-situ coagulant produced during the EC process is efficient for heavy metal removal [16]. Thakur et al., 2023 successfully removed the lead (initial con.: 18 mg/L), chromium (initial con.: 451 mg/L) and

Abbreviations: ADP (E), Abiotic Depletion Elements; ADP (F), Abiotic Depletion Fossil; AP, Acidification Potential; EP, Eutrophication Potential; FAETP, Freshwater Aquatic Ecotoxicity Potential; GWP, Global Warming Potential; HHPA, Human Health Particulate Air; HTP, Human Toxicity Potential; HT (C), Human toxicity, cancer; HT (NC), Human toxicity, non-cancer; ODP, Ozone Layer Depletion Potential; POCP, Photochem Ozone Creation Potential; Res.F. F, Resources, Fossil fuels.

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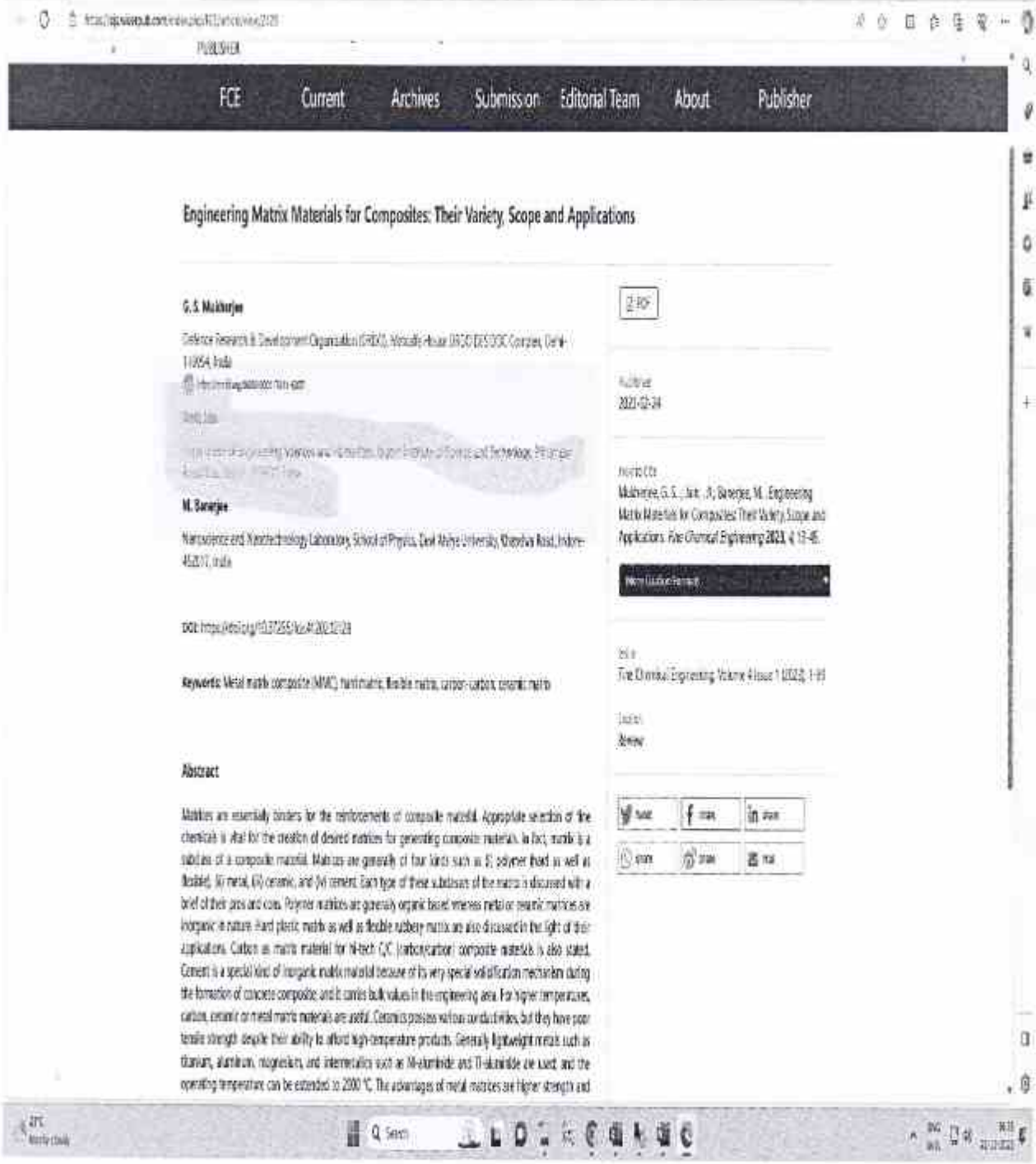
Engineering Matrix Materials for Composites: Their Variety, Scope and Applications.



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Engineering Matrix Materials for Composites: Their Variety, Scope and Applications

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Keywords: Metal matrix composite (MMC), nanomatrix, flexible matrix, carbon-carbon, ceramic matrix

Abstract

Matrices are essentially binders for the reinforcements of composite materials. Appropriate selection of the chemicals is vital for the creation of desired matrices for generating composite materials. In fact, matrix is a substitute of a composite material. Matrices are generally of four kinds such as (i) polymer (hard as well as flexible), (ii) metal, (iii) ceramic, and (iv) cement. Each type of these substances of the matrix is discussed with a brief of their pros and cons. Polymer matrices are generally organic based whereas metal or ceramic matrices are inorganic in nature. Hard plastic matrix as well as flexible rubbery matrix are also discussed in the light of their applications. Carbon as matrix material for Hi-tech C/C (carbon/carbon) composite materials is also stated. Cement is a special kind of inorganic matrix material because of its very special solidification mechanism during the formation of concrete composite and it carries bulk values in the engineering area. For higher temperatures, carbon, ceramic or metal matrix materials are useful. Ceramics possess various conductivities, but they have poor tensile strength despite their ability to afford high-temperature products. Generally lightweight metals such as titanium, aluminum, magnesium, and intermetallics such as Ni-aluminides and Ti-aluminides are used, and the operating temperature can be extended to 2000 °C. The advantages of metal matrices are higher strength and

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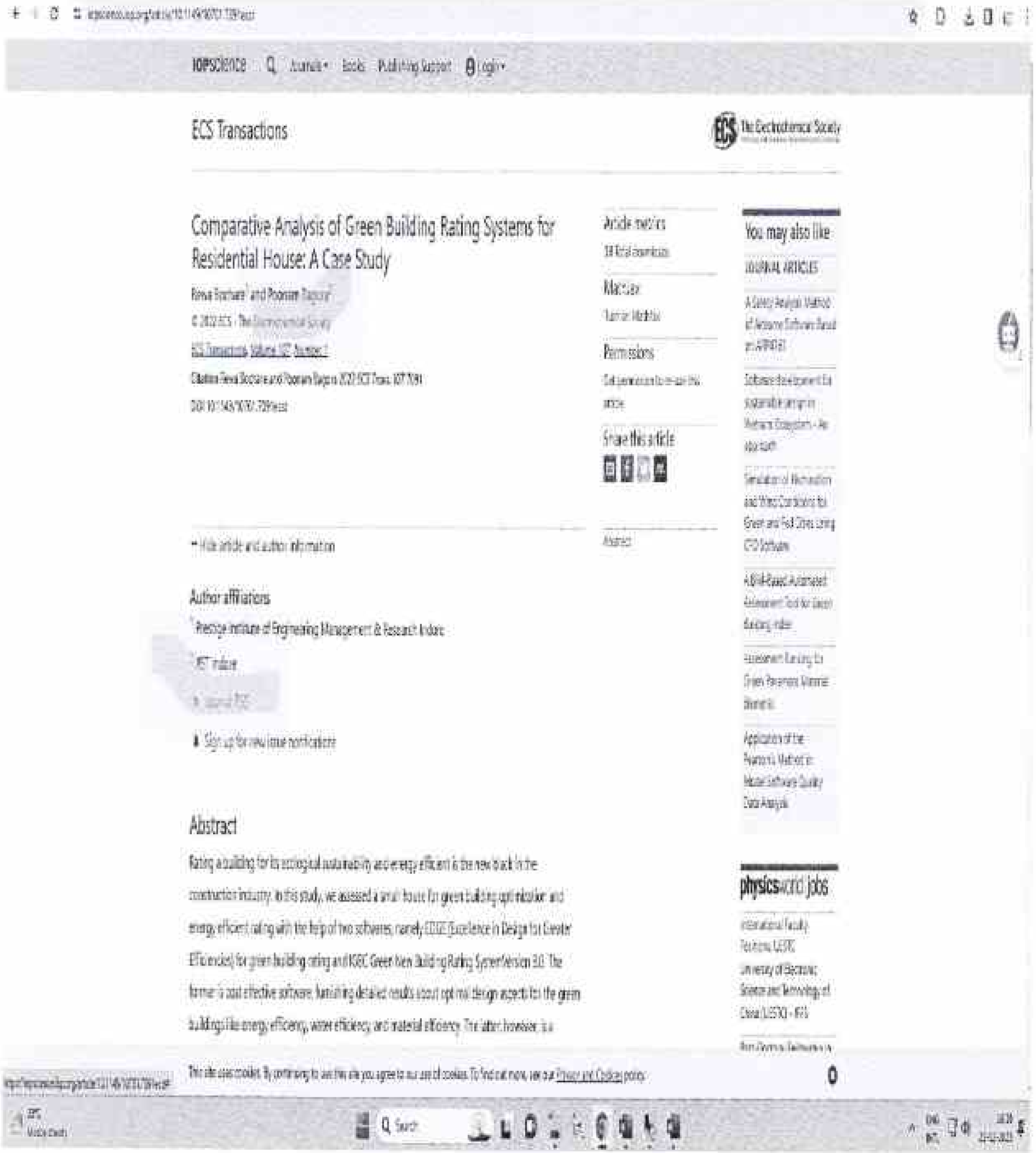
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Abstract

Rating a building for its ecological sustainability and energy efficient is the new black in the construction industry. In this study, we assessed a small house for green building optimization and energy efficient rating with the help of two softwares, namely EDGE (Excellence in Design for Greater Efficiencies) for green building rating and IGBC Green New Building Rating System Version 3.0. The former is cost effective software, furnishing detailed results about optimal design aspects for the green buildings like energy efficiency, water efficiency, and material efficiency. The latter, however, is a

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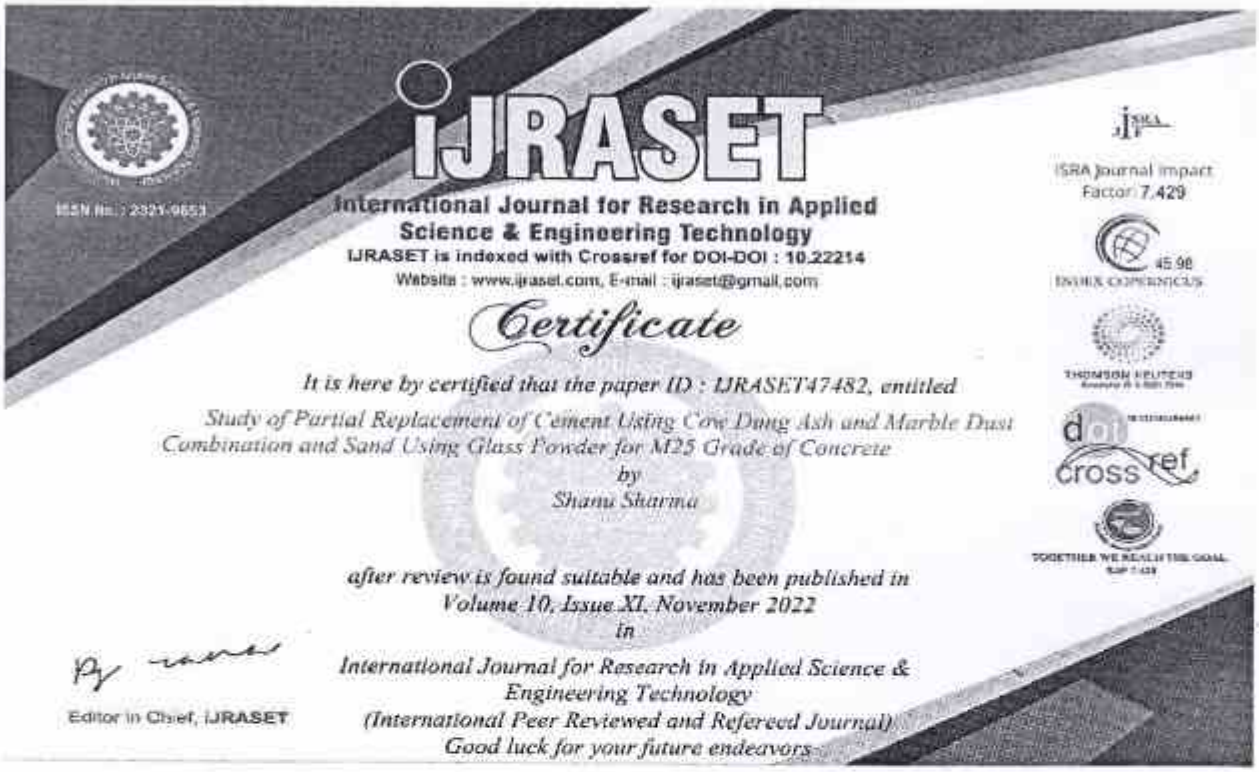

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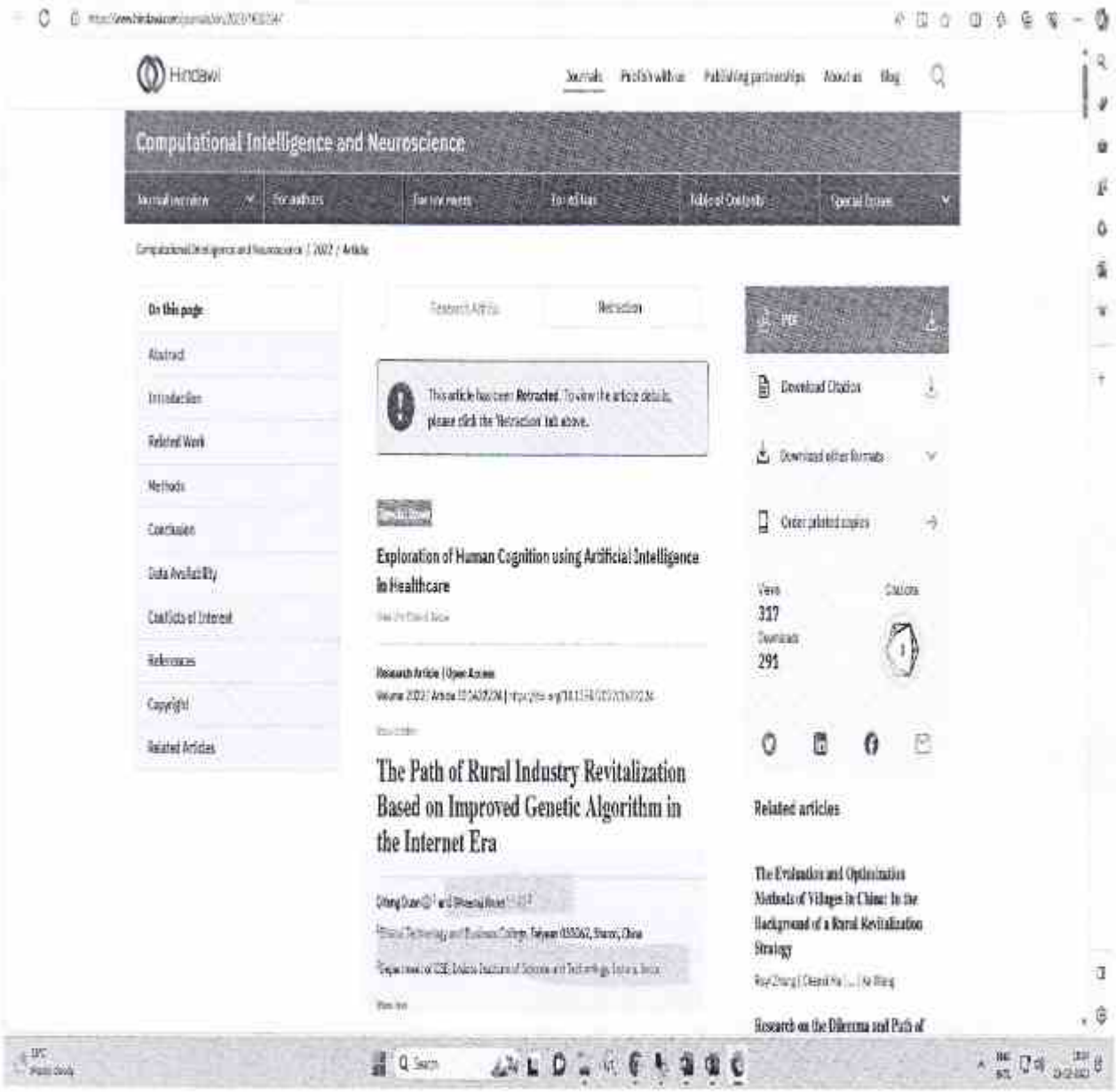

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