



# ETRD-2022



## Souvenir

Global Conference

on

"Emerging Trends in Research & Development"

(ETRD-2022)

organized by

International Journal of Innovative Research &  
Growth (IJIRG)

in association with

Bhartiya Shikshan Mandal

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**Prof. (Dr.) P.L. Verma**  
Chief Patron, ETRD 2022



## ***Message***

It is my proud privilege to be the part of this International Conference on “**Emerging Trends in Research and Development**” ETRD-2022 is being organized by International Journal of Innovative Research & Growth (IJIRG) in association with Bhartiya Shikshan Mandal, MP & KPS Science Academy on 29th-20th June 2022.

This International event is another small endeavor in the direction to bring together the experienced intellectual on one hand, and the young inquisitive minds on the other hand, to develop new thoughts, new ideas and new strategies to combat the challenges of changing pattern of world demand.

I extend a warm welcome to all the participants from across the world to this mega event and hope that two days scientific deliberations of this august congregation will go a long way in shaping the philosophy and action, and make a valuable contribution to the field of Research and Development.

I wish a grand success to ETRD 2022.

**Prof. (Dr.) P. L. Verma**  
Chief Patron, IJIRG

**Dr. P. Singh**  
Convener, ETRD 2022



## ***Message***

It gives me immense pleasure that the Global Conference on “**Emerging Trends in Research and Development**” ETRD-2022 is being organized by International Journal of Innovative Research & Growth (IJIRG) in association with Bhartiya Shikshan Mandal & KPS Science Academy on 19th-20th June 2022.

Science is always considered a boon because without the auspices of Science, it would have been impossible for us to stay in this world with such a great comfort. Science is readily and rapidly generating new laws and theories, but still, we are in the infancy stage, we have to uncover lot of mysteries of the nature. New theories in combination with the innovative technologies are finding place in the laboratories every year thus generating new ideas for industrial and economic growth. The industries are eagerly waiting for the progress and innovations in the field of science and technology and look towards their R&D wings with great expectations.

The ETRD 2022 aims to provide a scientific platform for all the participants to congregate and interact with subject specialist. I am sure the deliberation of the conference will be an enlightening and enriching experiences for all the participants.

I welcome you all to ETRD 2022 and extend my best wishes for the grand success of the Conference.

**Dr. P. Singh**  
Chief Editor, IJIRG



# ETRD-2022



## About: IJIRG

International Journal of Innovative Research & Growth (IJIRG) is a double blind reviewed quarterly, peer-reviewed and fully refereed international journal. Being an international journal, we broadly cover research work on next generation cutting edge science and technologies. Critical evaluation of manuscript is a prime focus of each member of IJIRG, Reviewer Panel for identifying Plagiarism. We try our best to ensure the novelty in each research manuscript being published in IJIRG. The journal invites original papers, review articles, technical reports and short communications containing new insight into any aspect of sciences that are not published or not being considered for publication elsewhere.

The aim of this journal is to publish articles in Engineering and Technology, Physical Sciences, Life Sciences, Chemical Sciences, Food Science, Earth Science, Biomedical Sciences, Biological Sciences, Biodiversity, Biotechnology, Clinical Sciences, Animal and Veterinary Sciences, Agricultural Sciences, Environmental sciences, Home Science, Horticulture, Hospitality and Tourism Management, Geology, Library & Information Science, Management, Yoga, Economics, Education, Languages and Literature.

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## Keynote

### “Acceleration of Solar Cosmic Rays”



**Alexei Struminsky**

The problem of the origin of Solar Cosmic Rays (SCR) touches on such fundamental questions of solar physics as the relationship between flares and coronal mass ejections (CME); the existence of two classes of flares - limited (confined) and not limited in height (eruptive); acceleration of electrons and protons in two phases of flashes - impulsive and gradual; generation of long-term solar gamma  $>100$  MeV radiation.

A solar flare is a long-term process of consumption of magnetic energy stored in the active region at altitudes up to  $\sim 0.5$  solar radii. At heights less than  $\sim 0.1$  of the solar radius, the strength of the magnetic field is sufficient to hold the heating plasma, and flares occur, limited in height, with pronounced chromospheric effects in the impulsive phase. Eruptive flares occur at altitudes greater than  $\sim 0.1$  of the solar radius, when the strength of the magnetic field is insufficient to contain the plasma. Eruption occurs, in the limiting case of a supersonic CME. Eruptive flares may or may not be accompanied by effects in the chromosphere.

Where there is a change in the magnetic flux, an electric field arises that accelerates the charged particles. Under conditions of flares, the strength of such a field is larger than the Dreiser field (determined by plasma temperature and density). The time of acceleration of electrons in this field to an energy of  $<100$  keV is fractions of a second (an elementary act of acceleration), but protons will need several minutes to reach the gamma-line generation threshold ( $>10$  MeV). Such a time can be reached as a result of the action of many elementary acts, that is, due to stochastic acceleration. In the first (impulsive) phase of acceleration, only the radiation of non-thermal electrons is seen, and in the second (gradual) phase, evidence of proton acceleration is observed.

Since the acceleration of CME's to supersonic speeds requires a time comparable to the time of proton acceleration to  $\sim 100$  MeV, there is a dilemma whether protons are accelerated directly in flares or at the CME shock front. A joint analysis of data on increases in the intensity of solar electrons and protons after eruptive flares, both with strong and weak electromagnetic radiation, allows us to state that electrons  $>1$  MeV and protons  $>100$  MeV accelerate stochastically during and after the CME acceleration. The confinement of protons behind the CME front leads to long-term gamma radiation.

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## The Cell Membrane – A Vulnerable Target for Reactive Species Attack

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The cell membrane is a semipermeable, thin (7.0 – 10 nm), delicate, flexible, and fundamental structural unit that envelopes the cytoplasm of the cell. The cell membrane is eminently composed of lipids and proteins. Polyunsaturated fatty acids and redox-sensitive amino acids in the cell membrane make it a favourite target of reactive species (RS). While controlled oxidation of the cell membrane is important for physiological functions, e.g., cell signaling, and immune functions, excessive oxidation results in diseases, e.g., arteriosclerosis and Alzheimer's disease. Therefore, a sensitive probe is required to precisely monitor RS to understand their multifaceted role in physiology. Genetically-encoded redox probes, such as roGFPs, are promising tools for quantitative and dynamic observation of RS. However, the excitation light used to read out the fluorescence of these proteins may lead to phototoxicity [1]. Thus, we herein introduce two genetically-engineered non-photonic RS sensors: roNaV1 (rNaV mutant M1305C) and roNaV2 (rNaV mutant IFM1305U), both based on the rat skeletal muscle voltage-gated Na<sup>+</sup> channel (rNaV1.4) [2,3]. Notably, roNaV2 is the first functional selenocysteine-containing ion channel. Through the hinged-lid mechanism, roNaV1 and roNaV2 respond to local changes in the redox milieu and yield a ratiometric signal that can be measured with high precision in a non-photonic fashion

**Keywords:** Redox, selenocysteine, mutant

## Electron Temperatures in the F Region of the Ionosphere During Day Time

**Ashish Kumar Meena<sup>1</sup>, Lavi Kumar Vaswani<sup>2</sup>, Preetam Singh Gour<sup>3</sup>**

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### Abstract

The theory and observations regarding electron temperatures within the F region of the ionosphere are reviewed. The review is split into three basic parts within the first part the speculation concerning electron heating, cooling, and strength shipping methods is reviewed, and each one the relevant expressions are up to date and the second part of the ionosphere F region contain electron temperature and its measured by incoherent scatter radars, rockets and satellites are discussed. This portion covers electron temperature variations with, local time, season, altitude, geomagnetic activity, latitude and solar cycle. The third part is primarily dedicated to a discussion of the assorted attempts to check measured and calculated ionosphere F region electron temperatures. F region electron temperatures are highly variable, depending on altitude, latitude, local time, season, solar cycle, and geomagnetic activity

**Keywords:** -Electron Heating, Electron temperature, Transport, Incoherent scatter, geomagnetic activity, solar cycle

## Effect of Straw and Straw-Derived Biochar on Plant Grown in Saline Soil

**BrahmacharimayumPreetiva<sup>1</sup>, Jonathan S. Singsit<sup>2</sup>, Abhishek Kumar Chaubey<sup>3</sup>, Tej Pratap<sup>4</sup>, Dinesh Mohan<sup>5</sup>**

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### Abstract

Soil salinization is one of the major contributors of soil degradation. Globally, it has spread to 7.6% of the total terrestrial surface and has engulf around 75% of cultivated areas. To be exact, after soil erosion, salinization is the second largest cause of soil degradation. This puts pressure on the already stressed food production system. Therefore, in order to alleviate the effect of salts accumulation in agricultural fields, various chemical and organic amendment methods are available, however, these are not sustainable options for long term use, as they often require frequent applications and at high rates. As such, looking for a sustainable way to remediate this problem is essential. Biochar, a solid carbonaceous material, has been proposed as a more viable option in recent times. In this study, biochars derived from some of the most common agricultural waste are used as soil amendment to alleviate salt stress in sampled agricultural soils. The biochar is prepared using an indigenously designed farmer friendly bioreactor, which provides an added advantage for future field applications. The positive results (increased plant height, leaf area, fruit weight, soil nutrients) shown in this study projects biochar as an attractive sustainable option for remediation of salt stress.

**Keywords:** - Salt stress, agricultural waste biomass, biochar, indigenous bioreactor.

## Promoting Awareness of Ethically Responsible Use of Agricultural Biotechnology

**Jyoti Pandey**

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### Abstract

Agriculture and its products have taken centre stage in the modern Era. Growing global need for food, biological energy, and particularly farm goods, as well as the risk posed by numerous environmental changes, create significant problems for agricultural output. Plant biotechnology has the possible to help advance sustainable agriculture in a variety of ways, but it is fraught with ethical issues. Agricultural biotechnology is a promising way to address these issues, but ethical and socio-cultural considerations must be addressed first to secure widespread public trust and adoption. To be effective, we must create solutions that are ethically responsible, socially sensitive, and relevant to people from various cultural and social backgrounds, as well as communicated to the public in a persuasive and straightforward manner. The appropriate use of agricultural biotechnology should be guided by ethical methods, principled decision-making processes, citizen-stakeholder participation, and effective communication in science and bioethics education, according to the authors. Responsible research and innovation are linked to issues of participation and political influence, making it primarily a public awareness tool. The main aim of this study is to develop awareness about ethical issues and their regulations for overcoming challenges which arise multiple problems in agriculture field and to help in find out their different solutions for develop sustainable agriculture.

**Keywords:** - Plant Biotechnology, Ethical reasoning, Bioethics, Public and political engagement.

## A Correlative Study of Geomagnetic Storms, Solar Flares and Flare Classes

**Lavi Kumar Vaswani<sup>1</sup>, Ashish Kumar Meena<sup>2</sup>, Preetam Singh Gour<sup>3</sup>**

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### Abstract

We report a statistical observation of the relationship of Dst index of geomagnetic storm and solar flare flux along with its different classes of flare. We find the relation between Dst index of geomagnetic storm and solar flare flux of all the flares occur from 2010 – 2020 is .21. We also find correlation of Dst index of storm with different classes of flares. The correlation of Dst index and X class solar flare flux is .97 which is very high means chance of storm increases strongly during eruption of X class flare towards earth but in 10 years very few X class flares are seen although the correlation of Dst index and flux of M class flare is low which is .04, during the period we noted 28 geomagnetic storms whose Dst indices is  $\leq -100$  nT and each storm is associated with any one class of flare means solar flares are major reason behind Geomagnetic Storms

**Keywords-** Coronal mass ejections, Solar flares, Space weather, Geomagnetic Storm.



## Analysis of Coronal Mass Ejections and Solar Flares

**Mahindra Kumari Meena<sup>1\*</sup>, Ashish Kumar Meena<sup>2</sup>, Preetam Singh Gour<sup>3</sup>**

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### Abstract

The Sun is the most prominent feature in our solar system and contains approximately 98% of the total solar system mass. In this work we have selected those CME events which are having velocity  $\geq 500$  Km/s with an apparent width of  $360^\circ$  during the period from 2008-2019 (SC24). Within this time frame we have observed 201 CME events and corresponding solar flare events were 183 of different categories most of the flares observed was C class flares (47.5%). Further we have observed that there were no CME events for the year 2008, 2009, 2018 and 2019. The peak of SC24 was observed on April 2014 with 23 months smoothed sunspot number 81.8. By extracting the data of CMEs and flare events from SOHO/LASCO catalogue and NOAA and do the statistical analysis and find out the correlation between CMEs and solar flares of different categories. CME events with B class and C class flares not having any correlation but M class flares have positive correlation with correlation coefficient 0.38. Further CME events are moderately correlated with X class solar flares with correlation coefficient 0.45.

**Keywords:** -CMEs, Solar flares, Solar cycle.

## Comparative Study of ZnO and Ni doped ZnO Nanoparticles: Structural and Optical Properties

**Osheen Sharma<sup>1</sup>, Pankaj Srivastava<sup>2</sup>**

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### Abstract

Now-a-days, nanotechnology is gaining lot of attention from researchers due to its numerous unique structural, chemical, physical and optical properties at nano-scale. ZnO nanoparticles are semiconductor metal oxide having diverse applications in field of material science. This research investigated the optical and structural properties of Ni-doped ZnO nanoparticles synthesized using pineapple peel extract. Herein, the green synthesis and Co-precipitation route were employed to prepare Ni-doped ZnO nanoparticles. The pineapple peel extract was used as capping agent. The absorbance was demonstrated through UV-Vis spectroscopy which evident the absorption of UV-A rays. The optical band gap for Ni-ZnO nanoparticles was lower as compare to pure ZnO nanoparticles. X-ray diffraction results confirmed the hexagonal crystalline structure of Ni-ZnO nanoparticles having dominating peak in 101 planes.

**Keywords:** Nanotechnology, Semiconductor, UV-Vis Spectroscopy, Optical Properties, Structural Properties.

## Regulating Biodiversity Resources and the Associated Traditional Knowledge

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### Abstract

We have a case of Kani Tribes where the traditional knowledge of such society has been recognized and the research output was patented and successfully commercialized too. The revenue of such commercialization has been shared with the concern society and the impact is the positive changes in the life style. Such a sharing need to be promoted utilizing such precious knowledge in the interest of public in large.

It is noted that now days the application of bio-resources and the associated knowledge has been promoted worldwide and new innovations based on existing knowledge (TK) emerging with some value additions. In view of the nature of traditional, most of such innovations attracts the problem of 'novelty' and 'inventiveness' for the purpose of patenting the same. However, some are considered for patents too. This work will suggest the trend of such filings for patent, trend of disposal, major issues in patenting etc. Further, there is a discussion on the role of TKDL and the system of patent on the subject.

**Keywords:** -Biodiversity, bio-resources, traditional knowledge

## Spectra, Abundance and Evolutionary Track of Main Sequence Stars

**Pooja Soni<sup>1</sup>, Preetam Singh Gour<sup>2</sup>**

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### Abstract

Spectroscopy plays an important role in study of celestial objects. Spectroscopy enables to determine chemical elements and chemical structure. Spectroscopical instruments are available at Hubble Space Telescope. The methods of spectroscopical study of Ultraviolet, visible and infrared wavelengths are called as ultraviolet spectroscopy, optical spectroscopy and infrared spectroscopy. Multiple stellar codes are available for computational study of stars, their structure and their evolution. In this paper IR spectroscopy is used as the considered stars emit infrared radiations. The spectrums of all the main sequence stars (O to M type) are plotted by Vizier Catalogue. By the literature review, chemical elements of these stars are determined. Data available from Vizier Catalogue is used in Starevol Code for finding the Surface Abundance of light elements (H, He, Be, B). Effect of Metallicity ( $Z=0.01, 0.02, 0.03, 0.04$ ) is shown on surface abundance of these light elements. Starevol code is also used to plot the grids of evolutionary track of considered main sequence stars at metallicities 0.01, 0.02 and 0.04. Evolutionary track are plotted as Hertzsprung Russel diagram. Astronomers predict the life of stars by these Evolutionary Tracks.

**Keywords:** - Spectroscopy, Surface Abundance, Metallicity, Stellar Evolution, HR Diagram.

## Impact of Liquidity and Profitability on Dividend Policy: An Empirical Study on Select IT Companies in India

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### Abstract

This study examines the relationship among liquidity, profitability and dividend policy in one hand and determines the impact of liquidity and profitability on the dividend policy of select IT companies on the other hand. For this study, 19 Indian IT companies have been selected as sample units who have been generating profit on a continuous basis. Data for the study have been collected from the annual reports and websites of the concerned companies. The study period is 12 years i.e. from 2008-09 to 2019-20. The data thus collected have been analyzed by correlation and multiple regression analysis. In this study, Current Ratio (CR), and Return on Assets (ROA) are taken as independent variables and Dividend Payout Ratio (DPR) is considered as dependent variable. The result shows that there is negative association between ROA and DPR, while there is positive association between CR and DPR. Further, the study reveals that liquidity and profitability together have lesser impact on the dividend policy. However, on individual basis ROA has significant impact on the dividend policy of select IT companies.

**Keywords:** - Dividend Policy, IT companies, Liquidity, Leverage, Profitability

## Determination of Attenuation Coefficient and the Half-value Thickness of $\beta$ Particle & $\gamma$ particle in $^{22}_{11}\text{Na}$ and $^{60}_{27}\text{Co}$

**Rehana Bi<sup>1</sup>, Ashutosh Tiwari<sup>2</sup>, Preetam Singh Gour<sup>3</sup>**

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### Abstract

In this research we work with radioactive source to learn about attenuation of radiation by different material. Particle emission is almost always followed by  $\gamma$  emission it is electromagnetic radiation of very short wavelength and high frequency. Gamma -radiation is present everywhere on Earth as a background of natural radiation, coming from space or the decay of natural radioactive isotopes. Effect of radiation is harmful for human tissue but here with safety measures we use these radiations for investigation of various parameters of different sample. Here we are interested to find Attenuation of gamma -radiation in a thin layer of an absorber and find half value thickness of absorbing material sample. In the present work half value thickness and attenuation coefficient of various sample like Al foil, Gift wrapper, and paper foil has been reported and calculated experimentally. In the present investigation we calculated the values of linear attenuation coefficient and half value thickness (HVT) of  $\beta$  particle and  $\gamma$  particle in and we estimated Half value thickness of  $\beta$  Particle in =  $134 \pm 1 \text{ mg/cm}^2$ , Half value thickness of  $\gamma$  Particle in = 14000 mm, Half value thickness of  $\beta^+$  particle in =  $373 \pm 2 \text{ mg/cm}^2$  and Half value thickness of  $\gamma$  Particles in = 14000 mm. It is found that Half Value thickness of any sources does not depend on material but it depends on material thickness. The results of this investigation have shown that, the Attenuation coefficient of  $\beta^+$  particle by Al foil = 0.0015 Attenuation coefficient of  $\beta^+$  particle by Paper foil = 0.0013, Attenuation coefficient of  $\beta^+$  particle by gift wrapper = 0.0015, and Attenuation Coefficient of  $\gamma$  Particle is 0.1131. The attenuation coefficients are an important parameter for characterizing the penetration and attenuation properties of alpha, beta and gamma rays in materials.

**Keywords:** -Half value thickness, Attenuation coefficient, Gamma radiation

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## Simplifying the Steps of Social Research for Better Understanding

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### Abstract

Research is the major source of knowledge. Research is as old as man. Man needs to use the social research to understand the happenings around him and provide a reliable solution to a problem or innovate something that will help the humanity at large. For instance, it was the research that gave birth to the invention of the electronic devices we are using nowadays. The industrial revolution that led to the creations of many industries was the products of the research made by the firm owners. What about today? Is Elon Musk not using the scientific research to discover that the space is survivable? This paper will give an answer to these questions by explaining to the readers steps taken by the well known scientists to discover a body of knowledge, and then transform it to what we now called Astronomy, Astrology, Mathematics, Sociology, e.t.c.

The methodology used in this paper is to simply the hard terms that are not easy to be comprehend by the students of research. Whereas, clear examples that will give an image to the reader were outlined.

This paper is the motivation to the researchers on the steps to follow to make discoveries more extensively. The steps are eleven in number. They are very simple if the reader endure to read them carefully.

In the end, the paper maintained that if a researcher follows the steps explained in this paper he/she will undergo an easy-going research journey with accurate result at the end.

**Keywords:** - Social Research, Methodology, Hypothesis, Causes, Reasons, Solutions.

## Feasibility study of Floating Solar Photovoltaic System at Smart City Sagar in Madhya Pradesh, India: A Review

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### Abstract

Due to finite fossil fuel supplies and rising energy demand, solar energy, which is a free and endless source of energy that is also eco-friendly and environmentally sustainable, is becoming more popular, installations of solar PV systems are increasing. Solar photovoltaic systems require a lot of land, which will always be a precious resource. However, issues arise during the implementation of solar installations on land. Land availability, development and acquisition, substation capacity, and evacuation are all obstacles to the project's completion. FSPV systems are gaining popularity in comparison to their land-based rivals because of benefits such as increased panel performance, the elimination of ground costs, and the expense of the mounting structural system, as well as environmental benefits such as reservoir saving water through reduced evaporative cooling and algae. This research investigates the floating solar photovoltaic (FSPV) technology as a means of harvesting sustainable energy from the sun. In this study, the climatic compatibility of FSPV systems, solar output evaluation, and calculation of evaporation losses were all investigated and studied, which included lakes and dams inside the city limits.

**Keywords:** - Infrastructure Planning/Renewable Energy/Town and City Planning.



## Curcumin Encapsulation in Calcium Phosphate Nanoparticles for Neurodegenerative Diseases

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### Abstract

*Curcuma longa L*, a Zingiberaceae plant, is a popular spice in India and other Asian countries. It's mainly composed of polyphenols that have a bright yellow color to them. At acidic and physiological pH, and have a limited water solubility and hydrolyze quickly in alkaline solutions. For a better stability and solubility. Many studies have employed nanoparticles as drug carriers for both in vivo and in vitro investigations; Calcium phosphate is an essential inorganic mineral with high biocompatibility due to its chemical resemblance to human tissues, as a milestone in nano biotechnology toward treatments for neurological diseases such as Parkinson's and Alzheimer's. This project focuses on solving curcumin's inadequacies, such as its low chemical stability and bioavailability. Fresh rhizomes were cleaned, washed in deionised water, sliced, and dried for two weeks in the laboratory, afterwards dried in a hot air oven for six hours at 100°C in 15 minutes. The mobile phase was utilized in a thin layer chromatography test, a sample of approximately 25gm was collected dissolved in 250ml of methanol for soxhlet analysis. Pure curcumin was obtained by carefully weighing a 25mg sample and dissolving it in 25ml acetone using higher liquid chromatographic. Nanobiotechnology techniques and innovations will improve the above limitations and offer a solution to neurological diseases such as Parkinson's and Alzheimer's in future.

**Keywords:** - Curcumin, Encapsulation, Nanoparticles and Neurodegenerative Diseases.

## Improvement of Farmer Economy Using Integrated Farming System

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### **Abstract**

Agriculture has been most influential in meeting the food and fiber needs of today's population. Integrated farming systems consist of multiple enterprises that interact in space and time, resulting in a synergistic resource transfer between enterprises. Integrated farming system (IFS) is a modern technique used to enhance farmer economy. However there are growing scrutinize about the economic, environmental and social insinuation of this success. IFS often include crop and livestock. While integrated farming systems were historically general, the trend has been towards more specialized systems. A different variety of drivers influence the adoption of integrated farming, including economic, social and environmental drivers. Integrated systems enjoy the economies of scale, but these are diminished in large-scale farms that benefit from economies of scale. There are lots of challenges with integrated farming, including the complexity of managing multiple enterprises. Future improvement in technology, and demands for food and ecosystem services will influence the adoption of these systems. This review focused on efficient mixing of two field crops and domestic animal for the sustainable production, income generation, and employment opportunities for resource poor rural farmer.ds

**Keywords:** - IFS, Economic, Sustainable production, Mixed crop

## Yoga Benefits on Breathing Capacity and Anxiety

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### Abstract

Yoga is an old practice that has evolved into a holistic approach to general wellness and healing. The word “yoga” comes from the Sanskrit word “Yuj”, which means to “Yoke” or join in union which consists of *asana* (movement), *pranayama* (controlled breathing), and *Dhyana* (meditation). When this combined yoga practices are used together, they are aimed at attaining “enlightenment” or “self-awareness”. Were Yogais 5,000yearold practice that has evolved into a holistic approach to general wellness and healing. The yogic practice of “Pranayama” specifically focuses on our respiratory health. When we practice breathing consciously, our rate of breathing drops and the amount of oxygen inhaled increases with fewer numbers of breaths. According to a study, after a month of practicing Yoga, the average respiratory rate in people with lung problems decreased from 13.4 to 7.6 breaths per minute.

Anxiety is the key to “wear and tear” our bodies experience as we adjust to our continually changing environment. It has physical and emotional effects on us and can create positive or negative feelings. Anxiety disorder, elevated levels of anxiety, which are associated with concerns about health, relationships, work, and financial issues lead to a wide variety of physical symptoms and behavioural changes.

Yoga for anxiety guides you to harness the power of your thoughts, works directly with your body, and helps you to face your fears. With the right support, you may just discover that you are stronger and more capable than you imagined.

**Keyword:** - Yoga, Breathing Capacity, Anxiety.

## Assessment of Single- Petalled Tuberose (*Polianthes Tuberosa*L) Germplasm for Its Growth and Floral Attributes under Pantnagar Conditions

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### Abstract

Tuberose (*Polianthes tuberosa* L.) is a popular bulbous flower crop and is in great demand due to its potentiality for cut and loose flower trade, long vase life, high concrete and oil recovery, attractive long spikes, and nearly year-round production in tropical and subtropical climates. Therefore, an investigation was carried out to evaluate the performance of twelve single-petalled tuberose germplasm under Pantnagar conditions for two years at Model Floriculture Centre, GBPUA & T, Pantnagar. Results were significant among all the varieties for most of the vegetative and floral traits. Among all the cultivars ArkaNirantara produced significantly taller plants (75.50 cm) with maximum number of leaves (80.47) followed by Phule Rajni and Kalyani Single (74.25 cm and 77.52) respectively. However, earliest spike emergence (115.69 days), maximum number of florets per spike (46.17), maximum duration of flowering (26.38 days), tallest spike (106.35 cm), maximum rachis length (32.88 cm) and maximum vase life (14.37 days) was observed in var Kalyani Single which was statistically at par with var Prajwal. ArkaNirantararecorded maximum number of spikes (5.10 per clump, 56.10 per m<sup>2</sup> and 5.61 lac per ha) followed by Kalyani Single (4.83 per clump, 53.17 per m<sup>2</sup> and 5.32 lac per ha) respectively. Therefore, based on the results it was inferred that var Kalyani Single was found to be superior in terms of growth and flower yield followed by Mexican Single and ArkaNirantara under Pantnagar conditions.

**Keywords:** -Tuberose, single-petalled, spike, floret, Pantnagar

## Effect of Irrigation and Nutrient Management on Nutrient and Water Use Efficiency, Yield and Economics of QPM Production in New Alluvial Zone of West Bengal

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### Abstract

Being C<sub>4</sub> plant, quality protein maize is undoubtedly an exhaustive feeder which requires substantial amount of continuous and assured nutrient and water supply throughout the growing period. A comprehensive field experiment was conducted in District Seed Farm, Bidhan Chandra Krishi Viswavidyalaya, West Bengal during *rabi* seasons of 2017-18 and 2018-19 to examine the effect of irrigation and nutrient management practices on yield, water and nutrient use efficiencies and economics of QPM production (variety HQPM-1). The experiment was laid out in a split-plot design consisting three irrigation treatments in main plots like IW/CPE 1.0 (I<sub>3</sub>), 0.75 (I<sub>2</sub>) and 0.5 (I<sub>1</sub>) and four nutrient management practices in sub-plots such as control(N<sub>1</sub>), 100% RDF (N<sub>2</sub>), 75% RDF+ 2 t ha<sup>-1</sup> vermicompost(N<sub>3</sub>) and 75% RDF + 2 t ha<sup>-1</sup> vermicompost + 25 kg ha<sup>-1</sup> ZnSO<sub>4</sub>(N<sub>4</sub>) with three replications.

The pooled results revealed that I<sub>3</sub> exhibited significantly highest grain yield; net return; B:C ratio; partial factor productivity, agronomic efficiency, apparent recovery and physiological efficiency. Besides, N<sub>4</sub> treatment recorded significantly higher grain yield; PFP, AE and AR; WUE; net return and B: C ratio. I<sub>3</sub>N<sub>4</sub> emerged as the best interaction treatment in terms of grain yield (6.76 t ha<sup>-1</sup>), net return (Rs. 76886ha<sup>-1</sup>), B: C ratio (2.50), PFP (26.28 kg kg<sup>-1</sup>), AE (13.90 kg kg<sup>-1</sup>) and AR (49.39%) while the WUE (27.26 kg ha-mm<sup>-1</sup>) was significantly highest in treatment combination I<sub>1</sub>N<sub>4</sub>. Therefore, from the research outcomes, irrigation scheduling at IW/CPE 1.0 along with the use of 75% RDF + 2 t ha<sup>-1</sup> vermicompost + 25 kg ha<sup>-1</sup> ZnSO<sub>4</sub> (I<sub>3</sub>N<sub>4</sub>) can be recommended to the farmers for enhancing crop productivity, profitability and nutrient use efficiencies QPM in new alluvial zone of West Bengal.

**Keywords:** -Irrigation, Nutrient, QPM, Water, Yield

## Study of Freshwater Desmid Algae from Machagora Dam of Chindwara, District, MP India

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### Abstract

With the objective of investigations, the 6 genera of Euastrum, cosmarium, staurastrum, Pleurotaenium, Desmidium, and Closterium four collection stations (A, B, C, D) along the Machagora Dam were set up. This resulted in the research work all these genera were recorded first time from this region. The present work carried out in June 2020 to June 2021. Sample was preserved with 4% formalin solution. The qualitative analysis was done by compound microscope 06 genera of the class Chlorophyceae were described each one illustrated by means of photomicrography and ocular micrometer.

**Keywords:** - Desmid, Machagora dam, Freshwater, Algae, Microalgae, cosmerium.

## Statistical Relationship of Cosmic Ray Intensity Modulation with Coronal Mass Ejections and Solar Flare Index Indices

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### Abstract

A Statistical analysis of Cosmic ray modulation has been performed with Coronal mass ejections and Solar flare index for the period 1996-2014. We studied the relationship between Cosmic ray intensity and Coronal mass ejections as well as CRI and H $\alpha$  Solar flare index for covering the solar cycle 23 and 24. In this study we take all the CME's data of LASCO. The CRI data used in this analysis are taken from Oulu neutron monitors and H $\alpha$  Solar flares index data are used from website: <https://www.ngdc.noaa.gov/stp/solar/solarflares>. In this study we have taken monthly mean value to calculate yearly averages of CRI, Frequency of Halo CME and solar flare index from 1996 to 2014. We have also correlated CRI with Solar flare index and Coronal mass ejections for the period 1996-2014 and found that Solar Flares are Very strongly negative correlated with CRI, however the value of Coefficient of correlation is  $r = -0.762$ .

In our linear regression statistical investigation we have obtained a high negative correlation between CRI and Halo CME's ( $r = -0.772$ ) for the period of study and found that a very strong relationships.

**Keywords:** -Cosmic ray intensity modulation, Coronal Mass Ejections, Solar flare index.

## A Study of Emerging Trends in Library and Information Science

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### Abstract

In the modern information society, libraries and information centres have a new role to play. This is due to increasing use of web-based information sources and electronic services. Libraries are also being managed in a more democratic way due to flexible communication system and efficient work organization. Services of libraries are user oriented, and with the emergence of new technologies all the kind of libraries and information centres are working effectively and efficiently. Not only in services but also in all parameters which are required for working in libraries. Due to modern technologies and inventions in this information era physical appearance is not required to get the information material because all are also available in digital form. This article is highlights on modern trends which are associated with library and information services and education.

**Keywords:** -Information Technology, ICT, E-Library, Mobile Library.



## Current System Perspective of Earth Magnetosphere

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### Abstract

The motivation behind this survey is to give an outline of the magnetospheric framework to show how the framework is driven by the sun based breeze, and how it responds to the driving. To portray the different peculiarities those altogether make up magnetospheric action to survey the framework properties of the magnetosphere. The occasion happen on 20 January, 2005 have the most elevated pinnacle transition of sun based vigorous molecule with energies  $> 100$  MeV. In this occasion sun oriented vigorous particles ( $>16$  MeV) enters to the magnetosphere under toward the north interplanetary attractive field conditions. During the beginning stage of this occasion lively molecule entrance into the magnetosphere occurred in the districts on the magnetopause where the magnetospheric and interplanetary attractive field vectors are equal. The size and state of the magnetopause still up in the air by the dynamic and static tension of the sun based breeze. Magnetosphere is constrained by interplanetary medium, applicable to magnetospheric elements specific to the state of the magnetopause. The real reaction of the magnetopause to changes in the interplanetary medium is delivered by magnetospheric current framework. The electric flow is a progression of charge starting with one spot then onto the next. An electric flow is related with an attractive field, and they consolidate with the Earth's inside produced dipolar attractive field to frame the geography of the magnetosphere. The ramifications of comprehension magnetospheric current frameworks are extremely essential to the satellites orbiting earth.

**Keyword:** - Magnetosphere, Magnetopause, Magnetospheric Current, Current System.

## Design Research In Architecture Practice In Ethiopia: A Study To Assess Architects' Appreciation Of The Benefits Of Research For Design With Emphasis On The Potential For Theory And Practice Research

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### Abstract

The profession of architecture has not managed to sufficiently build a body of solid knowledge through research, which weakens the profession in terms of justifying its practice. In order to investigate why the profession has not built its knowledge-base sufficiently, this research collected first-hand empirical data on the **use** and **need** of research in current architectural practice, as well as the perceptions about research among architects in Addis Ababa Architectural and Engineering Consulting Offices.

Three questions are asked in this study:

1) What are the concerns of architectural practice? 2) What is the significance of research in architecture? 3) How do architects perceive the need of research?

To answer the questions, **interviews** and **questionnaire survey** are given to selected and recommended Architects and Engineers Consulting firms by the Association of Ethiopian Architects (AEA) in Addis Ababa. The data are analyzed through **descriptive statistics** and **comparative statistics**.

Nowadays professionals are expected not only to successfully perform professional actions, but also to justify these actions with rational explanations. To meet this expectation, the scope of architectural design knowledge has expanded from design knowledge into systems knowledge.

While **design knowledge** concerns how to do design, **systems knowledge** concerns why certain design actions should be taken. Meanwhile, with expanding systems knowledge, research becomes more and more important to architectural practice. However, **results indicate** that architects are expecting to do research to generate rational solutions based on solid understanding of the phenomena and problems involved in design. **Based on a review of literature**, this expectation is unrealistic. The profession, if it expects to build a research-oriented practice, needs to change its **perceptions about research**, and advance its knowledge through inquires and evaluations of built design work.

**Keywords:** -architectural practice, design research, professionalism, tacit knowledge, systems knowledge, design knowledge, research-oriented practice.

## Urban Voids as Pocket Parks for Urban Regeneration Case of Arba Minch, Ethiopia

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### Abstract

Our cities, like the world's population, are growing, as are the issues of coping with urban empty space (Lydon & Garcia, 2015). In our pricey world, these areas might be recognized as enormous potential and used as urban public spaces such as public pocket parks, a location for activities that engage people and improve the public realm. Arba Minch town's inner city CBD has been heavily densified, resulting in a lack of common public areas. There are no constructed public places in Kulfo, except from the natural waterfronts. There are numerous little pockets or lost places that are readily visible, all of which have been vandalized and have little or no value for the community.

In order to identify vacant spaces that are suitable for a pocket park, researcher utilized a mixed method approach that included both qualitative and quantitative methodologies. Primary data was gathered through the techniques of **Observation, Key Informants & Round table Discussion Purposive sampling** is used in this study, it employs an **expert sampling** technique to obtain the necessary information from individuals with specific interviewing expertise. Secondary Data was gathered from the town's municipal office through document reviews, review of laws and standard policies, and review of related literature. **Mapping** of current open spaces and constructed space, particularly in Arbaminch Town, with the help of ArcGIS is utilized once more to determine the best empty space for the pocket park. Suitability study is done in four steps. Suitability Factors Selection, Land Uses Selection, Buffering Range, Weighting and grading.

The analysis clearly shows that the study area has multiple emergences of urban voids. The reasons for the emergence of these voids can be closely attributed to: Uncontrolled and

unplanned urban growth, Lack of awareness within the city planners and managers for the identification and utilization of negative, unused, left-over spaces in the urban fabric, Negligence of the society towards the development of unbuilt spaces within individual's compounds or common areas that are vacant and unused. The existing void spaces existent can be categorized as undeveloped areas with individual plots, road setbacks that are undersigned and has no assigned function, service parcels that are assigned with huge plot area and land is reserved for future development, large vacant open spaces devoid of any development & leftover pieces of land due to land parceling.

**The existing site analysis shows that the urban voids in the study area are:** Vandalized, Create environmental hazard through use of those voids as waste disposal sites with activities such as dumping or burning, Under-utilized potential, Un-aesthetic appearance. Stimulating the existing voids in the area within the parameters of mentioned criteria's using GIS it is found that there are two potential types of urban voids that are suitable for development into pocket parks: Pockets of void spaces along the setbacks of the arterial roads & Pockets of void spaces around the condominium housing area (social mass housing).

The inner-city CBD Sikela has gone a drastic transformation since the establishment of Arba Minch almost 70 years ago. The uncontrolled growth and transformation have resulted in occurrence of Urban Voids. The urban voids can be clearly seen in various areas of the study site such as the main arterial roads, within the neighborhoods and on the fringes of the urban development. The pocket parks should serve as a means of sustainable development of the inner cities and serve as pivotal stands for future development. The municipality should conduct studies identifying the existing void spaces and study its characteristics and existing situations. The users should look towards the void spaces as an opportunity rather than with feeling of hate and negligence.

Finally, pocket parks offer tremendous potential that has yet to be fully realized by municipal governments. It is hoped that more people would become interested in embracing them in order to improve the city's open space holdings, so boosting the prospect of an improved quality of life for its residents.

**Keywords:** – Urban Void, Pocket Park, Sustainability

## Measuring the Factors for the Occurrence of Slums In Case of Arba Minch Ethiopia

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### Abstract

Developing countries are quite often characterized by the presence poverty. Poverty can be described in different ways one of which being the existence of Slum. According to (UN HABITAT, 2010) slum is a highly populated area characterized by sub standardized housing and squalor. Ethiopia is one of the least developed country in Africa, the country currently the 10<sup>th</sup> least developed country in Africa (Wale-Oshinowo et al., 2020), this character of the country is guarantees for the existence of slum. In order to measure the incidence of slum in African countries, five quantifiable and defining indicators have been put forward by (UN HABITAT, 2010). This article intends to apply these indicators in the context of Ethiopia specifically Arba Minch town. By using these parameters, the paper will rank which indicator has the most impact and which indicator has the least impact in measuring the existence of slum.

**Keywords:** - Slum, Poverty, Arba Minch town.

## Review and Investigations on Mechanical Characterizations of Glass Fiber Dispersed Epoxy Composites

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### Abstract

Glass fiber reinforced polymer composites are prepared by different methods. Presently many researchers are working on glass fiber reinforced composites owing to their good mechanical properties. The present work review sand analyses different types of glass fibers reinforced polymer composites manufactured by different processing routes. Glass fibers are in the form of roving's, chopped strand, yarns, fabrics and mats. Each type of glass fibers have unique properties and are used for various applications in the form of polymer composites. Different matrix materials have also been evaluated using different production technologies. Glass fibers exhibit good mechanical properties such as high strength, flexibility, stiffness, durability etc. With an increase in the content of glass fiber, the properties of GFRP composites are also improve. The mechanical & thermal attributes of various glass fiber polymer composites when subjected to mechanical loading have been studied and reported.

**Keywords:** - Polymer, Glass fibers, Polymer composites.

## Vehicle Theft Detection/Notification with Remote Engine Locking

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### Abstract

In today's world vehicles form an important asset to us, without which our life would be incomplete. But, when it comes to the security of our vehicles, we are very helpless. It is of a great concern, especially in metropolitan cities, where these incidents occur each and every day. So, in this paper, I have focussed on the security of vehicles. Raising awareness about this major challenge, we need to make an enable innovative idea implemented on anti-theft system. This system includes the existing technologies (GPS and GSM) which increase the security rate by providing information and location about vehicles in timely manner. The stolen activities of unauthorized person are firstly alert the message to real owner of vehicle through GSM which has an interaction with microcontroller (which provide monitoring to ignition system of vehicles). After finding alert notification, owner sends back a message to GSM which is again interact with microcontroller to deactivate the system. With instant messaging, lower communication cost, unlimited access of location and generating good feedback of a speedy progress etc, all the factors make it cost effective and efficient anti-theft vehicle system.

**Keywords:** -GPS, GSM, Remote Engine.



## Bluetooth Controlled Robot Using Mobile Phone

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### Abstract

This paper deals with the design and control of vehicle type robot which can move in desired direction. MIT App inventor has used to create an application. Bluetooth communication is made between robot and microcontroller. Aim of this project is to control the vehicle type robot using mobile phone. Mobile phone will act as remote of the system, Bluetooth device act as the connection link between robot and mobile phone, microcontroller will acts as the brain of the robot and dc motor will help us to move the robot. Robot is reprogrammable, multifunctional device that is controlled by computer program to perform operation.

**Keywords:** - Microcontroller, Bluetooth device, Mobile phone, MIT app inventor.

## Smart Mini Weather Station Using Thing Speak

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### **Abstract**

Real-time Weather analysis and forecasting are very important in recent years of science and technology to predict the state of the atmosphere for a future time and a given location. In this paper, we are trying to analyze whether streaming data like temperature, humidity using the Thing Speak tool, meanwhile data is collected through IOT sensors. The Internet of Things (IoT) platform used is Thing Speak it should be able to display the weather parameters and the information will be visible wherever in the world. With the weather reporting system, all-weather will be controlled by ESP32 microcontrollers as the server will send the data collected by the sensors to the database as sent by the Thing Speak.

**Keywords:** - IoT, Thing Speak tool, Weather.

## IoT Based GPS Tracker Shoes for Girls Security

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### Abstract

IOT based GPS tracker shoes for security provides safety to girls. It includes GPS module that sends the location by computing the latitude and longitude. GSM sends the text message and make calls to the predefined emergency numbers. Left leg shoe is used to send the location and text message and to establish the calls. Right leg shoe provides electric shock to the attacker that protects the victim from the attacker for some time. Both the shoes will work after pressing the panic button on the tip of the shoes. The whole project works on piezoelectric that charge the battery time to time while walking. Women can go anywhere without any fear. It gives them freedom and strength to face the attacker. It is cost effective and can easily reach to common people. It makes the family member of the victim stress free and they can easily reach to her by tracking the location. The true potential of this project lies in the future when IOT makes its place everywhere in India.

**Keywords:** -GSM, GPS, Piezoelectric, IOT.

## Evaluation of Rice Cultivars against Leaf Blast of Rice with Special Reference to Bio-Chemical Components

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### Abstract

Rice is one of the most important staple food crops of India, grown in diverse ecosystem in 44.3 Mha in India. Productivity of rice is mainly affected by abiotic and biotic stresses. Among the biotic stresses leaf blast caused by *pyricularia grisea* is becoming a major threat for cultivation of rice and causing heavy and economic losses to the crop.

Keeping these facts in view, study was undertaken to assess the biochemical components of rice cultivars influencing the disease resistance against *P. grisea*.

Study revealed that chlorophyll 'a' chlorophyll 'b', PH of cell-sap electrical conductivity and optical density were recorded maximum in healthy cultivars IET-7564, Tulsi IR-50 and belchidi in healthy composition to diseased plants similarly estimation of Sodium, Potassium, Calcium, Magnesium, Iron and total soluble sugars were also analysed in healthy and diseased plants for disease resistance study. It was recorded that maximum value exhibited in healthy plants in comparison to diseased plants in the cultivars Lohandi, Belchidi, Tulsi and IT-7564. Thus it was concluded that these entries may be use in breeding programme for releasing disease resistance variety for leaf blast management.

**Keywords:** - diseased plants, blast management, breeding programme.