



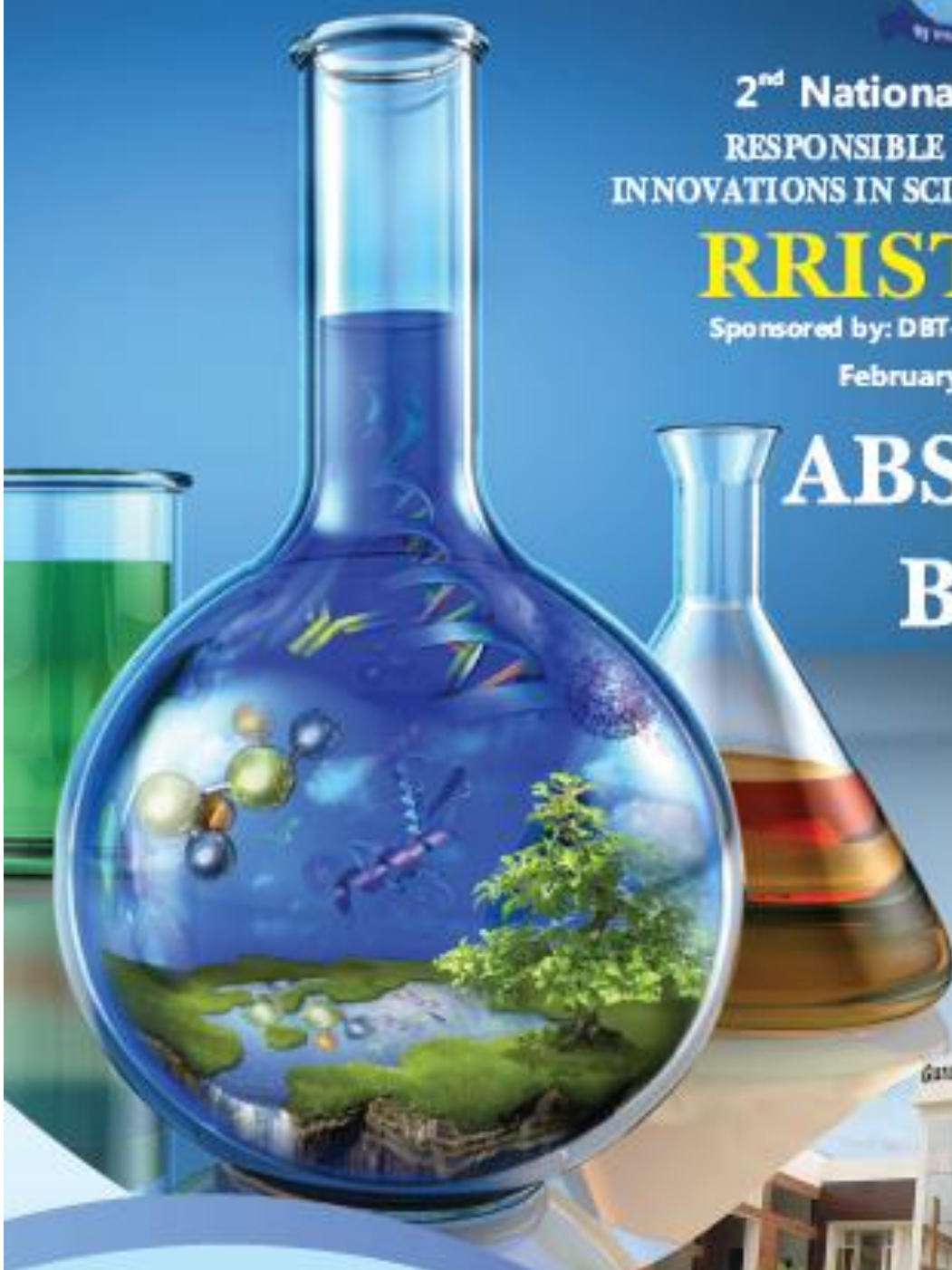
**2nd National Seminar on
RESPONSIBLE RESEARCH AND
INNOVATIONS IN SCIENCE & TECHNOLOGY**

RRIST-2020

Sponsored by: DBT-Star College Scheme

February 29, 2020

ABSTRACT BOOK



Organised by

**Department of Chemistry
Guru Nanak College
Budhlada - 151502 (Pb)**

NAAC Accredited 'A Grade'

(Affiliated to Punjabi University, Patiala)

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ਸ਼ਬਦ

ਦੇਹ ਸਿਵਾ ਬਰੁ ਮੋਹਿ ਇਹੈ,
ਸੁਭ ਕਮਰਨ ਤੇ ਕਬਹੂੰ ਨ ਟਰੋਂ ।
ਨ ਡਰੋ ਅਰਿ ਸੋ ਜਬ ਜਾਇ ਲਰੋ
ਨਿਸਚੈ ਕਰ ਅਪੁਨੀ ਜੀਤ ਕਰੋਂ ।
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ਚੰਡੀ ਚਰਿਤ੍ਰ (ਦਸਮ ਗ੍ਰੰਥ)

***Proceeding of 2nd National Seminar on
“Responsible Research and Innovations in Science and Technology (RRIST-2020)”
Guru Nanak College, Budhlada-151502, India***

Programme RRIST-2020
Feb 29,2020
(Saturday)

Registration	9.00 am - 9.45 am
Shabad Gayan	9.45 am-10.00 am
Inaugural Session Prof Bikramjit Singh, Head, Department of Chemistry Dr. Kuldip Singh Bal, Principal, Guru Nanak College Budhlada	10:00 am-10.30 am
Invited Lecture –I Dr. Ashok Kumar Malik, Head, Department of Chemistry Punjabi University Patiala	10:30 am-11.00 am
Invited Lecture –II Dr. Rajeev Sharma, Head, Department of Chemistry M.M. Modi College Patiala	11:00 am-11.30 am
Tea & Refreshment	11:30 am-12.15 pm
Invited Lecture –III Dr. Sabyasachi Senapati, School of Health Sciences Central University of Punjab, Bathinda.	12:15 pm-1.00 pm
Lunch	1:00 pm- 2.00 pm
Invited Lecture –IV Prof. Gulshan Kumar Jawa, SLIET Longowal	2.00 pm- 2:30 pm
Technical session – I Poster/Oral Presentation.	2:00 pm- 3:00 pm
Tea	3:00 pm- 3.30 pm
Valediction Ceremony	3:30 pm onwards

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Manpreet Singh (M.Sc –I Physics)

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REACTION MECHANISM OF TRANSITION METAL COMPLEXES

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Abstract: A coordination complex consists of a central atom or ion, which is usually metallic and is called the *coordination centre*, and a surrounding array of bound molecules or ions, that are in turn known as ligands or complexing agents. Many metal-containing compounds, especially those of transition metals, are coordination complexes. A coordination complex whose centre is a metal atom is called a metal complex.

Complexes show a variety of possible reactivities:

Electron transfers-A common reaction between coordination complexes involving ligands are inner and outer sphere electron transfers. They are two different mechanisms of electron transfer redox reactions, largely defined by the late Henry Taube. In an inner sphere reaction, a ligand with two lone electron pairs acts as a bridging ligand, a ligand to which both coordination centres can bond. Through this, electrons are transferred from one centre to another.

(Degenerate) ligand exchange-One important indicator of reactivity is the rate of degenerate exchange of ligands. For example, the rate of interchange of coordinate water in $[M(H_2O)_6]^{n+}$ complexes varies over 20 orders of magnitude. Complexes where the ligands are released and rebound rapidly are classified as labile. Such labile complexes can be quite stable thermodynamically. The lability of a metal complex also depends on the high-spin vs. low-spin configurations when such is possible. Thus, high-spin Fe(II) and Co(III) form labile complexes, whereas low-spin analogues are inert. Cr(III) can exist only in the low-spin state (quartet), which is inert because of its high formal oxidation state, absence of electrons in orbitals that are M-L antibonding, plus some "ligand field stabilization" associated with the d³ configuration.

Associative processes-Complexes that have unfilled or half-filled orbitals often show the capability to react with substrates. Most substrates have a singlet ground-state; that is, they have lone electron pairs (e.g., water, amines, ethers), so these substrates need an empty orbital to be able to react with a metal centre.

USE OF PESTICIDES IN AGRICULTURE AND THEIR IMPACT ON ENVIRONMENT

Gulshan Kumar Jawa

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Abstract: Pesticides are used to kill the pests and insects which attack on crops and harm them. Different kinds of pesticides have been used for crop protection for centuries. The use of pesticides dates back to the times of Ancient Romans where people used to burn sulphur for killing pests and used salts, ashes and bitters for controlling weeds. The major breakthrough in pesticide development occurred in the period around and after World War-II, when several effective and inexpensive pesticides such as DDT, BHC etc. were synthesised and produced. The use of pesticides derives tremendous benefits in agriculture such as high yield and better quality of crops, protecting the workers from many diseases etc. But a large number of challenges are created by the use of pesticides in agriculture. Pesticides degenerate soil invertebrates including nematodes, micro-arthropods, earthworms, and other small organisms that play an important role in soil ecosystems. Pesticides can enter the human body through inhalation, oral or dermal exposure, and well documented to be the main cause of several diseases such as cancer, respiratory diseases, skin diseases, endocrine disruption, and reproduction disorders. There are several means to protect human health and environmental hazards associated with pesticides in agriculture, including development and use of safe and environment friendly pesticide formulations, application of alternative pest control strategies. This paper reviews about the benefits of using pesticides in agriculture and their impact on environment including contamination of surface and ground water, soil and non-targeted organisms such as birds, fishes, plants, animals and human beings. Various alternatives for reducing the impact of pesticides on environment have been identified and presented. The development of new pesticides with novel modes of action, improved safety profiles and the implementation of alternative cropping systems that are less dependent on pesticides could minimize exposure to pesticides and the undesirable effects of exposure on the environment. Keywords: Pesticides, environment, hazards, health, management

ENVIRONMENT PROTECTION-NEED OF THE HOUR

Rajeev Sharma

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Abstract :Mahatma Gandhi has said,"There is a sufficiency in the world for man's need but not for man's greed". But the man, the most intelligent creation of God on this planet Earth,has brutally exploited the mother nature and natural resources to satisfy his greed to such an extent that even his own existence on the Earth is under threat. Over exploitation of natural resources , unplanned urbanisation and industrialisation , non-judicious use of chemical fertilisers ,insecticides and pesticides and man's highly irresponsible behaviour towards nature and creatures has deteriorated the natural environment and given birth to major environmental problems like air pollution, water pollution ,soil pollution ,acid rain ,global warming ,melting of glaciers ,rise of sea level ,spread of new diseases ,extinction of some plant and animal species etc. The Government and some non governmentalorganisations have taken a slew of measures to deal with environmental problems and curb environmental pollution.In line with the U N sustainability goals(SDG's 2030) India too has sets it's own sustainability goals and solemnly pledged for a safer environment. In light of the absolute urgency to preserve the deteriorating environment and resources. It is the need of the hour and duty of each and every individual to contribute towards the environment protection so that the next generation should not blame the present generation for not protecting the environment.

SCIENCE FOR SOCIETY: INNOVATIONS IN HEALTH SCIENCES

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Abstract : Modern era of scientific research and innovation revolve around the societal benefit. Observational research practiced centuries back has evolved into experiment based systematic research. Objective oriented research in health sciences started way back during later half of eighteenth century, when small pox vaccine was developed by Edward Jenner in 1796. Successive discoveries in different fields of sciences paved the path for breakthrough innovations in the field of public health. Inter-disciplinary and systems approach to solve the public health issues has become the mandate of recent era of health sciences. Systematic research, translatability, and massive societal outreach along with simultaneous protection of human rights through strict ethical guidelines has made paradigm shift in modern day health research outcomes.

Life style diseases such as, diabetes, hypertension, cardiac diseases, immune related diseases, stroke, some forms of cancer etc. have become ‘*modern day plague*’. From a ‘*sleeping giant*’ couple of centuries back, it has become the leading cause of human disability and death. Technical advancements helped in identification of genes for such diseases, which aided health researchers to formulate specific and sensitive tools for disease prediction in high-risk individuals and early diagnosis. Disease treatment has become much easier with personalized medicine approach, where each patient treated differently based on his or her biochemical profiles. Recent advancement in modifying genes through ‘*genome editing*’ approaches shown the promise to eliminate lethal diseases in near future. Family based diseases (inherited diseases), such as thalassemia, sickle cell anemia, in-born metabolic diseases etc. can now be prevented by timely genetic counseling to the parents. Assisted reproductive technology (ARTs) such as IVF, IUI etc. has been implemented successfully to tackle infertility.

Global public health concerns are being addressed by bringing laboratory-based discoveries to every individual through technical innovations. Several initiatives taken by Indian Government (DHR, ICMR, NIHFV) have already been successful to challenge public health issues. International initiatives taken by UNESCO, WHO, United Nations and several other International agencies have taken key initiatives to implement newer approaches to improve global public health.

IMPACT OF AGRICULTURE PRACTICES ON ENVIRONMENT

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Abstract: The practice of agriculture has been in use for hundreds of years and provides countless people with livelihood all over the world. The advancement in agriculture activities improved farmer's efficiency and ensured the food safety to feed an increasing population but simultaneously it also yielded troublesome results in nature. In present time, Farmers are adopting a wide range of modern agriculture technologies and approaches from which most of them are not environment friendly. Main reasons of environment pollution are inaccurate use of pesticides and chemical fertilizers, unintended usage of farmland, irrigation and plant product applications are some of the incorrect operations. Beside of these functions, stubble burning, planting without rotation and irrelevant animal wastes are also incorrect agricultural applications. The most notable effects of Incorrect agricultural applications includes climate change, pollution of water systems, loss of soil fertility, depletion of nutrient reserves, biodiversity loss and general environmental degradation. Therefore, we can't deny this fact that current agriculture practices, while important to society, rapidly deteriorates and contaminates the environment than renewability capacity of environment. Hence, the purpose of this paper is to explain the impacts of agricultural technologies and practices on the environment.

Keywords: modern agriculture, environment, agricultural practices, pollution,



***IN-SITU* SYNTHESIS AND CHARACTERIZATION OF VANADIUM COMPLEX OF SCHIFF BASE LIGAND: CATALYTIC PROPERTIES**

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Abstract: In the present work, mono-nuclear vanadium complex of Schiff base receptor **1** was synthesized using 2-hydroxy naphthaldehyde, N-(2-hydroxyethyl) ethylene diamine and vanadium acetyl acetonate. The synthesized complex (**1**) has been characterized by elemental analysis, IR, mass spectrometric studies and Single crystal X-ray crystallography. Single crystal X-ray structure revealed the formation of mono-nuclear complex (**1**) which is composed of *in-situ* generated NNO-ligand coordinated to vanadium with one free hydroxyl group. Furthermore, catalytic activity was explored using styrene in the presence of diverse oxidizing agents such as hydrogen peroxide, m-chloro perbenzoic acid and tert-butyl hydroperoxide. The reaction products have been optimized by Gas Chromatographic analysis using flame ionization detector. The vanadium complex showed selective conversion of styrene into benzaldehyde upto 40% mole conversion instead of styrene oxide. The efficiency of the catalysis is optimized at 80°C temperature in the acetonitrile as solvent.

ROLE OF MODERN CHEMISTRY IN SUSTAINABLE CROP PROTECTION

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Sumamdeep Kaur and Sushampreet Sharma

Abstract: As world population continuous to grow, but agricultural land remains constant , as a result of this demand for food is increasing day by day. This will further increase the demand for higher crop yields per unit area. To meet the demand of increasing population for food, Green revolutioj was initiated in india. This encouraged the adoption of modern methods and technologies such as use of high yielding varieties, irrigation facilities, pesticides and fertilizers. The use of these pesticides reduces the effect of pests on crop by 10%. Control of fungal pathogens, insect pests and weeds is crucial to enhanced food provision. Synthetic chemistry had added an array of chemicals used in agriculture field. The green revolution within India in mid 20th century that led to an increase in good grain production, especially in Punjab, Haryana and Uttar Pradesh. The wheat production has best result in fueling self sufficiency of india. No doubt crop yield increased during greem revolution but due to residual effect of some chemicals, soil and water conditions are deteriorated. So there is need to use chemicals which are safe for soil, water and environmemtal conditions and be de-degeadable in nature. Three aspects are considered in this review: advances in the discovery process for new molecules for sustainable crop protection, including tests for environmental and toxicological properties as well as biological activity; advances in synthetic chemistry that may offer efficient and environmentally benign manufacturing processes for modern crop protection chemicals; and issues related to energy use and production through agriculture.

Keywords: crop protection chemical, modern chemistry, environmental quotient, biofuels.

VERMICOMPOST

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Abstract: An alternative to conventional sewage sludge composting technology can be vermicomposting, when manure worms are placed into the starting material, so the efficiency of breakdown and transformation of organic matter is increased by the activity of worms. It restores microbial population, which includes nitrogen fixers, phosphate solubilizers, etc. It also improves soil texture and water holding capacity of the soil. Vermicomposting also reduce the pollution because use of fertilizers are not involved. Worms also help plants grow better. Plant roots require oxygen and worm burrows provide passages for air to get next to the roots deep within the ground. This is called aeration, analogous to what home owners often do, to turf lawn with heavy machinery. It should be noted that these deep tunneling worms also bring subsoil closer to the surface, mixing it with topsoil that has more organic matter. Compared to conventional composting, higher-quality product can be produced with vermicomposting concerning agronomical value because of the properties of the finished material such as favourable particle size distribution, more easily available nutrients for plants and presence of plant growth stimulating compounds, high metabolic enzyme activity, better quality humic acid and humic substance content. In addition, worms are able to extract certain inorganic contaminants and accumulate them in their bodies, as well as to promote the breakdown of organic pollutants.

Keywords : vermicomposting, fertilizers, phosphate solubilizers

REMOVAL OF OIL AND CHEMICALS FROM WATER USING AUTOMOBILE (DIESEL) SOOT

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Abstract: The high demand for clean drinking water stimulated the researchers to look for alternative water remediation technologies that are fit for industrial as well less developed countries to ensure a high quality of drinking water. The present paper discusses a range of Phytoremediation technologies to be applied in a modular approach to integrate and improve the performance of existing wastewater treatment ,especially towards the emerging micropollutants. Existing technologies for waste water treatment do not sufficiently address increasing pollution situation , especially with the growing use of organic pollutants. It is known that carbon species can adsorb various organic pollutants in water. Carbon nanotubes, filter paper, meshfilms, graphene,Adsorption by the use of agro residues etc methods have been used for removing oil from water. Present paper proposes an effective method that uses soot, emitted by diesel engines to remove oil and organic chemicals from water. While, it is impossible to bring down soot emissions to zero,it is possible to find use for the soot produced.This hydrophobic soot impregnated sponge showed high adsorption capacity for various oils, without the need for complex pretreatments,along with characteristics of being recyclable and retained 95% efficiency even after 10 cycles. The soot impregnated sponge can help in developing cost effective remediation process for organic pollutants like methylene blue, Ciprofloxacin and detergent from water. The Wet soot absorber can provide a large contact area between water & exhaust flow which increases the soot capturing probability. Such a development would additionally serve to repurpose automobile waste. The highest oil absorption capacity found was 39g/g for engine oil without the need for complex pretreatments. So,this has practical implications justifying the need for new materials to mop up oil and prevent catastrophic outcomes.

Keywords: Diesel soot, organic pollutants, Adsorption.

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Strategies to Control Morphology of Manganese Oxide Films in Galvanostatic Electrodeposition

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Abstract: In galvanostatic electrodeposition the morphology of films are controlled by controlling current density and time during. This Manganese oxide films have been synthesized by galvanostatic mode for current density 2 mAcm^{-2} to 0.5 mAcm^{-2} and the time is chosen such that the average mass content of all film samples remains nearly same. The surface morphology of deposited films were analyzed using scanning electron microscopy (SEM). The images of SEM revealed the porous morphology of deposited films, but during high growth rate (higher current density) in galvanostatic mode the discontinuity of film surface was observed. As morphology directly relates to electrolyte and electrode interface, it has significant effect on the electrochemical behavior of films so low current density preferred for better continuity of films.

Keywords: Manganese oxide; Galvanostatic deposition; Morphology.

Study and Analysis of Various Adaptive Signal Processing Algorithms for Voice processing over IP

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Abstract: Voice over internet protocol (VoIP) is a method of providing phone services over dedicated public IP networks. It allows significant cost savings over traditional Public Switched Telephone Networks (PSTN). Speech quality, as perceived by the users of VoIP telephony, is critically important. Signal quality of the VoIP system is degraded by various network layer problems, which include delay, packet loss and jitter. The effect of these degradation factors, using network modeling of VoIP system and wide area network emulator (WANem) has been studied.

The paper outlines the rate adaptive voice communication over internet protocol. In the VoIP structure the codecs (G.729, AMR-NB) adapt their bit rate according to the available network bandwidth conditions. Various adaptive signal processing algorithms (LMS, nLMS and RLS) are studied and analyzed for processing of voice over internet protocol for different network conditions, in terms of delays and packet loss. The results are validated through the measurement of enhancement signal using perceptual evaluation of speech quality (PESQITU-T) measurement. The results find that the quality of speech is adversely affected by packet loss and delay. Further spectral analysis of this degraded VoIP speech signal is carried out. Some optimized digital signal processing algorithms should be implemented to reduce the additional noise due to the network transmission.

Keywords: VoIP, PSTN, WANem, G.729, AMR, PESQ.

A STUDY OF SENSING DEVICES TO SENSE THE ENVIRONMENT

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Abstract: Wireless sensor network have become emergence concept for sensing in different applications areas. Environment issues are one of major area of sensing. Wireless sensor network is a network that detects the various conditions from the environment and generate an electronic signal as result to take an appropriate action to improve environment conditions. Environment monitoring is required to save the environment from toxic contaminants that produce from air, soil and water. Environment sensors are capable of providing information that includes temperature, UV index, light, acceleration etc. In this article we will discuss different types of sensors to sensing or monitoring environment like moisture sensors, pressure sensors, tilt sensors, rain sensors, and vibration sensors with our requirements. Speed, Sensitivity etc. all are factors which are considered while sensing the environment. In addition we studies new system or sensors with additional facilities for future.

VARIATION IN STRUCTURAL PROPERTIES WITH ANNEALING PARAMETERS AND WITHDRAWAL SPEED

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Abstract: Transparent thin films of zirconium oxide (ZrO₂) have been deposited on glass substrates by sol-gel dip coating technique. Synthesized films were characterized for different annealing temperature, annealing time and withdrawal speed. Change in crystallographic properties of thin films was investigated by X-ray diffraction (XRD). Thin films of ZrO₂ remain amorphous up to 300° C of annealing temperature and crystallization begins at 400° C. Four crystallization peaks have been observed with increase in annealing temperature to 500° C. Change in crystallization phase was also observed with the increase in time of annealing. Surface morphology and thickness of synthesized films was investigated through scanning electron microscope (SEM).

Keywords: Zirconium oxide; dip coating; sol-gel; crystallography; morphology.

Cauchy's Approach – 'A Resend Trends in Optimization'

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Abstract: Non Linear Programming is a part of Mathematical Optimization. The central problem of mathematical programming problems is that to minimizing/ maximizing, a given function of a finite number of variables subject to a finite set of equality and/or inequality constraints. Non Linear Programming deals with those problem where the objective function or some of the constraints are non linear. Non linear programming is similar to Linear Programming and it is composed of an objective function, general constraints, and variable bounds. The difference in Linear and Non Linear Programming is that, a non linear programming includes at least one non linear function, which could be the objective function, or some/all of the constraints.

New approach is based on Cauchy's criterion which convert the non linear function into piece wise linear function with minimum/ controlled error. For this, we use the concept that constrained (either linear or non linear) may be lies with in an interval $[a,b]$. This interval will be further partitioned with the norm property. The function (non linear/ non smooth) will be parametric one and converted into a piecewise linear with the help of summation and step function. Global error during this process will be measure and efforts are made to minimize it.

Keywords:-Non-linear Programming, Non smooth functions, Partitions, Error.

DETERMINATION OF HARDNESS OF TAP WATER

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Abstract: The drinking of hard water can cause many health challenges on all living beings, so it is important to determine the cause of hardness of water this is due to the presence of Calcium and Magnesium ions in drinking water. For this purpose, we take samples of water from the locality of budhlada and then determine the strength of hardness of water by complexometric titration using 0.01M standard solution of EDTA solution. Firstly we titrated the 10ml of H₂O sample using buffer solution of pH=10 and Muroxide as indicator against EDTA which gave change of color from red to violet at end point and this is given volume of EDTA that react with Calcium and Magnesium ion present in sample and volume of EDTA used for titration of calcium and Magnesium ions combined. Then the combined strength of calcium and Magnesium ions in given water samples can be calculated by using normality equations. Then, for determination of the strength of Calcium alone, we precipitated Magnesium ion using 10% Sodium Hydroxide and Magnesium hydroxide are precipitated. Then we titrated it against 0.01M EDTA again using EBT indicator which gave change in colour from red to blue and indication for the volume of EDTA that react with volume of given sample for titration of Calcium ion only. By proceeding in this way we calculated the strength of Calcium and Magnesium ion which came out to be 0.052 gram per litre and 0.336 gram per litre respectively. Thus ppm concentration of Calcium ion is 52 ppm which is less than 60ppm so the tap water of Budhlada can be considered as Soft Water. The value of calcium ion ppm below than 60 ppm in water considers water as soft, between 60 and 120 ppm water is slightly hard, and between 120 and 180ppm water is hard.

Keywords:Complexometric titration, Calcium and Magnesium ion.

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SH-WAVE PROPAGATION IN VERTICALLY HOMOGENEOUS VISCOELASTIC LAYER OVER A MICROPOLAR ELASTIC SUBSTRATE

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Abstract: This paper deals with the propagation of SH-wave in vertically homogeneous viscoelastic layer lying over micropolar elastic substrate. Dispersion and damping equations are obtained analytically in closed form. Phase and damped velocities are computed numerically and depicted by means of graph to exhibit the substantial effect of viscoelasticity (internal friction) and micropolar parameter. As a special case of the problem, it is found that deduced dispersion relation is in well agreement to the classical-Love wave equation and damping equation vanishes identically for isotropic case.

Synthesis and antipestal studies of schiff base ligand and its transition metal complexes

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Abstract: Heterocyclic multidentate Schiff base ligand (Z)-2-(((6-methylpyridin-2yl)imino)methyl)phenol, and its metal chelates with some transition metal ions viz., Co(II), Ni(II), Cu(II) and Zn(II) have been synthesized and characterized through various spectral data and elemental analyses. The ligand acts as a tetradentate ligand and forms four-coordinated complexes with all these metal ions through two imine nitrogen and two phenolic oxygen. The structures of synthesized Schiff base and metal complexes are geometrically optimized by using the Avogadro software of modelling. The ligand and its metal complexes have been screened for the antipestal activities towards *Tribolium castaneum* a red flour beetle as a storage food grain pest commonly found in India. The results showed that all the metal complexes have higher antipestal activities than the ligand. The order of antimicrobial activities was in order: Cu(II)L > Zn(II)L > Ni(II)L > Co(II)L > L.

Key Words: Schiff base ligand, transition metal complexes and antipestal activities.

BINARY ADSORPTION STUDIES OF Pb(II) & Ni(II) ONTO WOOD POWDER (*Dalbergia sissoo*)

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Abstract: Effluents from a battery assembly plant, water treatment plant, pharmaceutical industry and former copper smelter are major sources for both lead and nickel. The permissible level of lead in drinking water is 0.05 mg/L. The permissible limit of lead in waste water as set by Environment Protection Agency is 0.05 mg/L. It poses serious health hazards such as anemia, damage to kidney, lung, brain, reproductive systems and central nervous system. Removal of toxic lead is therefore essential, the use of agricultural products and by-products as low-cost sorbents has been widely studied. In the present study removal of Pb(II) by wood dust has been investigated. Batch studies suggest that removal is dependent upon contact time, metal ion concentration and pH. Maximum removal of Pb(II) (to the extent of 90.1% by wood dust at pH 5 in 2.5 hr have been achieved for the concentration range 30 to 300 mgL⁻¹ at 25°C. The sorption data obtained at optimum conditions have been subjected to Freundlich and Langmuir isotherm studies. The possibility of intraparticle diffusion has been studied by using the Morris–Weber equation. In binary mixture experiment, one of the two metal (i.e lead) was considered target one and other one (i.e nickel) the competitive metal. The percentage removal of Pb(II) decreases with increase of concentration of Ni(II) in the mixture (percentage removal decreases from 90.1% to 46% when conc. of Ni(II) increased from 0-120 mg/l). Mutual interference effects were probed using equilibrium adsorption capacity ratios q'/q_e , where the prime indicates the presence of other metal ion. The ratios $q'/q_e < 1$, indicating that the adsorption of the metals was depressed by the presence of other metal ions in the binary solution, hence the effect of the mixtures seemed to be antagonistic. The behaviour of competitive adsorption for Pb–Ni was described by the Langmuir Competitive Model (LCM).

Prospects of Use of Paddy Stubble as an alternate energy source in Punjab

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Abstract: Punjab is an agro-based state of India and every year around 18m tonnes of Paddy stubble is produced, which is almost double the quantity of the cereal produce. Paddy stubble is a low density agro-residue, and contains high amount of ash. The management of this residue is a challenging job. Due to lack of management facilities, the paddy stubble is usually burnt in open fields or dumped on the road sides and elsewhere. During this time, the smoke of the burnt stubble stays in the atmosphere for few weeks, making the life of the people miserable. Many people lose their lives due to improper visibility on the roads. Besides, these activities are also associated to numerous respiratory disorders among the young and old people. Thus, the paddy stubble can be regarded as an unavoidable disaster. The present study highlights some of the non-commissioned alternatives, that can help in managing the paddy stubble efficiently. As the paddy stubble is a dry biomass, so biomass gasification is the most suitable way to convert it into portable and a compatible gaseous fuel for IC engines. The densified paddy stubble can be fed into a gasifier, that converts it into producer gas mostly composed of CO, H₂ and CO₂. This gas can be used in furnaces, diesel engines, spark ignition engines and gas turbines. The paddy stubble can be fed along with the cattle dung and kitchen waste in a digester, that converts it into a gas rich in methane. This gas can be further reformed using different catalysts into hydrogen. Hydrogen as a fuel has numerous applications. The Solid oxide fuel cells are the most efficient route to convert the gaseous fuel directly into electricity. Pyrolysis is another route to convert paddy stubble into liquid fuel, having characteristics similar to crude oil. The paddy stubble, if heated in the absence of oxygen, releases the volatiles (~70% by mass), that are collected and condensed in the form of a viscous liquid fuel. These are some of the alternatives, that can be used to manage the paddy stubble efficiently. These systems are associated with large capital investment, so, these systems can be easily installed at village level.

Electrochemical Synthesis of Organoantimony Compounds and their coordination compounds

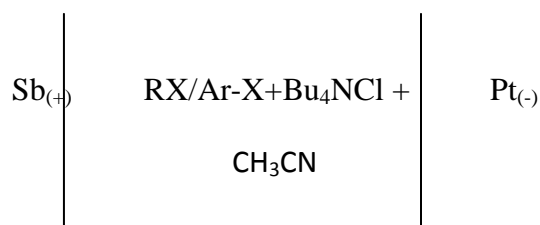
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Abstract: Electrochemical reactions of bromoethane, 1-bromopropane, 1-chlorobutane and chlorobenzene have been carried out in acetonitrile at sacrificial antimony anode using tetrabutylammonium chloride as supporting electrolyte in the following electrolytic cell at antimony anode yields solid products. The cell can be represented as:



Where:

$\text{Sb}_{(+)}$ is antimony anode

$\text{Pt}_{(-)}$ is platinum cathode.

Bu_4NCl is the supporting electrolyte

RX/Ar-X is alkyl halide/aryl halide used in the systems

These products are quite stable and are not much affected by air and moisture. All these products are insoluble in various organic solvents, therefore, their molecular weight could not be determined. Melting point measurements of these products reveal that the products change their color in the temperature range of 200 to 250⁰C and do not melt up to 300⁰C.

Antimony, carbon, hydrogen and halogen contents in the products have also been determined and the relevant analytical data conform to the molecular formula, $(\text{R})_2\text{SbX}$.

The products isolated from the anode compartment have been characterized by elemental analysis and infrared spectral studies and are identified as organoantimony compounds. Coordination compounds of same have been synthesized with ligand (1,10-phenanthroline and 2,2'-bipyridyl). All these reactions proceed with high current efficiencies.

Recycling of Industrial Waste for Sustainability, Environment and Economic Gains

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Abstract: Majority of the raw materials needed for industry is mined from earth's crust. The waste produced by industry is dumped back to the earth. By doing so, the human beings are exploiting the mother earth and are damaging the environment. It has already started showing effects in the form of natural disasters and widespread deadly diseases. Recycling of industrial waste is a strategy that can offer a multidimensional solution to the said problem. It will not only minimise the dumping of waste, but will also help in reduce the requirement of fresh raw material. At the same time, it can also reduce the cost of production, thereby leading to economical gains. This paper discusses the ill effects of over exploitation of natural resources and undue dumping of industrial waste. Thereafter, the needs and methods of recycling of arc welding slag have been discussed in details.

Methods of Rodent Pest Control in Punjab

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Abstract: As a result of the magnitude of the rodent problem in agriculture and public health in India, research into different aspects of the biology and management of rodents received the attention of scientists and research organizations. Many species of rodents are pests in agriculture, horticulture, forestry, animal & human dwelling, rural and urban areas. Of these, *Bandicota bengalensis* is the most predominant and widespread pest of agriculture in wet and irrigated soil and also established in houses and godowns in Punjab. Several traditional and modern approaches and methods of rodent control are being used. In recent decades, non – chemical and eco-friendly and safe methods of rodent control are being used due to their safety , species specific and long term action on the target pests. Unlike the chemical methods, which kill non target species, causes detrimental health effects to human beings and pollute environment. Most common biological control agent used in rodent pest control is predators, parasitoids and microbial antagonists, pathogens, competitors etc. In this review article various environmental, cultural, biological, mechanical and chemical methods of rodent control in Punjab are discussed. Methods, success and problems in implementation of rodent control are also reviewed.

Key words: Rodents, *Bandicota bengalensis*, Punjab, biological control, chemical control

Mushroom Cultivation as a Significant Tool to Enhance the Socio-Economic Status of Rural Women: A New Paradigm in Modern Agricultural Practices

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Abstract: In Punjab state, the Mansa District is considered as a backward and remote area and the status of rural women in this area is limited in house hold activities only. It has been observed that even graduate women of the area are not financially sufficient although have a capacity to learn and earn if proper guidance and technical support is provided. There are various limitations of rural women and the need is for measures and schemes to smooth over bumps in the road without too much disruption. The cultivation of mushroom has become a popular farm and household activity over the last decade among the people. Even at a small scale it not only diversifies the relish base of any cuisine but also enhances the income of the cultivator. The multidimensional uses of mushrooms include their usage as decomposers, inclusion in medicines, as food source and in bioremediation for cleaning of environment. The basic procedure of mushroom cultivation includes; isolation of pure mycelium, preparation of inoculums, inoculation of sterilized substrate, colonization of spawn and initiation of fruit body. As each of the stage has specific environmental requirements and Oyster and Button mushrooms are not capital-intensive so are a popular choice among the cultivators. Thus keeping in view the above mentioned considerations this paper deals with the various aspects of mushroom cultivation even at the domestic level and provides substantial information for the setup of cultivation units to boost the socio-economic status of rural women and make them financially strengthened.

Applications of Metal Organic Frameworks in the Development of Micro-extraction Techniques for Major Organic Pollutants

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Abstract: Environmental issues have become one of the most significant global concerns to attract a great deal of attention. Many important hazardous contaminants including pesticides, insecticides, aromatic amines, heavy metals, VOCs, PAHs, etc. are identified to be of great concern due to their toxicity, carcinogenicity, or endocrine disrupting effects even at nano scale. Metal organic framework (MOFs), composed of metal ions (or metal clusters) and organic connectors (multi dentate organic ligands) are a new kind of crystalline porous material with well-defined co-ordination geometry. MOFs are widely applied as materials for fabricating adsorbents in separation and preconcentration fields on account of large surface area, uniform cavities, good thermal stability, tailorable molecular properties and ease of preparation. Therefore, MOFs are successfully adopted as advanced materials in many microextraction techniques. During the recent times, our research group has successfully synthesized different MOFs and exploring them in various extraction techniques for the preconcentration of broad spectrum of organic environmental pollutants. Emphasis has been given on development of magnetic MOFs as a fast extracting material in dispersive solid phase extraction procedure in hyphenation with HPLC-UV and GC-MS. Spectroscopic and microscopic analysis was performed for analysis of developed surfaces. The developed method produced satisfactory results with excellent values of coefficient of determination within established calibration range.

GOLDEN RATIO AND ITS APPLICATIONS

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Abstract: In this paper it is explained that how Golden ratio can be used in different structures like Sun flower, Daisy flower, Human body and face, DNA, Animals, Galaxies etc. Various applications of this ratio are also discussed in the present paper such as Golden ration used in paintings and sculptures in a broad way to achieve balance and beauty moreover this ratio is used in major companies to design products and logos all over the world. Golden ratio is the nature's most amazing number that controls the proportions of all beautiful objects. It is a special number whose approximate value is 1.618 which often denoted by Greek letter phi (ϕ) and was made famous by Leonardo Fibonacci around 1200 AD.

Source apportionment of PM₁₀ using the receptor models PMF and UNMIX at semi urban site of Malwa region of Punjab

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Abstract: Rural areas are considered as cleaner as compared to urban areas. The source apportionment study was carried out in the Patiala city of Punjab, using the receptor models Positive Matrix Factorization and UNMIX, for characterizing the major PM₁₀ at semi urban site. The study was conducted from May 2015 to May 2016. Collected samples were characterized for heavy metals (Al, Ti, Mn, Fe, Mg, V, Ni, Cu, Zn, Ba, Pb, Cr, Ca), anions (NO₃⁻, SO₄²⁻, Cl⁻) and cations (Na⁺, K⁺). The PMF model distributed the data into 5 major sources namely, Biomass burning, vehicular pollution, resuspended road dust, industrial pollution and secondary aerosols. UNMIX segregate the PM10 mass fraction into 4 different sources, identified as biomass burning, vehicular pollution, resuspended road dust and Secondary aerosols.

Keywords: PMF, UNMIX, PM10, source apportionment, rural area.

Algorithmic approach for computing primary decompositions

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Abstract: In Literature, the Lasker-Noether theorem plays vital importance in sense that every Noetherian ring is a Lasker ring, which means that every ideal can be decomposed into the intersection of finitely many primary ideals, called primary decomposition. It is the generalization of the fundamental theorem of arithmetic and more generally the fundamental theorem of finitely generated abelian groups to all Noetherian rings.

First algorithm for computing primary decompositions for polynomial rings over the field of characteristic 0 was published by Noether's student Grete Hermann. In this paper, some algorithms for computing for calculating the primary decompositions for polynomial rings of prime characteristics are discussed and some examples are also furnished to illustrate the concept.

Keyword:- Commutative Algebra, Primary decomposition, Algorithm.

DETECTION OF TETRABROMOBISPHENOL A BY COPPER(II) USING UV SPECTROSCOPY

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Abstract: Whenever the life of an electronic product ends, it leads to the formation of electronic waste or e-waste and usage of electronic products generates e-waste in bulk amounts with the release of e-waste toxins in the environment. Amongst broad spectrum of e-waste toxins, flame retardants are major contributors for introducing toxins into environmental samples. Brominated flame retardants (BFRs) are common organic pollutants that are widely used to improve the flame resistance in circuit boards and plastics. As one of the most commonly used BFRs around the world, tetrabromobisphenol A (TBBPA) is extensively used in printed wiring boards and electronic products. Due to the structural resemblance to the thyroid hormone thyroxine (T₄) and bisphenol A, a suspected endocrine disruptor, the major concern regarding TBBPA is its potential as an endocrine disruptor. Herein, a spectrophotometric method is developed to detect the presence of TBBPA using copper(II) ions and analytical parameters are standardized to extract TBBPA from e-waste.

Finite p -groups with Central Automorphism Group of Minimal Order

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Abstract: In this paper, we give necessary and sufficient conditions on a finite p -group G with cyclic center such that the group $Aut_z(G)$ of all central automorphisms of G is of minimal possible order. We also find necessary and sufficient conditions on finite p -groups G of coclass up to 4 for which $Aut_z(G) = Z(Inn(G))$. As a consequence, we obtain very short and elementary proofs of main results of Sharma and Gumber (*Comm. Algebra* **(41)**,1117–1122).

Impact of climate change on the existence of the great Himalayan

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Abstract: A large portion of the world population and wildlife directly relies on the Himalayas for their survival. Thus a small change in the climate of the Himalaya either by natural and anthropogenic can impose a severe threats to their existence and/or survival. The main threats to the survival of the life in this region generally facing from the climate change and establishment of the hydropower projects in the region. The various factors responsible for climate change are increase in the emission of CO₂ as well as other green house gases due to rapid urbanization. The various human activities like construction of development projects, industrialization, vehicular emission, increase in the tourism, deforestation, forest fire are the main factors responsible increase in the concentration of Carbon dioxide and other pollutants in the region. The melting of glaciers due to climate change, become a great threat to the Himalayas existence. For example the Himalayan glaciers are the also known as water towers of the Asia is the source of many great rivers of the world. These glaciers are melting and forming lakes. This is due to the global warming and ultimately climate change. Its worthy to note here the glacier of the Himalayan region are attenuating in faster rate. It is estimated that if current rate diminishing of glacier prevails for 30 years, ~80% of Himalayan glaciers will be vanish in 30 years. The climate change also disturbing the ecosystem of this region, accelerating rate of soil erosion, increasing number of landslides, as well rapid loss of habitat and genetic diversity. In this paper source and impact of various climate changing parameter will be examine in depth and some corrective measures required to undertake immediately will be suggested.

INDUSTRIAL REVOLUTION AND ITS IMPACT ON SOCIETY

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Abstract: In the medieval period, people by and large depended upon agriculture to make their both ends to meet. Industry had not flourished at that time. Trade was mostly carried on by barter system because of lack of money or currency. But after the crusades, trade and industry began to develop. In the 15th and 16th centuries the European sailors made many geographical discoveries. These discoveries encouraged colony system. The European began to exploit the people of their colonies and brought a revolution in trade. They began to construct big ships to develop trade and it also gave birth to a new class known as the class of capitalist. They had enough money to buy raw-material and machines. Then with these richest established banks to keep their money safe. This also gave birth to middle class of industrialists. This brought many social and financial changes and the background of the Industrial Revolution was founded.

Keyword: Industry, Barter system, capitalist, Raw-material and Machines.

Challenges in wireless sensor network security

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Abstract: Wireless Sensor Networks (WSNs) are wireless networks for checking and recording conditions at diverse regions. In other words, WSNs are a combination of monitoring, sensing, computing and communicating in a single tiny device. The parameters which are commonly monitored are temperature, humidity, pressure, wind direction and speed, pollutant levels and vital body functions. WSNs rely on wireless connectivity and formation of networks so that the monitored data is cooperatively passed through the network to a main location or sink where it can be observed and analyzed. WSNs are normally deployed in untended or even unwelcoming environments. Therefore, due to their distributed nature and their deployment in isolated areas, one of the main challenges in WSNs is the secure routing of data through the network. Security in sensor networks is, therefore, a challenging task. Different types of attacks are discussed in this paper, including examination of various types of attacks and respective techniques for tackling these.

Increasing Profit through Value-Added Dairy Products

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Abstract: The global population is expected to grow upto 8 billion by 2030. Food scarcity is one of the major global challenges and is forcing people to look for ways of ensuring the available land for farming. Dairy products are emerging as balanced nutritious food and are a key element in household food scarcity. Milk is the most valuable protein food that is widely consumed by people all over the world. Milk as a raw food is easily available on various dairy farms that are processed to increase the variety of nutrients. Processing of dairy products gives small-scale dairy producers higher cash incomes than selling raw milk and offers better opportunities to reach regional and urban markets. Milk processing can also help to deal with seasonal fluctuations in milk supply. *Cheese* is probably the most popular and well-known value-added dairy product. Hundreds of cheese varieties are produced, ranging from soft cheeses (mozzarella, ricotta, etc.) to hard cheeses (cheddar, colby, swiss, etc.). *Yogurt* is becoming more popular as people become aware of the health benefits of two probiotics in yogurt that aid digestion, *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. Flavored and drinkable yogurts are among the leading yogurt products. *Butter* is a fairly traditional dairy product, with organic butter presenting a new twist on this product. The production of butter demands a large amount of milk fat, usually making dairy cows the choice animal. However, goat milk and sheep milk have greater percentages of fat, so these animals can be used if small quantities of butter are to be produced. *Ice cream* is a very popular value-added dairy product. Certain traditional products are also important in improving the economy of the country. For instance, in India, the different types of milk products include fat-rich (full-cream milk, cream, butter, margarine, ghee), heat-coagulated (khoa and its products), acid-coagulated (paneer, chhana), fermented (dahi, yoghurt, cheese), frozen (ice cream and frozen desserts), condensed and dried products and byproducts (caseinates, whey beverages). The key to the success of value-added

products is to market a high quality product that is reasonably priced and available in a convenient location for the consumer to purchase.

Key words: Dairy products, Cheese, Yoghurt, Butter, Ice cream and Traditional Products.

Synthesis of Novel Substituted Dihydropyrimidines and their *In Vivo* Anti-inflammatory Activities

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Abstract: A series of 1,4-dihydropyrimidine derivatives were prepared from Biginelli reactions by using ethyl acetoacetate, substituted benzaldehyde and thiourea in the presence of piperidine and ethanol. The compounds were reacted with dimethylsulphate, diethylsulphate, butyl bromide and benzyl chloride to give the new series of compounds. The structures of the newly synthesized compounds were established by IR, ^1H NMR, Mass spectra and elemental analysis. The synthesized compounds were evaluated for their *in vivo* anti-inflammatory activity by using the carrageenan –induced rat paw edema test. Some of the synthesized compounds showed promising anti-inflammatory activity in comparison to standard drug.

Key words: Anticancer, Biginelli reaction, Carrageenan, Dihydropyrimidine, Rat-Paw.

SKEW-TRAPEZOIDAL BIPYRAMIDAL ORGANOTIN(IV) COMPOUNDS OF

2-ARYL-3-HYDROXY-BENZO- γ -PYRONE: SYNTHESIS, SPECTROSCOPIC CHARACTERIZATION AND X-RAY STUDIES

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Abstract: Organotin compounds, a unique part of organometallic chemistry are highly versatile materials due to high coordination ability, diversity in structure, application in a number of fields, simple synthetic methodologies and less complicated techniques required for characterization.¹ Among them organotin(IV) compounds are important and most studied class of industrially and biologically active organometallic complexes. The nature and number of organic moieties attached to the tin atom, leads to variable biological activities of the organotin (IV) complexes.^{2,3} The structural diversity in these compounds is due to the Lewis acidity of Sn(IV) center, by which it can coordinate to S-, O-, N- or P donor ligands with variable coordination number.⁴ The many current and potential applications of organotins make these as the largest tonnage organometallics being produced today. In this field we have synthesized some organotin(IV) compounds involving 2-aryl-3-hydroxy-benzo- γ -pyrone heterocyclic moiety with O- as donor site. All the compounds were characterized by spectroscopic techniques (FT-IR, ¹H-NMR & ¹³C-NMR). Single-crystal X-ray diffraction and ¹¹⁹Sn-NMR of final complexes provided the confirmation about successful binding of tin to the ligand system. The Single-crystal X-ray diffraction pattern revealed that the organotin(IV) complexes were crystallized as mononuclear compounds in triclinic crystal system with the *P*-1 space group and showed Skew-trapezoidal bipyramidal geometry around Sn.

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Mushroom cultivation in Punjab

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Abstract: Mushroom cultivation is known to be a commercially valuable spore bearing fruiting body of fungus. The Mushroom Industries has expanded very rapidly in the last two decades by addition of new types of Mushroom for commercial cultivation. But it finds a regular place among the Indian consumers. Mushrooms are highly nutritious and environment friendly crops that carry numerous medicinal benefits. The cultivation of edible mushrooms carries great relevance in today's world. Mushrooms are rich in proteins, carbohydrates and low in fat content. In Punjab Button mushroom, Shiitake mushroom, Chinese mushroom and Milky mushroom are cultivated. In this article, cultivation of Button mushroom is being explained in detail. Method adopted for cultivation of mushroom involves boiled grain, calcium sulphate, calcium carbonate mixture and seeds of Button mushroom. By providing suitable temperature, moisture and light conditions the mushrooms get ready within three weeks. Net returns are higher on large mushroom farms due to lower cost. Mushroom cultivation is looked upon for its immense potential for the Punjab farmers who can earn more with less input. Judicious planning of mushroom cultivation helps the farmers to reduce their Paddy waste and rich in their economic level.

Keywords: Mushroom, Button mushroom, Economic, protein, environment friendly

A REVIEW ON THE MOLECULAR MODELLING OF MACROCYCLIC IRON COMPLEXES

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Abstract: DNA Interaction of iron complexes have got enormous attention from past few years due to their ability to bind effectively to DNA via covalent or non-covalent mode of interaction. Scientists are working to develop anticancer drug alternative to platinum drugs due to their toxicity and harmful fascinated the researcher to work on them and was confirmed by various physicochemical and spectroscopic techniques. Transition Metals are alluring tremendously capable of cleaving and binding DNA because they can support a multitude of coordination numbers and geometries that go even beyond sp, sp^2, sp^3 hybridisation of carbon . Transition Metals which exhibit interaction with DNA have been studied for the analysis of nucleic acid structures, chemotherapy agents and to determine the structural mechanism of metal ion toxicity. So there is massive interest to design new and effective ways to know about mechanism of cleavage mode and binding of DNA with transitions metal complexes. In this review article the complexes available from 2004 onward have been summarized to understand the development of iron complexes undergoing interaction with DNA.

ANALYSIS OF PULP WASHING MODEL VIA NUMERICAL TECHNIQUE

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Abstract: Process of adsorption, desorption is of great importance in chemical engineering and process industries. Variety of mathematical models has been developed to study the mechanism of adsorption, desorption and washing of solute adsorbed on particle surface. In this paper, washing of porous structure of compressible and cylindrical particles *e.g.* fibres has been modelled via an axial dispersion model involving Peclet number (Pe). Non linear Langmuir adsorption isotherm has been followed to relate bulk fluid and intra-pore solute concentrations. Model equations comprising a set of differential algebraic equations have been solved using orthogonal collocation in conjunction with finite elements. Lagrangian interpolating polynomials has been taken as base functions. Effect of axial dispersion coefficient and interstitial velocity has been checked on exit and average solute concentrations with the help of breakthrough curves. Washing operations have been performed on a washing cell using unbleached, unknafed pulp beds. Model predicted values have been compared with the experimental values to check the efficiency of the model.

CO₂ CAPTURE METHODS TO REDUCE GLOBAL WARMING

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Abstract: CO₂ is useful for plants but excess of CO₂ present in the atmosphere causes green house effect and global warming. So CO₂ has become a wide spread concern in the recent years. Carbon capture has actually been in use for many years. The oil and gas industries have used carbon capture for decades as a way to enhance oil and gas recovery. Now we started thinking about carbon capture for environmental reasons. There are various methods to capture CO₂ like organic solvents, electrochemical capture and by *Escherichia coli* strains etc. The organic solvents are used as they capture and release CO₂ in pure form by using solar heat. These solvents can also be immobilizing on the high surface area material such as mesoporous silica nanoparticles to enhance carbon capture efficiency. There is an electrochemical capture of CO₂ as well, in which industrial catalyst anthraquinone is used. Polyanthraquinone has dual nature to absorb or release CO₂. In electrochemical cell, during charging CO₂ is absorbed and during discharging CO₂ is released in the pure form, which can be used for some benefits such as carbonation, syn gas formation (electricity is required for this process). Other than these there are *Escherichia coli* strains that consume CO₂ for energy instead of organic compounds.

Keywords: CO₂ capture; Organic solvents; Silica nanoparticals; Polyanthraquino; *Escherichia coli*.

BODY AREA NETWORK: A SURVEY

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Abstract: Wireless Sensor Network is an advanced popular technology used in various fields to collect information like Communication, Environment Monitoring, Health Care, Defence System, data routing. In Health Care 'Wireless Body Area Network' is a major aspect of Wireless Sensor Network. WBAN is becoming an important in the Health Care to maintain body and improve the functionality of body. Wireless Body Sensors are attached within body to monitoring heartbeat, body temperature, blood circulation etc. With the increasing awareness of peoples about health. WBAN is an easy and flexible system to monitor health. In addition Wireless Body Sensors are attached with the body of patient and detect body and send information to medical server for treatment. In this paper we discuss various Wireless Body Sensors that are used in Wireless Body Area Network.

Is good Corporate Governance a yardstick of sound financial performance?

Case study of Reliance Industries Limited

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Abstract:-Corporate governance is a practice followed by the owners and managers in controlling and directing a company on the behalf of individuals, corporations and society. It further encompasses providing information to the general public in a more fair and transparent manner. The current study aimed to examine the relationship between a good corporate governance and financial performance of a Reliance firm. The study made use of secondary sources of data, both from the reports on Corporate Governance and the annual report of Reliance Industries Limited for the financial year 2018-19. The reason behind the selection of RIL is that it is the largest private-sector firm and its share prices significantly influence the movement of the Indian stock market in India. The aforesaid period of 2018-19 has been considered due to the easy availability of the CG Report and Annual Report of RIL for the said period. The findings of the study revealed that RIL group is in the forefront implementation of the best corporate governance practices in India which leads to its high financial performance, thereby establishing a sound relationship between the considered variables of the study.

Keywords: Corporate Governance, disclosure practices, financial performance, SEBI's Clause 49, Listing agreement.

Wild Fruit of Uttarakhand Berberis (*Berberis asiatica*): A Review

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Abstract: There are innumerable fruits and vegetables which are consumed for their nutrients for their medicinal purposes. Wild edible fruits contribute significantly to the nutrition of inhabitants of rural areas. Berry such as *Berberis* Botanical name: *Berberis asiatica*. Local name: *kilmora*, *Marpyashi*, *Daruharidra*, *Darbi*. Family –Berberidaceae Ethno botanical. *Berberis* commonly occurring in the Himalayas from Himachal Pradesh at 600-2,700 m eastwards to Bhutan and Assam at 1,500-1,800 m and on Parasnath hills in Bihar, Pachmarhi in Madhya Pradesh and Mount Abu in Rajasthan. In Uttarakhand, *Berberis* is found mainly in the hilly regions of Almora, Champawat, Devidhura, Sheharphatak and Lohaghat. Uniyal et al, (2006) reported that the fresh roots of *Berberis* are used for curing diabetes and jaundice. The total alkaloid content in the roots is 4% and in the stems, 1.95%, of which *berberine* forms 2.09 and 1.29%, respectively. The stems are recommended in cure of rheumatism. Bhakuni et al., (1969) revealed that the roots are reported to possess anti-cancer activity. The berries are mildly laxative and are given to children. In Ayurvedic medicinal system it is named as ‘*Daruharidra*’ or Wood Turmeric due to similar properties as of turmeric (Singh et al, 2007) which is used in antimicrobial, wound healing, hepatoprotective and cytotoxicity etc. (Dehar et al 2013 and Mazumder et al 2010). This fruit high phenolics and used to protect oxidation of lipoproteins. The studies shows that wild fruit plant *Berberis* highly nutritious and have medicinal properties as it is good sources of bioactive compound.

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Current Review Study and Approaches of Farm Mechanization for the Income Enhancement of Farmer in India

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Abstract: This review studies is to bring the current set-up of farm mechanization in India. The current status of mechanization in India is 40 % which still lowest as compare to US(95%),Brajil(75%) and China(57%). Hence, there is need to increase the level of farm mechanization that contribute efficiently to resolve the many agricultural problem. Farm power availability has increased 1.47 KW (2005-06) to 2.02KW in (2013-14) at slow rate. The availability of farm power is very low not sufficient to make efficient agriculture that impact the low production in agriculture and more input cost. Studies also identifies farm mechanization will useful in input material saving (fertilizer 15-20%), (seed 15-20%) and increased cropping intensity and efficiency of work done 5-20% and 15-20% respectively that assure less risk in agriculture . As per report of World Bank rapid urbanization will reduce agriculture al worker that make a sufferer of agricultural work by the year of 2050. Farm mechanization is play key role in agriculture to improve the participation of agriculture in GDP. Moreover there is need to developed the precise and advance technology that sustain the agriculture work and bridge gap between availability of the current agricultural technology and farmer.

Optical Investigations of Silica Nanoparticles Doped Polymer Dispersed Liquid Crystal Composite Films for Display Applications

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Abstract: Polymer dispersed liquid crystal devices has been developed with doping of different concentration of silica nanoparticles and well characterized morphologically with the assistance of optical polarizing microscope and scanning electron microscopy. It has been found that at different silica nanoparticles concentration in polymer dispersed liquid crystals host, the microstructure can be regulated homogeneously. Under the effect of an applied external electric field, these composite films switch from opaque to transparent, which can alter the photoluminescence properties. Applying a direct electric field of several hundred volts per micron in the stacking direction of these composite films, the alignment of the liquid crystal directors changes and hence the average refractive index of the structure get modulated. Overall, the electro-optical performance of these devices is found to be highly dependent on the morphology of these composite systems. The possible mechanism for the formation of polymer/liquid crystals microstructures in these composite systems will be presented in detail. This work is expected to produce vide efficient composite systems with switchable display devices.

High Hydrostatic Pressure Processing and Microbiological Food Safety: A Review

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Abstract: Among different non-thermal treatments high hydrostatic pressure (HHP) processing is one of novel method to preserve and sterilizing food. It has shown great potential in producing microbiologically safer products while maintaining the natural characteristics of the food items. Hydrostatic pressure (HHP) processing has a limited effect on covalent bonds with in food products, thus maintaining both the sensory and nutritional aspects of the products. This treatment occurs at low temperature and does not include the use of food additives. According to the data present high hydrostatic treatment is used for juices, jellies, jams since 1990 and nowadays also used to preserve fish, meat, salad dressing, rice cakes, yogurts and many other food products. The uses, advantages and limitations of the process as described by many scientific publications prove its industrial applications which have been widespread in the past two decades. The effect of high hydrostatic pressure on food borne pathogenic microorganisms, their structures and adaptive mechanisms, its application as affected by the intrinsic and extrinsic factors with a focus on microbiological safety, and research needs has been reviewed. The review also focus on tools and mechanisms in place to monitories, optimize and validate the process, and procedures for assessing and modeling the lethal effect of the treatment in the risk assessment context.

Keywords: High hydrostatic pressure; Risk assessment; Food safety; Nutritional aspects

Methods of reducing heavy metals from waste water

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Abstract: Although some heavy metals are essential trace elements, most of them can be toxic to all forms of life at high concentration due to formation of complex compounds with in a cell. Due to discharge of large amount of metal contaminated wastewater from industries bearing heavy metals like Arsenic, Copper, Cadmium, Nickel, zinc, lead and Mercury are major Pollutants of fresh water reservoirs. These metals are toxic , non-biodegradable and adsorbed by the fishes and vegetables due to their solubilities in water and they may accumulate in human body by means of food chain. Heavy metals removal from wastewater includes many process such as Chemical precipitation, Adsorption, membrane filtration, ion exchange electrodeposition nanotechnology treatments and advanced oxidative processes. To remove the heavy metals from drinking water we can use methods such as distillation, reverse osmosis(RO). Therefore, in this review article it is concluded that not only a single method is sufficient to remove the heavy metals from water but combination of all these technique is required.

Keywords: Heavy metals, pollutants, osmosis, ion exchange electrodeposition, nanotechnology treatments

IN VITRO STUDIES ON LOW COST MEDIA SUBSTITUTIONS FOR LARGE SCALE MULTIPLICATION OF SUGARCANE

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Abstract: Sugarcane (*Saccharum officinarum* L.) belonging to family poaceae is a major agricultural and industrial cash crop having potential for production of sugar, biofuel, bio plastics and bio fibers etc. Sugarcane is a vegetatively propagated crop and development of its new variety takes about 10-12 years resulting in a major constraint for the breeder to evaluate sugarcane variety at a faster rate and to make available sufficient quantity of its seed to the growers. The adequate quantity of disease free sugarcane planting material of improved varieties within shortest period can be made available to the farmers using tissue culture technique. Present studies were conducted to explore the feasibility of reducing the production cost and improving the efficiency of *in vitro* multiplication of sugarcane without compromising the quality of micro propagated plants and to up scale the technology to a commercial scale for its profitable cultivation. Shoot tip cultures were established on MS media fortified with 2.0 mg/l BAP. Shoot proliferation was found better on MS medium substituted with 1.0 mg/l BAP. Maximum rooting was observed on ½ MS liquid medium fortified with 5.0 mg/l NAA and 60 g/l sucrose. The substitution of traditionally used agar (0.8%) with isabgol (1.5%), sucrose (3.0 %) with sugar cubes and simple sugar (3.0 %), distilled water with RO treated water resulted in almost comparable average number and length of shoots. (23.6 and 21.4 shoots with 2.6 cm and 2.3 cm shoot length respectively). Traditionally used agar, sucrose and distilled water are contributing 45.32%, 16.59% and 21.58% respectively of the total media cost. Thus 83.49% of the total media cost is contributed by agar, sucrose and distilled water. It was found that the total media

cost of Rs148.27 per litre is contributed by major salts (Rs 23.40), minor salts (Rs 0.15), vitamins (Rs 0.92), sucrose (Rs 24.60), agar (Rs 67.20) and distilled water (Rs 32.0).On over all basis, the substitution of conventionally used solidifying agent agar, carbon source sucrose and distilled water with low cost alternatives such as isabgol, table sugar and RO treated water resulted in 74.10% reduction in total cost of M S media.

In silico* Identification and Characterization of Glutathione Peroxidase Gene Family in *Phalaenopsis equestris

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Abstract: Reactive Oxygen Species (ROS) are produced as a normal product of plant cellular metabolism. The various environmental stresses lead to excessive production of ROS causing progressive oxidative damage and ultimately cell death. Despite their destructive activity, they are well - described second messenger in a variety of cellular processes, including conferment of tolerance to various environmental stresses. Among major Reactive Oxygen Species (ROS), Hydrogen Peroxide (H_2O_2) exhibits dual roles in plant metabolism. Low levels of H_2O_2 modulate many biological/physiological processes in plants; whereas, its high level can cause damage to cell structures, having severe consequences. Thus, steady- state level of cellular H_2O_2 must be tightly regulated. Glutathione Peroxidase (GPX) is one of the enzyme which catalyze the reduction of H_2O_2 or organic Hydroperoxides to water or corresponding alcohols using reduced glutathione, which plays an essential role in ROS homeostasis and stress signaling. We have identified 6 GPX genes in *P. equestris*. Employing bioinformatics approaches, this study represents a comparative evaluation of GPX gene family in *P. equestris* and provides valuable insights into the protein characterization, exon-intron organization, motif organization, promoter elements and their functions and phylogenetic analysis

Keywords: Reactive Oxygen Species, Glutathione Peroxidase, Hydrogen Peroxide.

TISSUE CULTURE STUDIES ON MULTIPLICATION OF *NOTHAPODYTESFOETIDA* – AN ENDANGERED MEDICINAL PLANT SP.

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Abstract: *Nothapodytesfoetida* is an important medicinal tree and a rich source of camptothecin. The therapeutic values of camptothecin and its derivatives are highlighted against cancer, falciparum malaria and AIDS. The destruction of this valuable tree by harvesting the roots as a source of camptothecin has threatened its survival in the natural habitat and it has been assigned the threat status of “vulnerable”. Keeping in view the utility, large-scale demand by pharmaceutical industry and need for conservation of this endangered species, present study was undertaken to develop an effective protocol for its large scale multiplication *in vitro*. The highest shoot regeneration and proliferation using shoot tip and nodal explants was observed on MS medium supplemented with BA (3.0 mg l^{-1}) + IBA (1.0 mg l^{-1}) added with additives i.e. adenine sulphate (50 mg l^{-1}) + glutamine (100 mg l^{-1}) + L-arginine (25 mg l^{-1}) + citric acid (25 mg l^{-1}) + ascorbic acid (50 mg l^{-1}). Shoot tip explants exhibited higher regeneration percentage and better growth of propagules in comparison to nodal explants. Half strength MS medium supplemented with IBA 1.5 mg l^{-1} proved most effective for rooting of *in vitro* raised plantlets. The rooted plantlets were acclimatized and successfully established in pots containing sterilized soil and vermicompost (1:2). An effective protocol for large scale multiplication has been developed which shall be useful in conservation of this endangered medicinal plant species and shall also meet out the increasing demand of pharmaceutical industries.

Key words: -Camptothecin, Auxin, Cytokinin, Regeneration, Anti-oxidants

Microbial Enzymes in Industry and Medicine

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Abstract: Enzymes are biocatalysts produced by living cells that are required for the numerous specific biochemical inter-conversions generally forming parts of the metabolic processes of the cells to sustain life. Currently, microbial enzymes are obtaining much consideration with rapid development of enzyme technology and are preferred because of their rapid growth, simple media requirements, economic feasibility, strain improvement, production optimization, ease of product modification, high yields, stability, and greater catalytic activity. Due to this, microbial enzymes have evolved as an important molecules being widely used in different industrial and therapeutic purposes. Currently, enzymes are one of the most essential molecules which are being widely used since the prehistoric times. With the population expansion and mounting need, enzymes seem to be one of the most vital molecules that have a large blow in every industry that may be agriculture, bio-fuel, dairy, food and feed, pulp and paper, textile, waste management or medicine (biochemical investigation, diagnosis, monitoring and treatment of various dreaded diseases) therefore, the search for microbes with novel or improved enzymes activity continues. Enzymes industry is one among the major industries of the world, and there exists a great market for further improvement in this field.

Applications of wireless sensor network: A Survey

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Abstract: Use of sensing devices is increasing day by day and WSNs (Wireless Sensor Networks) are one of them. It is proceeding due to its low-cost, small-scale factor, smart sensor nodes etc. in a wireless sensor network sensor node reacts and take some kinds of input from the environmental physical conditions, like heat, pressure, light, etc. A WSN can be describe as wireless network of devices which can send the sensed information from observed environment with using wireless connections. Its main aim is to grab data from physical world. It is an automation that uses many wireless nodes and other devices that can sense, process or communicates to capture movements of real world environment. Wireless sensor networks can virtually work in any kind of environment, especially those where wired connections are not possible. In this article, different applications of WSNs have been presented. Wireless Sensor Networks have applications in many fields such as in forests, agricultural activities, medical centers, smart buildings, military, ecological, scientific purposes etc.

SYNTHESIS OF NEW LIGANDS AND THEIR COMPLEXATION WITH METAL IONS

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Abstract-Some potentially active azomethines and azomethine N-oxides ligands of pharmacological importance have been synthesised from O-nitrocinnamaldehydes and variously substituted aromatic amines and phenylhydroxylamine respectively. Initially their synthesis have been carried out by condensing O-nitrobenzaldehyde with acetaldehyde under base catalysed reaction conditions. The crude product isolated was characterised by means of derivatisation and melting point as O-nitrocinnamaldehyde which was subsequently condensed with variously substituted aromatic amines by taking their equimolar quantities in ethanolic solution. These crude products were recrystallised and were characterized through their spectral studies. While the azomethine-N-oxide was synthesised by condensing O-nitrocinnamaldehyde with phenylhydroxylamines and product azomethine-N-oxide was analysed like wise. Both the ligands azomethines and azomethine N-oxides showed a great affinity of complexation with Cu(II) and Ni(II) ions. These complexes have been characterised through their spectral studies.

CROP STUBBLE BURNING: SIDE EFFECTS AND POSSIBLE SUBSTITUTES

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Abstract: India has a major agribusiness sector which achieved remarkable successes over the last three or four decades. India is an agricultural driven economy where more than 60% population is engaged in cultivation of agricultural products. India is one of the important countries in production of crops such as wheat, rice, sugarcane and many more, with million tons of agriculture crops producing every year; it also produces tons of agriculture waste. Agriculture waste or residue is made up of organic compounds from organic sources such as rice straw, sugar cane bagasse, coconut shell and others. With high amount of agriculture wastes, it becomes difficult for the farmers to dump that waste. With reaping of paddy fields, large quantities of husk are generated that needs dumping. Farmers generally collect husk and put them to fire. Burning husk is the easiest of ways to dump the husk. But burning husk has several demerits. Recently in India, husk burning cases by farmers of Haryana, Punjab and Uttar Pradesh have been penalized. But why do farmers burn husk? There is very little they can do about the husk. When threshers thresh the paddy field, husk is left behind. Husk surrounds the paddy grain. During milling of paddy about 75% of weight is received as rice, broken rice and bran. Rest 25% of the weight of the paddy is husk. These days, farmers due to lack of labor and time prefer threshers over hand reaping, which leaves husk behind. Husk collecting machines are not provided by the government neither they are given subsidies. So the easiest they can do before they sow wheat is collect husk and set it to fire. But they don't know the harmful effects of burning husk on ground.

SIDE EFFECTS

- ❖ Open burning of husk produces harmful smoke that causes pollution. Open burning of husk is of incomplete combustion in nature. Hence large amount of toxic pollutants are emitted in the atmosphere. Pollutants contain harmful gases i.e. Methane, Carbon Monoxide etc.

- ❖ Some think burning is a quick, easy and cheap method as all unwanted husk, plants and shrubs get destroyed. Some believe that fire may return nutrients to the land. But burning husk on ground destroys the nutrients in the soil, making it less fertile. Heat generated by stubble burning penetrates into the soil, leading to the loss of the moisture and useful microbes. Thus adversely affecting the soil. It kills natural nutrients and bacteria that help rejuvenate soil.
- ❖ The burning of paddy or stubble leads to the loss of precious nutrients as nearly 25% nitrogen and phosphorus, 50% Sulphur and 75% potassium uptake from the soil are retained soil residues.
- ❖ Husk has high prolific value. Rice husk is unusually high in ash, which is 92-95% silica, highly porous and lightweight, with a very high surface area. Its absorbent and insulating properties are useful in many industrial applications, such as acting as strengthening agent in building materials.

SUBSTITUTES:

- ☞ Providing stubble collecting machines to farmers to collect stubble.
- ☞ Subsidizing or availing the stubble collecting machines at rent.
- ☞ Decomposing stubble in the farm field and turning it into the useful manure.
- ☞ Making fodder for livestock out of collected stubble.
- ☞ Government should Involve or invite benefiting industries like cement industry to collaborate in stubble collection to use it proficiently.
- ☞ Inviting packaging industries to collect stubble to make packaging boxes which are more environment friendly than other non-disposable materials like thermo Cole and plastic etc.

Key Words: Stubble, burning, side effect, crop, etc.

WIRELESS SENSOR NETWORK- A SURVEY

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Abstract: A wireless sensor network has important application. In the WSNs system many sensor nodes are connected with each other without any cable or physical connection, that is why we can call it wireless sensor network. WSN are used everywhere now days e.g.:-Health, Military and Security. In the hospitals physiological data about patients are monitored by a doctor with the help of sensors remotely. Some products are monitored the body temperature, blood pressure etc just within a one touch on the human body. Sensors are also help end users to understand the environment. Sensor found polluted chemical in the environment. Sensor nodes are used for sensing, event detecting. In this paper we are discuss about the WSNs application and its types. In this paper also define the importance of WSNs system in today's world.

The Role of Fuel Cells in Global Energy System: An Overview

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In the search for alternative fuels for conservation of the environment, fuel cells are very good alternative over petro fuels in global energy systems as we know petro fuels are associated with several negative environmental impacts. The history of fuel cells was more than one and half century old it creates electric energy by converting a fuel into a negative charge on one terminal and a positive charge on the other terminal. A fuel cell is differing from primary cells as well secondary cells in many manners. The most common fuel cell is hydrogen cell. A fuel cell does not create any pollution and it can play a leading role in the protection of climate. Fuel cells were also extensively used in space missions. Further research into fuel cell technology will give clean and abundant energy in future.

BIOLOGICAL CONTROL OF CROP PESTS AND WEEDS

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Abstract: There is various methods which are used for the pest or weed control. The use of chemical pesticides is widespread due to their relatively low cost or easy to applied, but there is some limitations of chemical control like highly toxic, residual effect, persistence in nature and environmental degradation. So that, to overcome the limitations of chemical control, biological control can be a better option or it can be used an IPM component. Looking at the harmful impacts of modern pesticides, scientist over the world used their attention to non chemical and environments friendly means of disease and pest control in agriculture Biological control is a non-chemical method and safe for the human health in which, natural enemies used for the control of insect pests is known as biological control or reduction of inoculum density or disease producing activity of a pathogen or a dormant phase, by one or more organism accomplished naturally or through manipulation of environment, host or antagonist or by mass introduction of one or more antagonists, the ultimate aim is the reduction of inoculum of the pathogen through disease survival between crops. Usually parasitoids, predators and pathogens were used for the control of insect pests. In recent times more emphasis was given on biological control for the sake of eco-friendly cultivation. The biological control involves three techniques i.e. introduction, conservation and augmentation. Introduction means introduce the exotic species or non native species into an area for the long term effect or to fulfils the conditions of ecological homologues. Conservation techniques, in which, natural enemies were protected by avoiding harmful measures that destroy natural enemies or by using measures that increase the longevity, fecundity and attractiveness of an area to natural enemies. Augmentation involved the activities like addition of number of natural enemies into a system or the modifying the environment to promote the number and effectiveness of natural enemies. Most commonly uses bio agents includes bacteria *Bacillus thuringiensis* against many pest or insect Lady bird beetle also an important group of predators at larvae stage or introduction of anagonists in soil is practised to control number of diseases (VAM). Biological control has many benefits over chemical control

such that free from pollution, residual toxicity and biomagnifications in no target organisms. They are manipulated and applied for various integrated pest control programs in Agriculture. Unfortunately, the primary factors affecting adoption of biological control are efficacy, predictability and high cost. Better understanding of ecological aspects of natural enemies is important for the improving the performance of predators and parasitoids, especially in tropical regions. The study is based on desk table, magazines, newspapers or personal interaction with peoples.

Keywords: biological control, natural enemies, pathogens, pest

HARMFUL EFFECTS OF PESTICIDES ON HUMAN HEALTH

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Abstract: Green revolution though rendered India self sufficient in food production, yet it leads to the deterioration of soil, water and air health. Use of agricultural chemicals pesticides continue to increase with passage of time. India produced 216703 Million tonnes pesticides in 2018-19. Punjab earned the title of "Grain Bowl of India" due to very high production of food. The impact of the use of these blatant chemicals on animals particularly birds was pathetically depicted by Rachel Carson in book "Silent Spring" and as an impact DDT was banned in USA in 1972. This attracted the attention of scientific world and researches were initiated to study the impact of these harmful chemicals on human health. Pesticides are chemicals used by man to control pests. In agriculture, pest may be anything that harm the crop like insects, fungi, weeds etc. Therefore, to control these pests, we use insecticides, fungicides, weedicides etc. which are collectively termed as pesticides. Globally used insecticide is chlorpyrifos and largest selling fungicide nowadays is mancozeb. Pesticides are beneficial to agriculture like to protect the crop from insect pests and diseases. But there are also some drawbacks of these pesticides such as toxic to human and animals. Pesticide residue is public health concern and has been linked to a range of diseases and disorders. Pesticides leave residue in food grains and their harmful effects have been seen in environment and consumers who widely use these food items. Most pesticides especially the organochlorines are very resistant to microbial degradation. Therefore, accumulate in human body fats and environmental posing problems to human health. Harmful effects of pesticides are of three types such as acute, chronic and allergic. Effects that appear immediately after exposure to a pesticide is called acute effect. Symptoms include numbness, headache, sweating, blurred vision, breathing difficulties and slow heartbeat. When a person is exposed to toxic agent repeatedly over a long period, and low dose enter into body is called chronic effect. Symptoms of this effect are difficulty in speech, delayed reaction time, nightmares, insomnia, irritability etc. Allergic effects include asthma, skin irritation such as blisters, rashes, open sores nose and eye irritation. To avoid the harmful effects of pesticides on human health and contamination of food

with these chemicals, farmers should use alternative methods such as Integrated Pest Management (IPM), organic farming and crop rotation. Consumers should also consume organic food to avoid harmful effect of pesticides. The present paper is based on the desk study of scientific journals, magazines, newspapers, conference proceedings, online articles and personal communication with the people of Budhlada and surrounding areas.

Keywords: human health, pesticides, integrated pest management, insecticides, fungicides, weedicides

USE OF WASTE MATERIALS FOR CONSTRUCTION

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Abstract: As we are living in 21st century, new technologies are being invented in almost every sector to make human life fast and easier. Beside this we are still finding the solutions to problems related to our environment, energy and natural resources. Construction industry produces large amount of waste throughout the year. Most of the time construction and demolition waste ends up in landfills disturbing environmental, economical and social life cycle. Construction and demolition waste is the waste materials that are produced in the process of construction. Components of construction and demolition waste typically include concrete, asphalt, wood, metals, gypsum wallboard, roofing, paper, plastic, drywall and glass. Concrete is the second most consumed material after water, so recycling of concrete can save construction costs also it will help to keep environment healthy. In many countries like Japan, United States, United Kingdom various recycling techniques are being used and returning good results. In india also Rock Garden at Chandigarh is constructed by the waste materials. Process of recycling construction and demolition waste includes storage, sorting, collection, transportation, recycling and disposing. Recycling of Construction and demolition waste has many benefits such as reduction in transportation cost, it keeps environment clean and reduces natural resource exploitation. To promote recycling and reuse of waste, awareness about its effects and benefits should be communicated with people, contractors, engineers and architects. More numbers of recycling plants should be installed and allowing the use of recycled aggregate instead of natural aggregate for some purpose.

Keywords: Construction & Demolition waste; Recycling; Reuse; Recycling techniques; Sustainable development

AIR PURIFYING IN PUNJAB DURING PADDY SEASON –A REVIEW

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ABSTRACT: Punjab produces million of tons of paddy straw and about 85 to 90% of stubble burning is burnt in the field. This burning produces greenhouse gases and polluted air. These gases are CO₂, NO_x, SO₂, CH₄ etc. Their content is 65.9, 2.2, 0.35, 2.38 percent respectively. These gases cause skin disease, irritation in eyes, nose and throat inspite of these, asthma like disease caused by them. There are various instruments to detect these gases like NDIR (Non Dispersive Infrared Sensor), gas chromatography etc. CO₂ is the main gas released in air. In natural way CO₂ is absorbed 25% by plants and 25% by oceans and rest remains in atmosphere, so if we collect CO₂, problem of air pollution could be solved to great extent. Various technologies are used to use these gases like in MIT university they use CO₂ collector to collect CO₂ from atmosphere, we can use this to collect CO₂ and use it into plants where fuel cells are installed and can produce products like electricity and methane. This method will leads to decrease in environment pollution and full-fill electricity demand in various rural areas and ultimately leads to benefit to farmers and in mean time we can install fuel cell which can use other gases as reactant so that this problem get eliminated wisely.

Keywords: stubble burning, paddy straw, greenhouse gases

SYNTHESIS AND CHARACTERIZATION OF ORGANOTIN COMPOUNDS DERIVED FROM TRIPODAL LIGANDS

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Ligand $N(\text{CH}_2\text{CH}_2\text{OH})(\text{CH}_2(2,4\text{-di-}(t\text{-Bu})\text{C}_6\text{H}_2\text{OH}))_2$ [H_3L] was synthesized by Mannich base condensation reaction by refluxing 2,4-di-*t*-butyl phenol, ethanolamine and 36% aqueous formaldehyde in methanol. H_3L was further reacted with phenyltrichlorostannane (PhSnCl_3), butyltrichlorostannane (BuSnCl_3) and tin tetrachloride (SnCl_4) to yield the novel pseudostannatranes LSnPh , LSnBu and LSnCl_2 , respectively. The pseudostannatranes formed were characterized using the various characterization techniques such as FT-IR, CHN analysis, ^1H NMR, ^{13}C NMR and mass spectrometry, which confirmed their formation.

ALCOHOL AND HEALTH

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Abstract: Ethyl alcohol or ethanol which also known as alcohol. It is moderately good solvent for many fatty substance and essential oil. It also act as psychoactive drug that is active ingredient in drinks such as Beer, Wine, Whisky and Distilled spirits. Alcohol is formed by fermentation in anaerobic process. Ordinary distillation cannot produced alcohol of more than 95.6% by weight, which is about 92.7%. A spirit which contains very high level of alcohol and does not contain any added flavouring is commonly called neutral spirit. Alcohol is depressant which in low doses cause euphoria (BAC-Blood Alcohol Concentration) 0.03-0.12% typically cause improvement in mood, reduce anxiety and nervous activity. But in higher doses BAC 0.09-0.25% cause lethargy, Sedation , balance problem. BAC 0.08-0.20% cause confusion, impaired speech ,dizziness, staggering. BAC (0.25-0.40%) cause Stupor, vomiting, unconsciousness, early death. According to report about 3.3 million death (5.9% all global death) are due to harmful use of alcohol in 2016. Alcohol consumption is 6.4 litre of pure alcohol per person. It is causal factor in more than 200 diseases and injury conditions. Beyond health consequences the harmful use of alcohol brings significant social and economic loss to individuals and society at large. For reduce the adverse health and social impact of alcohol consumption. Every country meets alcohol laws which fix a specified amount of alcohol in standard drinks and regulate the manufacturing, packaging, labeling, distribution, sale consumption, blood alcohol content and legal age. Such laws may take formed permitting distribution only to licenced store, monopoly store, pubs and they often combined with taxation which favours to reduce the demand of alcohol.

GREEN CHEMISTRY- A FUTURE PERSPECTIVE

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Abstract: Green chemistry is the design of chemical products and processes that reduces or eliminate the use and generation of hazardous substances. Paul Anastas is the father of green chemistry who done his work on the production of the non- hazardous products which have a positive effect on the environment. As we know that a huge amount of toxic, volatile organic solvents are used and released into the atmosphere, during the chemical processes or production of materials into the labs. About 20 million tons of organic solvents are released into the atmosphere which produces the bad effect on plants, animals, water, soil and human health. For reducing this worse effect of hazardous compounds like HCL, HNO₃, ACETALDEHYDE etc. we can apply green chemistry in the labs. In the labs we can use greener fluids catalysts, solvents, reagents like vegetables oil, glycerols, water, nanocatalyst and bio-catalyst etc. These all greener are used to optimize the chemical processes and reduce the solvent usage. And greener catalysts also have high activity, stability and have a catalytic system to achieve the dual goal of environment protection and economic benefits. Green chemistry also very useful to saving the sources for future generation which are renewable and diminished after using only once like CO₂, coal, petroleum etc. So for saving these sources for the upcoming generation, green chemistry is very beneficial and use sustainable energy sources like wind energy, tidal energy, geotherm-al energy etc. In labs, when we performed an experiment a little amount of chemical must be used and use 3R process i.e reduce, recycle, reuse. After the completion of an experiment, waste chemicals not to drain because it contaminate the water, soil and may be reason of fire explosion. And put these into the containers, so we can conclude that Green chemistry is not a solution to environment problems but it is a fundamental approach to prevent the pollution and helpful for save the resources for future generation.

KITCHEN AS A CHEMICAL INDUSTRY

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Abstract: The chemicals in our diet are often put into broad categories for example: oil use as a immune boosting system mineral for us in our daily life. Which contains saturated and unsaturated fatty acids and the vegetables also contains protein, carbohydrates, starch and pulses contains protein in rich amount and other things in our kitchen are nuts, which are full of fats, fibre, and protein. The important components we will use in our kitchen is our herbs like ginger and garlic. Which contains inorganic salts, sugar, protein and the utensils that are made up of Teflon and bakelite are also work as industrial instrument and Pressure cooker is the best example for that because the cooker work like a reactor and cook food easily with steam pressure and retain nutrients. Like industries that are using fuel for there instrument we will use L.P.G. as a fuel in heating appliances that are made up of hydrocarbons such as butane and propane. The instrument we will use for energy transformations in our kitchen. Which are safe is like Microwave, refrigerator and mixer grinder and for filtration. We use strainer in our kitchen to filter solid particles like tea leaves and now a days new technique will come in our kitchen that is chimney. This is working same as the chimney work in industry to expel out gases. That's why kitchen acts like industry.

LIGHT FIDELITY ADVANTAGES AND DISADVANTAGES

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Abstract: This most recent innovation Li-Fi (Light Fidelity) alludes to 5G Obvious Light Correspondence frameworks utilizing visible light communication diodes as a medium to rapid correspondence along these lines as Wi-Fi. Harald Haas says his innovation, which he calls D-LIGHT, can create information rates quicker than 10 megabits for every second, which is speedier than your normal broadband association. In the days where web has become a significant interest individuals are in a quest for Wi-Fi hotspots. Li-Fi or New Existence of information correspondence is a superior option in contrast to Wi-Fi in remote correspondence. Li-Fi has multiple times more prominent speed than Wi-Fi and gives security as the noticeable light can't enter through the dividers, which propose another time of remote correspondence. Such innovation has brought greener as well as more secure and less expensive eventual fate of correspondence.

Keywords: LI-FI, WI-FI, Visible light communication, Data Light.

ORGANOCHLORINES AS XENOESTROGENS

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Abstract: Organochlorine pesticides are the chemicals which are present in the environment in their many fold concentrations. These chemicals concentrate in the crops, continue to be detected in the food chain, accumulate in human tissues and fluid due to their lipophilic nature, and are excreted in breast milk. In addition of being carcinogenic, mutagenic, and teratogenic these are also reported to possess estrogenic activity. Over the years, chemicals with estrogenic properties when administered chronically at high levels or when present in unphysiological amounts for long periods promoted mammary gland carcinogenesis in experimental systems and growth of estrogen-responsive human breast cancer. These pesticides have deleterious effects on the immune system and increased amounts of organochlorines have been detected in certain cancerous tissues.

DECAY ANALYSIS OF COMPOUND NUCLEI FORMED IN α AND HEAVY-ION INDUCED REACTIONS

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Abstract: The investigation of nuclear reactions is an eminent domain of the research in the fields of Nuclear Physics. The analysis of the interaction taking place between two nuclei imparts crucial information regarding the dynamics involved. The mechanism of every nuclear reaction is unique and depends upon target-projectile combination, their energies, the angular momentum shared, the impact parameter with which they collide and so on. The energy associated with nuclear reactions lies in a wide expanse of few MeV/nucleon to GeV/nucleon. For the low energy domain, with energy $E \leq 15$ MeV/nucleon, the processes like evaporation residue (ER), fusion-fission are investigated predominantly through compound nuclear reaction mechanism. Various statistical models have been employed to explore the decay of these compound nuclei but in our studies, we explore the reaction dynamics via Dynamical Cluster-decay Model (DCM). The vitality of DCM over other statistical models is that it provides collective clusterization approach and treats all the decay channels- evaporation residues (ER), intermediate mass fragments (IMFs) and fission fragments at equal footing. The role of various vital parameters of DCM like deformations and orientations, level density parameter, temperature of the compound nuclei, angular momentum and energy of the incident channel have been investigated thoroughly in context to α and heavy-ion induced reactions. It would be of immense importance to extract the roles of these DCM parameters for alpha-induced reactions and to compare the results with the heavy-ion induced reactions. Keywords-collective clusterization, fusion-fission, heavy-ion induced reactions, compound nuclear reactions.

**SEASONAL AND HABITAT EFFECT ON TOTAL LIPID CONTENT IN LIVER, KIDNEY AND
INTESTINE OF SILVER CARP (*Hypophthalmichthys molitrix*) WILD AND FARMED OF TWO
DIFFERENT WEIGHT GROUP 1-3Kg AND 3-5Kg FROM GOBIND SAGAR AND NANOKI FISH
FARM**

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Abstract: The study deals with the estimation of lipids in different tissues like liver, kidney and intestine of silver carp fish (*Hypophthalmichthys molitrix*). The lipid contents were measured in two weight groups 1-3kg and 3-5kg from GobindSagar Reservoir Bhakda and Nanoki Fish Farm. The maximum lipids of liver was found in Summer 10.04 ± 0.04 and 12.87 ± 0.02 and 14.44 ± 0.05 and 16.81 ± 0.03 respectively for GobindSagar and Nanoki Fish Farm in 1-3Kg and 3-5Kg weight group respectively. In kidney and Intestine same pattern was recorded. Total lipid content value in kidney was 8.36 ± 0.02 and 9.89 ± 0.03 for 1-3kg weight group in kidney GobindSagar and Nanoki Fish Farm and 11.77 ± 0.02 and 12.84 ± 0.02 in 3-5 Kg Weight groups respectively. Intestine also recorded the Highest value of Total lipid content in Summer 9.21 ± 0.02 and 10.71 ± 0.04 in 1-3Kg Weight group and 12.89 ± 0.02 and 13.84 ± 0.03 in 3-5Kg weight group in both the sites respectively. Kidney recorded lowest value of total lipid content as compared to liver and intestine in all the seasons and both in 1-3 and 3-5 kg weight groups as compared to liver and Intestine. Total lipid content values observed in 1-3 kg weight group was lowest in Autumn season 6.22 ± 0.03 and 7.66 ± 0.04 in kidney as lowest value as compared to Intestine 6.99 ± 0.07 and 9.81 ± 0.04 and Liver 8.05 ± 0.05 and 12.06 ± 0.01 respectively in GobindSagar Reservoir and Nanoki Fish Farm. In all the seasons Nanoki fish Farm (Cultured Fish) Recorded higher values in both the weight groups. In Rainy season the Total lipid content value observed in 1-3 kg weight group was similar to value of 3-5 kg weight group because of the breeding effect. It was also observed that the proximate composition of fish depends mostly on season, size, age, sex, reproductive cycle as well as breeding season All biochemical parameters differ significantly ($P < 0.001$) among Farmed and Wild both in 1-3 and 3-5 Kg weight groups, under investigation.

Keywords: Lipids, Liver, kidney, intestine, GobindSagar Reservoir, Nanoki fish farm, *Hypophthalmichthys molitrix*, Total lipid Content.

EXPERIMENTAL AND DFT STUDIES ON NON-NUCLEOPHILIC BASES

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Abstract: Lithiation of pyridine and its substituted product is the most common approach for obtaining molecules that are of material and biological interest. Lithiation is a very useful tool for preparing methyl substituted pyridines derivatives. Position of lithiation of 2,4-lutidine in different solvents has been investigated experimentally and theoretically by with and without prior complexation with BF_3 . A variety of different non-nucleophilic bases like lithium diisopropylamide and lithium diethylamide were incorporated to investigate the position of lithiation. A carbanion of 2,4-lutidine formed after reaction with lithiating reagent at -78°C quenched with benzaldehyde and iodine gave products corresponding to exclusive lithiation at alpha-methyl carbon. The yield obtained with these reactions in case of lithiation of BF_3 adduct complexation were far superior to that obtained with lithiation of uncomplexed 2,4-lutidine.

ANALYSIS OF BRAIN TUMOR

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Abstract:-Brain tumor is an abnormal growth of cells which is the most fatal disease on earth. Due to the complex structure of the brain tumor detection is complicated one. Brain tumor causes when a group of abnormal cells grows around the brain or inside the brain, with the help of MRI images. (Magnetic Resource Images).We can quite easily detect the brain tumor. But, it is very time consuming and complicated process to detect the accurate brain image segmentation. Brain tumor abnormality define by the asymmetric and symmetric shape of the brain in the first step of brain tumor detection and the next step is segmentation which have two techniques 1.F-Transform(Fuzzy Transform) 2.Morphological operation. With the help of these two techniques we can detect the actual tumor era in the brain and its boundaries.MRI Images clarity reflects the tumor. The conclude is this that in many cases brain tumor devolves due to some injury which causes in some accidents, but it becomes difficult to detect or believe without undergoing specified treatment.So,we should never ignore the head injury as in above, we have through study an effect of this. A little carelessness some time puts in great trouble in such cases. So,it needs immediate diagnosis which is carried over through MRI and other concerned test. So, always should be careful in such situation

Keywords:BrainTumor, MRI Images,F-Transform (Fuzzy Transform), Morphological operation

HEALTH HAZARDS OF AGROCHEMICALS

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Abstract: Green revolution though rendered India self sufficient in food production, yet it lead to the deterioration of soil, water and air health. High use of agrochemicals is evident from the fact that India produced 216703 MT of pesticides in the year 2018-19. Punjab boasts of earning the title of "Grain Bowl of India" due to very high production of food grains at the cost of natural resources. The impact of the blatant use of these chemicals on animals particularly birds was pathetically depicted by Rachel Carson (1962) in his book "Silent Spring" and as an impact DDT was banned in USA in 1972. This attracted the attention of scientific world and researches were initiated to study the impact of agrochemicals on human health. Pesticides are chemicals used control pests like viruses, bacteria, phytoplasmas, fungi, nematodes and insects that harm the crop. Pesticides protect the crops as well as the produce from insect pests and diseases. Most pesticides, especially the group of organochlorines are very resistant to microbial degradation and have residual time as long as 3 to 4 years. They enter the different food chains in nature and show phenomenon of biomagnification. These pesticides are toxic to human and animals and have been linked to a range of diseases and disorders. An excessive use of these pesticides in agriculture has also been held responsible for very high rate of occurrence of cancer in residents of South West Punjab popularly known as 'Cancer Belt' and Budhlada town is a part of it. The present review is based on the desk study of scientific journals, magazines, newspapers, conference proceedings, online articles and personal communication with the people of Budhlada and surrounding areas.

Keywords: Agrochemicals, Health hazards, Cancer, Biomagnification.

BIO CONTROL-AN ENVIRONMENT FRIENDLY MODE OF CROP DISEASE MANAGEMENT

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Abstract: Biological control is the reduction of inoculum density or disease producing activity of a pathogen or parasite in its active or dormant phase by one or more organisms, accomplished naturally or through manipulation of environment, host or antagonist or by mass introduction of one or more antagonists. The ultimate aim is the reduction of disease by reduction of inoculum of the pathogen, decreased production or release of viable propagules or decreased pathogen growth, reduced infection of host by the pathogen, and reduction of severity of attack by the pathogen. The antagonist organism introduced in the field may exhibit antibiosis, competitive, parasitic or predatory relationship with the pathogen. Diverse types of microorganisms including bacteria, fungi, etc are being used as biocontrol agents in agriculture. They are manipulated and applied for various integrated pest control programs in Agriculture. In recent times people have become health conscious and preference is given to organic products. Since biocontrol do not involve the use of obnoxious and deadly agrochemicals for the protection of crops and agriculture products, it finds better acceptance from producers and consumers. Moreover, it is an ecofriendly and cost effective method of disease control. The biological control involves three techniques i.e. introduction, conservation and augmentation. Introduction means introduce the exotic species or non native species into an area for the long term effect or to fulfil the conditions of ecological homologues. Conservation techniques, in which, natural enemies were protected by avoiding harmful measures that destroy natural enemies or by using measures that increase the longevity, fecundity and attractiveness of an area to natural enemies. Augmentation involved the activities like addition of number of natural enemies into a system or the modifying the environment to promote the number and effectiveness of natural enemies. Extensive researches are being carried out to develop better understanding of ecological aspects of natural antagonists for improving the performance of predators and parasitoids to get better results. The present review is based on the desk study of scientific journals, magazines, newspapers and personal interaction with peoples of this area.

Keywords: Biocontrol, pathogen, environment friendly, agriculture, antagonists.

AGRICULTURAL DEVELOPMENT THROUGH NEW RESEARCH AND INNOVATION

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Abstract: With the introduction of new technology in the agricultural sector of Punjab during the mid-1960s, the area developed rapidly, but in 1990 the area could not sustained development. Due to the utilisation of natural resources were reached at the level of full utilization. In order to break the stagnation in agricultural productivity, the agricultural sector had been strived to achieve a level of redevelopment through crop diversification that has not yielded any significant benefit. Consequently, agricultural growth has been very lower level. The dependence of other sectors cannot be increased immediately to ensure that Punjab's economy is on the path of high growth. It is therefore important to study the factors that determine the technical skills in the field of agriculture, which will also help in deciding whether to use the existing technology or to make any changes to the technology. Technological advancements and technological skills play a significant role in accelerating the growth rate of each sector of the economy, as these factors can reduce production costs and generate greater market returns. As recorded in other areas of the world, the initial capital formation was created through the agricultural development. Schumpeter 1934 stated in his study that to maintain the position in the market and to strengthen it over time, the establishment of production units through the production of superior technical efficiency and technological advancement is must. The Punjab economy facing the stagnation situation and the overall growth rate (1.16 per cent) of the agricultural sector at very lower level. So the future of the Punjab economy deepened on the new innovation and modern thoughts which helps to break this stagnation.

Key words: Agriculture, Innovation, Stagnation, Agricultural Development, Punjab

CHEMISTRY IN SUSTAINABLE AGRICULTURE

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Abstract: Chemistry forms an integral part of agriculture from molecular to organ level. It plays a role from the basics of photosynthesis to the utilization of agricultural produce. The advancements in this practice is only because of active and productive research carried out in chemistry and then its applications to cause the land to produce more abundantly and at the same time to protect it from deterioration and misuse. Increasing population and limited land resources necessitated the adoption of modern agronomic practices, and technologies such as use of high yielding varieties, irrigation facilities, agrochemicals in agriculture. Crop yield per unit area was almost tripled during Green Revolution to render India self sufficient in food production. Synthetic chemistry added vast array of chemicals to be used as fertilizers, herbicides, weedicides, defoliants, insecticides, bactericides, fungicides and nematicides etc. in agriculture field. The use of these chemicals not only increased the crop production but also protected the produce from pests and pathogens. However, the excessive and blatant use of these chemicals adversely affected our natural resources. Very long residual time, non biodegradable nature, entry in food chains and biomagnification ability of some of these chemicals resulted in the loss of biodiversity. Scientists are busy in searching and synthesizing chemicals that are eco-friendly, biodegradable with very short residual time in nature and least toxic to living beings including humans. The present review highlights the advances in the discovery process for new molecules for sustainable agriculture that may offer an efficient and environmentally benign solution.

Keywords: Agriculture, agrochemicals, natural resources, eco-friendly, biomagnification.

HEALTH HAZARDS OF INDOOR POLLUTANTS

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Abstract: The air within homes and other buildings can be more seriously polluted than the outdoor air in even the largest and most industrialized cities. The young, the elderly, women and the chronically ill persons, especially those suffering from respiratory or cardiovascular diseases spend most of their time indoors and are at greater risk. Air pollutant levels in the home increase if not enough outdoor air is brought in to dilute emissions from indoor sources and to carry indoor air pollutants out of the home. In addition, high temperature and humidity levels can increase the concentration of some pollutants. Biologic pollutants include bacteria, molds, viruses, animal dander, cat saliva, dust mites, cockroaches, and pollen. These biologic pollutants can be related to health effects ranging from allergy of skin and respiratory tract to serious diseases like measles, chickenpox, and influenza etc. Aerosol products, dry-cleaned clothing, paints, varnishes, glues, art supplies, cleaners, disinfectants, cosmetic, degreasing, and hobby products, spot removers, floor waxes, polishes, and air fresheners release hazardous volatile organic chemicals like benzene, toluene, styrene, xylene, trichloroethylene, perchloroethylene, methylene chloride, ketones, and aldehydes. These compounds may cause cancer, childhood leukemia, birth defects, retarded growth and development and neurologic problems in babies, endocrine disruption, liver, kidney and CNS problems. Pesticides used in and around the home include DDT, BHC, aldrin, dieldrin, endrin, chlordane, and heptachlor to control insects (insecticides), termites (termiticides), rodents (rodenticides), fungi (fungicides), and microbes (disinfectants). These products are found in sprays, sticks, powders, crystals, balls, and foggers. Short term exposure to these chemicals may cause headaches, dizziness, muscle twitching, weakness, tingling sensations, and nausea whereas; long-term exposure may cause damage to the liver and the central nervous system, as well as an increased cancer risk. Carcinogens like radon, asbestos, lead and arsenic also contribute to indoor pollution. Beside these certain gases like carbon monoxide, ozone, sulfur dioxide and nitrogen oxides may also cause serious health problems to human beings in ill ventilated buildings. The present review is based on the personal observations and desk study of on line literature.

Key Words: Health hazards, Indoor, Pollutants, Biologic, Carci

MULTICOMPONENT SYNTHETIC APPROACH FOR THE SYNTHESIS OF N-SUBSTITUTED β -AMINO CARBONYL SCAFFOLDS

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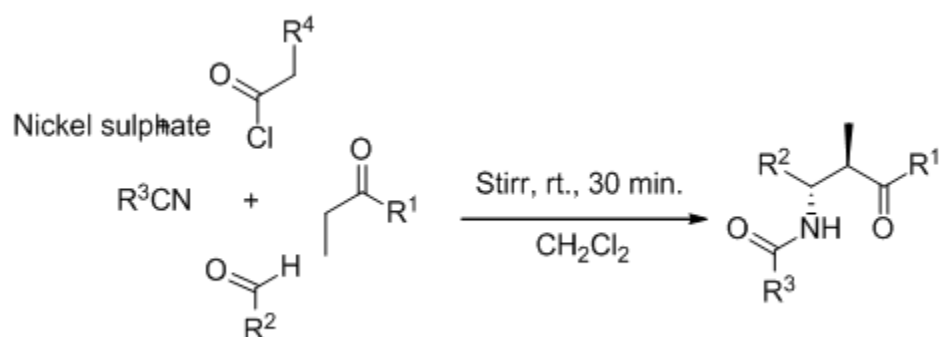
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Abstract: *N*-substituted β -amino carbonyl scaffolds are versatile synthetic building blocks, which can easily be converted into a range of useful and valuable derivatives. These scaffolds have many attractive applications, for example in plant protection, in paint manufacturing and in polymer chemistry. However, the most important application by far is in the area of pharmaceutical products since their skeletons exist in a number of biologically active and pharmacologically important compounds examples being for the preparation of 1,3 amino alcohols, β amino acids, γ lactams, antibiotic Nikkomycin or neopolyoximes. Therefore the synthesis of amino carbonyl compounds continues to be a challenging endeavor.

Not only the synthesis, but also the way by which they are synthesized is of importance. So improvement of synthetic efficiency in terms of increasing yields and decreasing the number of reaction steps for interesting scaffolds is became central to current research on synthetic chemistry. Even though various research groups have reported many catalysts, more and more methods have to be still introduced to get a greener look. If this is our goal, the idea of green chemistry should reflect on various aspects of the reaction. Even though many methods have been reported, some of them suffer draw backs such as longer reaction times, tedious work up, higher temperatures, expensive catalysts, lower yields and feasible only under an inert atmosphere. Therefore, the introduction of new and efficient methods is still necessary for this reaction.

Here we have reported a comparative study on the efficiency of nickel sulphate catalysts for the synthesis of β -amino carbonyl compounds (Mannich type products) via four-component coupling reaction. The study reveals that the catalyst is more efficient in catalyzing the reaction. The method offers several advantages such as high yields, short reaction times, mild reaction conditions, simple experimental procedures, cost effectiveness and tolerance to a wide variety of reactants. The catalysts used are environmentally friendly, inexpensive and highly efficient.

Using the peptide type scaffolds thus produced, many macrocyclic compounds of pharmaceutical importance can be developed using suitable MCRs coupled with other Organic name reactions. Since many nickel salts are commercially available, the study can be extended to explore their possibility also. That is, in addition to the alternate Mannich type reaction reported here, the work can be extended to many other name reactions.



CLEANING ACTION OF DETERGENT BY SURFACE TENSION

METHOD

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Abstract : Cleansing clothes is the important work that hold in every house . There is large no of detergent which are available in the market but it's difficult to choose one of the best detergent .Some detergent like Ariel, Active Wheel, Surf Excel, Tide,Fena, Ezeetc. are available. The cleansing action of the detergent is affected by various factors like solubility, ph value,surface tension. Surfactant are used to reduce the surface tension of water because the detergent have polar ionic hydrophilic head and longer hydrocarbon hydrophobic tail .In the water hydrophobic head interact with the H- bond of water and the tail being hydrophobic repel water molecules but attached the greese and oil on the cloths. Surface tension are attractive force in liquid that pull the surface molecule into the rest of the liquid minimizing the surface area. For calculating the surface tension of detergent we take 2 type of detergent. A- surf Excel and B- wheel We take different concentration of these detergent (0.25%,0.5%,0.75%,0.1%,1.25%) similar way another solution. The detergent that reduce the surface tension of water is the best detergent for the cleansing cloths by the method of surface tension we observe that detergent A is the better as compared to detergent B for cleaning action.

Keywords:Surfactant, detergent, surface tension

BIOSORPTION OF NICKEL USING LOW COST ADSORBENTS - A Review

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Abstract : Heavy metal toxicity caused by industrial waste water and other natural sources has become a threat to the environment and ecosystem for the past many decades. Very small concentration of metallic ions present in water increases the health problems to humans and animals. Nickel is one of the non-biodegradable, toxic, heavy metal ions present in waste water and ground water. Although there are various conventional treatment methods for removal of heavy metals from water and waste water e.g. chemical precipitation, membrane filtration, ion exchange, coagulation, flocculation, electrochemical technique, adsorption and co-precipitation, yet various researches paid their attention towards biosorption which involves adsorption as it is highly effective and economical technique for removal of heavy metals from waste water. Attempts have been made to develop inexpensive adsorbents, is attractive because it reduces the cost of waste disposal, thereby leading to environmental protection. Chemical modification to improve their efficiencies is also discussed. These waste materials pollute our environment or ecosystem and pose the problem of their disposal. So “use the waste to treat the waste” is the best concept to avoid the environmental pollution. In this review various agricultural, microbial, synthetic, natural and other adsorbents used for removing Ni (II) from aqueous solution, optimum parameters and their removal from aqueous solution have been discussed.

SYNTHESIS, CHARACTERIZATION AND CRYSTAL STRUCTURE OF NOVEL COPPER(II) PADDLE WHEEL COMPLEXES; $[\text{Cu}_2(\beta\text{-pic})_2(\text{C}_6\text{H}_5\text{CH}_2\text{COO})_4]$, **1** AND $[\text{Cu}_2(\beta\text{-pic})_2(2\text{-ClC}_6\text{H}_4\text{CH}_2\text{COO})_4]$, **2**

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Abstract : Two novel paddle wheel copper(II) complexes of composition $[\text{Cu}_2(\beta\text{-pic})_2(\text{C}_6\text{H}_5\text{CH}_2\text{COO})_4]$, **1** and $[\text{Cu}_2(\beta\text{-pic})_2(2\text{-ClC}_6\text{H}_4\text{CH}_2\text{COO})_4]$, **2** have been synthesized, characterized by elemental analyses, spectroscopic techniques (UV–vis and FT-IR), magnetic moment determination and their structures have been unequivocally confirmed by single crystal X-ray analysis. Complex **1** crystallizes in the triclinic crystal system with $P\bar{1}$ space group and complex **2** in monoclinic crystal system with $P2_{1/n}$ space group. The structure of **1** and **2** consists of a dinuclear paddle-wheel unit $[\text{Cu}_2(\beta\text{-pic})_2(\text{C}_6\text{H}_5\text{CH}_2\text{COO})_4]$ and $[\text{Cu}_2(\beta\text{-pic})_2(2\text{-ClC}_6\text{H}_4\text{CH}_2\text{COO})_4]$ which is composed of two Cu(II) ions, four $\text{C}_6\text{H}_5\text{CH}_2\text{COO}/2\text{-ClC}_6\text{H}_4\text{CH}_2\text{COO}$ anions and two $\beta\text{-pic}$ moieties. Generally, the equatorial positions of each Cu(II) ion are occupied by four O atoms from four $\text{C}_6\text{H}_5\text{CH}_2\text{COO}/2\text{-ClC}_6\text{H}_4\text{CH}_2\text{COO}$ different ligands, while N atom from each $\beta\text{-pic}$ occupies the apical position on each copper(II) metal centre, forming six coordination bonds. The geometry around each Cu(II) ion can be best described as a slightly distorted octahedron showing tetra-carboxylate type $\text{Cu}_2(\text{RCOO})_4$ unit. The packing arrangements of constituents units in both complexes revealed that the adjacent binuclear units of $[\text{Cu}_2(\beta\text{-pic})_2(\text{C}_6\text{H}_5\text{CH}_2\text{COO})_4]/[\text{Cu}_2(\beta\text{-pic})_2(2\text{-ClC}_6\text{H}_4\text{CH}_2\text{COO})_4]$ are interconnected to each other by intermolecular C-H...O/N (**1**) and only C-H...O (**2**) hydrogen bonding interactions. Besides this C-H...N and N...N in **1** and C-H...N and Cl...Cl interactions in **2** provides robustness to the crystal lattice. No N...N interactions were seen in **2**.

Key words: Paddle wheel, X-ray, copper(II), X-ray

GRAPHENE: THE WONDERFUL MATERIAL

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Abstract :Revolutionary change comes in the technology with the discovery of Graphene by Andre Geim and Konstantin Novoselov in 2003. Graphene is a one atom thick sheet of graphite. It is composed of strong sp^2 -covalently carbon atoms arranged in a 2-dimensional regular hexagonal pattern. Graphene is a strongest, lightest, flexible, transparent, highly electrical and thermal conductive, non corrosive and biodegradable in nature. Graphene is 4-times stronger than diamond. It has 98% visual transmission rate. It has zero gap conductivity. Nanoporousgraphene has efficient semipermeable properties. Graphene transistors are more efficient than silicon transistors. Graphene have high surface to mass ratio. Graphenebasedultracapacitor with high recharge rate and a normal discharge rate. Due to it's flexibility, it can be used to make LED screens. Graphene have high signal to noise ratio. Graphene based nanomaterials are used in food analysis. It can be used as biosensors, DNA sensors, pH sensors and for detection of various analytes. Graphene has antimicrobial properties. Grapheneis also efficient in solar cells, photonics, plasmonicsand Broadband optical devices. Hence due to it's tremendous industrial applications, it is one of the most researched material in the world. Graphene is really a wonderful material.

Keywords: Graphene, Ultracapacitor, Broadband.

DENTAL BIOMEDICAL WASTE MANAGEMENT

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Abstract : Hospitals are the health care institutions which have existed since time immemorial in one form or another and have become more complex with time because more health problems and advances in treatment technology. The general public now a day is more conscious regarding oral health and as a result there is significant increase in the dental hospitals, clinics and dental teaching institutes and correspondingly there is tremendous increase in the amount of biomedical waste generated by the dental hospitals, clinics and dental teaching institutes. The biomedical waste generated in dentistry has recently emerged as an issue of major concern not only to hospitals and clinics and other establishments but also to environmentalists and general public. In this paper an attempt has been made to review the waste generated in the dentistry. The emphasis has been laid to throw a light on the effect of this waste on environment and human health to create awareness among dental professionals and general public regarding its management and disposal

WATER CRISIS IN PUNJAB

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Abstract : There is a concern over the state of water resources in Punjab, which is facing a rapid depletion in ground water level and its contamination, because of bountiful agricultural production involving the cultivation of water intensive crop like paddy and the use of genetic modified seeds and toxic chemical fertilizers. It reveals that state has not been able to measure up so far as conservation of their natural resources. The Comptroller and Audit General of India (CAG) indicated that Punjab state has been failed to take measures as recommended by Central Ground Water Board (CGWB) to check the falling levels of ground water. The CGWB master plan identified Punjab as a state where the ground water extraction was among the highest in the country. The Board has suggested to construct 4.55 lakh ground water recharge structure that included 80,000 shafts, rooftops of three lakh houses, besides 75,000 government and institutional buildings, but only 103 such structures have been put in place. Fed by perennial rivers, besides an elaborate canal system that helps it withstand the vagaries of rainfall. The state did not have reasons to worry till the overexploitation of water resources aided by policies that has increased the profligacy that is resulting in problems. A welfare state pursuing populist policies, with emphasis on managing supply, rendered the scarcity value of water ineffective. In rural and semi-urban areas, groundwater is a major source for irrigation and drinking. But the situation gets compounded because the quality and level is not even across state. While the south-west parts of Punjab have shallow water level, as also the presence of fluoride and nitrate, water level is deepest in central and north-east parts of the state. Constructing structures involves expenditure and state and centre should be clear about their liability.

References : The Tribune, Reports of Central Ground Water Board (CGWB)

COMPARATIVE STUDY ON SWARM INTELLIGENCE ALGORITHM FOR LOAD BALANCING IN CLOUD ENVIRONMENT

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Abstract: Cloud computing is an internet based computing. It provides the on demand services to distribute the resources as a servers, software, database and infrastructure over the internet. The immense usages of the cloud services arise the crucial issue of maintain the load on server and we are need for an efficient load balancer in cloud computing. Good load balancing enhancing the overall performance and proper utilization of resources on cloud computing. Load Balancing is a process of distribute the entire workload in equal way to one or more servers in cloud computing. There are a lot of static and dynamic based load balancing algorithms are used to increased reliability, efficiency,performance and many more parameters for cloud computing. In this paper present the review and comparative study on the Swarm intelligence (SI) based Particle Swarm Optimization (PSO), Ant Colony Optimization (ACO), Artificial Bee Colony (ABC) load balancing algorithms.

DENTAL BIOMEDICAL WASTE MANAGEMENT

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Abstract : Hospitals are the health care institutions which have existed since time immemorial in one form or another and have become more complex with time because more health problems and advances in treatment technology. The general public now a day is more conscious regarding oral health and as a result there is significant increase in the dental hospitals, clinics and dental teaching institutes and correspondingly there is tremendous increase in the amount of biomedical waste generated by the dental hospitals, clinics and dental teaching institutes. The biomedical waste generated in dentistry has recently emerged as an issue of major concern not only to hospitals and clinics and other establishments but also to environmentalists and general public. In this paper an attempt has been made to review the waste generated in the dentistry. The emphasis has been laid to throw a light on the effect of this waste on environment and human health to create awareness among dental professionals and general public regarding its management and disposal

HARMFUL HEALTH EFFECT OF SOME ORGANIC COMPOUNDS USED IN DAILY LIFE AS HOUSEHOLDS

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Abstract : The present paper deal with the study of commonly used compounds in daily life for various purposes in which some compounds are useful but has adverse effect on our life and environment. These compounds have become essential for our life activities that without the use of these compounds ,the day to day activities of human life can not be performed . Some of these compounds are Bis phenol – A(BPA),LPG(LIQUIFIED PETROLEUM GAS), MOTH BALLS. So the present study include the composition ,occurrence mode of entry ,mode of action and harmful effect of these compounds but we have to use them wisely or carefully with all precautions ,so that we will minimize the effect because we cannot completely ban them .

Key words :Bis phenol-A, Moth balls, LPG. Daily life uses, adverse effects.

FOOD WASTAGE IN INDIA -A CASE STUDY

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Abstract: Food wastage is huge problem in India and now a days it is main concern of food chemistry and food safety. The main cause of food spoilage is physical, chemical changes, micro-organisms, fungi and some other bacteria, heavy metals pesticides etc. Secondly, oxidation, rancidification, change in PH-value, insects, enzymatic reaction spoils' food material. Food's nutritional value changes due to decomposition of proteins, carbohydrates, vitamins. This also effect organoleptic features like color, odour and texture. By wasting food, we also waste "time and energy", wealth and sources .Wastage contain moisture, high level of sodium salt and other chemicals which creates pollution in environment and great impact on hygiene and health. Food waste includes restaurants, supermarkets, residential blocks, cafeterias' waste food producing industries etc. According to report upto 40% of food produced in India is wasted and about 21 million tones of India's entire wheat produce are wasted and 50% of all food across in the world and situation raises a concern that "food never reaches the needy". According to GHI=Global Hunger Index India has 63 rank among 88 countries and India wastes Rs.244 crore worth of food a day. According to agricultural ministry INR 50,000 crore worth of food produced is wasted every year in the country .According to FAO, estimates in the state of food security and nutrition in world 2017 report 190.7 million people are undernourished in India. Other source like 300 million barrels of oil are used to produce food is ultimately wasted. Food wastage is happening at every level from harvesting, transporting, processing, packing and consuming. Wedding, events, restaurants, hostels and houses are major sources of cooked food. For reduction of food wastage store it carefully, donate accumulated food, freezing food, and eat leftover, also use of solar dryer to extent the shelf life of fruit improve packing techniques, sell by dates, and treat expiration as guidelines. Hence it helps to save money, health and hygiene. It also benefits the income growth and climate change.

AMLA: A NOVEL AYURVEDIC HERB

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Abstract: In the present era various wonder medicines have been invented which have been successful to treat some of the deadliest diseases like cancer and AIDS. Today most of the research studies are going on concerning how to cure similar diseases. In this process we have forgotten our ancient medicine systems like Siddha, Ayurveda and Unani Systems. There is no denying the fact that synthetic medicines like antibiotics, steroids, painkillers and other vaccines ensure faster and quicker relief. However they are responsible for causing many harmful side effects, and in some cases even death. They may be effective in curing the disease they have been manufactured to treat, but they may be harmful in other aspects for the body. This has in turn led to the decrease in average human life span. In contrast the ancient people used to live longer since their lifestyle depended mostly on nature. They searched for drugs in nature ever since the ancient times in an attempt to rescue from disease. An important such plant, *Phyllanthusemblica*, popularly known as the Indian Gooseberry or Amla is perhaps the most important medicinal plant in the Indian traditional system of medicine, the Ayurveda. *Amla* is an excellent source of Vitamin C; hence it helps boost your immunity, metabolism and prevents viral and bacterial infections, including cold and cough. It is known to be associated with a range of polyphenols which fight against the development of cancer cells.

NECESSITY OF SUNSCREEN

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Abstract : Sunscreens also known as sunblock are the only topical treatments that have been shown to protect skin aging and are essential for all of us. Sunscreen usually block erythymal wavelengths $<325\text{nm}$ well. The thinner the layer of sunscreen applied, the UV radiations reach the skin. Thus, if not applied thickly enough, some UV radiations will reach the skin. Main component of sunscreen is spf (sun protection factor). The effectiveness of sunscreen is indicated by spf which represents the ratio of amount of radiation needed to produce erythema with and without sunscreen. Regular daily use of SPF 15 sunscreen can reduce the risk of developing squamous cell carcinoma (SCC) by about 40% and lower melanoma risk by 50%. Sunscreens should be applied to clean, dry skin 20-30 minutes before being exposed to the sun. The particles of sunscreen include zinc oxide and titanium dioxide in micronized form and essentially block UV light from entering the skin. Sunscreens are necessary for everyone as they filter the UV radiations which are one of the main reason for cancer. The market in sunscreen which is estimated at more than \$40 million in west germany alone and in India it is 380 crores.

TO CHECK MILK AS A BALANCED DIET

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Abstract: Under the act of food adulteration the milk is also adulterate. After that there is many companies gives their packed milk in the market. Which are having different different adulteration Qualities which are affect our health by taking that adultrate milk in our diet. All packed milk having different different adulteration value. In this research we are found that which milk is more adultrate or which is less. Because this is necessary to find out the quality of adultrate milk due to some of the the are less good for our health and can be long time consumption of adultrate milk cause injurious to health. Here we have some simple methods to know the adulteration of milk by perform some tests like water, starch, urea, detergent, synthetic milk, glucose and etc. Like here we test for urea, if it gives the change in colour of the red litmus into blue it indicates the presence of urea. And how that we performs other tests Detergent. Shake 5-10 ml of sample with an equal amount of water. Lather indicates the presence of detergent. By the result of thistests helps us to choose a good quality of milk that is not injurious to our health

Keywords: adulterate –contaminated.

Reference: Food Safety and Standards Authority of India (FSSAI)

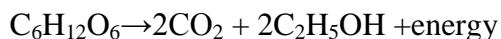
CHEMISTRY IN EVERYDAY LIFE

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Abstract:. Chemistry has influence our life so much that we do not even realize that we come across chemical every moment. Let's start with the morning time. First we use toothpaste which contain sodium monofluorophosphate and colour flavouring foaming agent sodium sulphate. At breakdown table yeast is microorganism which contain enzyme and catalyze the reaction



Orange, pineapple and strawberry rich in vitamin C Let's move to into kitchen. Onions make us cry inside the onions sulphur is present .Use of spices-it is derived from organic compound phenol. Aroma- Esters give aromatic smell. It is formed by benzyl alcohol and acetic acid. Let's go drink to celebrate joy. Three type of drinks are beer, wine and spirit all these alcoholic drink contain ethanol. Alcohol cause disinhibition Alcohol oxidised to acetic acid in liver. Time to go to sleep adenosine present in our brain and slow down nerve activity when we sleep. Without chemistry life is not possible. Chemistry may be enjoyable to anyone. But we have to care about harmful effects of chemistry. At the end we can say that chemistry is the great way to know life in better way.

Keywords: Toothpaste, Onion, spices, Drugs, Alcohol

Reference: Chemistry in daily life by Kirpal singh, Researchgate.net

FOOD PRESERVATIVES

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Abstract: Food preservative is process of treating and handling food to slow down spillage (loss of quality,edibility or nutritional value). Preservation usually involves preventing the growth of the bacteria, yeast, fungi and other microorganism .With the help of food preservative we can preserve the food for longtime pickles, milk ,fish and meat etc. These are two types of preservatives one is the natural preservatives like the mustard oil and the other one is artificial preservatives like sodium benzoate, ascorbic acid. Food preservative help in increasing the self-life of food.It saves the time by reducing preparation time and energy, as the food has already been partially processed food preservative decreases nutritional value of food. Now a days these are many methods developed like chemical, microbial, refrigeration etc. These are certain preservatives in food that are helpful if taken in more then the prescribed limit. For our better health some food authorities had made FSSAI which means food safety and authority of India which define that a substance which when added to food for the preserving is good for our health. Sodium benzoate is best preservative which is acidic in nature .according to FSSAI it is best preservative.

Keywords: Preservative, natural, artificial, food

HOW MUCH ANTACID SHOULD BE TAKEN DURING ACIDITY

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Abstract: Whenever there is an acid in our stomach we take antacids these antacids just neutralize of acids but how much we should take in 1 doses of that it can just neutralize not affect our body so we have to take some experiments .To find that these experiments related to find that how much we should take this experiment so we could done it by taking various uses of antacids at different time the different types of personal and then we find that how much amount is a utilize since our blood is a buffer solution so we have to take minimum amount of these minimum amount is A liquid antacid (Aludrox MH, Wyeth) with neutralizing capacity of 2.3mmol HCl/ml was administered in graded doses of 7.5 ml one hour and three hours after each meal, six times a day for four weeks.(BS Anand et al. 1984).

Keyword: antacid, stomach, neutralization, buffer solution.

AIR POLLUTION

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Abstract: Unwanted change due to extra amount of harmful gases like sulphur dioxide(SO₂), nitrogen dioxide(NO₂), carbon monoxide (CO), CFC chloroflouro carbons and other industrial wastage to our fresh air which is very harmful and poisonous for our health call as air pollution. In the present time, air pollution is most serious environment problem for human life as well as for our earth. The major sources of air pollution are thermal power plants, industrial gases and waste material, burning of agriculture waste, road transport, nuclear power plants, domestic sources. All these sources are helpful for our Development and economic growth but they pollute our environmental air. Air pollution causes acid rain, global warming, smog and other environment issues. Produce adverse effects on our health some of there are problems like headache, skin problems, irritation in eyes, breathing problems and in environment. So we have to make efforts to control air pollution or to reduce air pollution because we are totally depend upon these energy sources and facilities which causes air pollution so we can not leave them but usage can be reduced to some extent by taking steps at local level and global level.

Keywords: SO₂, NO₂, Environment issue, Adverse effect

EFFECTS OF PESTICIDES ON ENVIRONMENT

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Abstract: Pesticides are the materials used to kill the pests and insects that cause harm to crops. Various pesticides have been used for the protection of crops. The pesticides save the crops but have a destructive impact on environment. Excess use of pesticides may even cause the extinction of a wide variety of living organisms or effect their survival. It leads environmental pollution due overuse of pesticides. These chemicals have long term effects on human health. Bio magnification is another major issue due to the use of chemicals like DDT as the pesticides. There are both acute and chronic effects of the pesticides. In Punjab the percent area being treated by pesticide was calculated to be high in cotton (98.4%) followed by sugarcane (96.3%), paddy (93.6%) and wheat (91.7%) while per cent area was calculated to be lowest in case of maize crop (71.1%) (Manoj Sharma, et al., 2018) The consumption of pesticides has risen considerably in India over the past decade - in 2014-15 it was almost 50% higher than in 2009-10. That's a 50% spike in pesticide use in a span of just 5 years. There is a need to integrate the studies of departments including environmental studies to understand the direct and indirect effects of pesticides on the environment.

Keywords: pesticides, environment, pollution, biomagnifications, acute and chronic effects of pesticides.

Reference: - indiawaterportal.org, environmental Chemistry by H. Kaur, researchgate.net

CORROSION PROBLEM - AN OVERVIEW

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Abstract: Corrosion is the deterioration of material due to chemical reaction with environment. It is generally taken to be the wastage of metal by action of corrosive agents. In essence, corrosion of metal is an electron transfer reaction. An unchanged metal loses one or more electrons and becomes a charged metal ion.



In an ionizing solvent, metal ion initially goes into solution but may then undergo a secondary reaction, combining with other ions present in environment to form an insoluble molecular species such as rust or aluminum oxide. Corrosion has impact on the economy directly. The annual corrosion cost range from 1 to 5% of GNP for any nations. The impact of corrosion is not only related with cost but also with safety hazards and life losses. Hence, corrosion can be prevented by several methods. The material selection process becomes one of the more important part of corrosion prevention. In electroplating, zinc metal is used to cover the metal surface. Zinc wires are used with thermal spraying for corrosion protection of steel.

Keywords: Corrosion of metals iron, aluminum, steel metal etc.

Conclusion: Corrosion Can be prevented by applying grease, paint, galvanization, cathodic protection, anodizing etc. By these methods we can save lots of money and environment.

References:

- 1 "Corrosion and Its Control" by H Uhlig and RW Revie.
- 2 "Corrosion and Protection" by Einar Bardal.

COFFEE IS FRIEND OR FOE

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ABSTRACT: Coffee is a brewed drink prepared from roasted coffee beans, the seeds of berries from certain coffee species. I think most of us start our day with the cup of coffee but, you ever wondered about, that this cup of coffee is healthy or unhealthy. According to many researchers, It contain many antioxidants, other active substances which help to reduce inflammation and protect us from diseases. A person drinking coffee everyday have stronger DNA, healthy liver, have less chances of having colon cancer, Parkinson's disease, kidney diseases and depression. Black coffee prevent cavities. Also, coffee is made from seeds of plants so it cannot be harmful for our health but, excess of something is always harmful. Coffee contains caffeine, It replace adenosine (the chemical which make us sleepy) and we are able to awake for longer time. But, our brain build more receptors and we become more addicted to coffee. Also, we add various flavor's, milk product and sugar to it which make coffee unhealthy for our body. Caffeine stimulates our body to produce more adrenaline, which increases heart pumping. Excess of coffee cause trouble in falling asleep, problems in digestive system, increase anxiety. Conclusion:-from above discussion, we come to know that health benefits of coffee are quite amazing. So, if you enjoy a cup of coffee everyday then you are actually keeping your body healthy. But make sure you take simple coffee and in limited amount.

Keywords: Advantages and disadvantages of coffee

Wireless Sensor Network in Medical Sciences: A Survey

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Abstract : Wireless Sensor Network is capable of collecting, manipulating and performing computational and communicating wireless abilities. So WSN is becoming one of the fastest developing technologies in the field of human related activities. WSN has attracted researcher due its utility in wide number of areas from agriculture, defence, environmental and habitant monitoring and now in the field of medical sciences, leading to a great impact on the mind of medical researchers and doctors. The development of WSN in medical sciences have enable rapid growth in telemedicine system and remote monitoring of patients and helping in providing the timely health information and supporting potentially extending the reach of health care by making it available anywhere, any time. In this survey we have investigated the application of WSN in various fields of medicine and medical sciences to improve the management of health care and assistance of personal with cost effective medical appliances based on wireless sensor network and challenges in hardware and software for the design of medical sensor network is presented. We have also highlighted the future of WSN in medical feild.

GRAVIMETRIC DETERMINATION OF THE SOLUBILITY PRODUCT CONSTANT FOR LEAD CHLORIDE

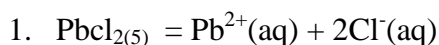
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Abstract: In the experimental method the equilibrium exhibited by slightly soluble ionic compounds in water is explored. Most ionic compounds even those called soluble have a limited solubility in water. If more than this amount is added solids will remain undissolved. Slightly soluble ionic compounds are often called insoluble because they have a relatively low solubility.

Pb(II) chloride the insoluble ionic compound used, is assumed to dissociate



K_{sp} the equilibrium constant for the dissociation reaction

$$2. K_{sp} = (\text{Pb}^{2+}) (\text{Cl}^{-})^2$$

Mass measurements are made in order to determine the amounts of dissociated and undissociated PbCl_2 . K_{sp} is then calculated using equation 2. Since PbCl_2 is insoluble K_{sp} should be very small ($\ll 1$). This reflects the fact that the concentration of dissolved ions is very low. The K_{sp} for PbCl_2 dissociation was found. Three trials were performed using about 0.77 g PbCl_2 each time. One trial performed in 25 ml pure water one trial was performed in 25 ml 0.10 M $\text{Pb}(\text{NO}_3)_2$ so the effect of additional dissolved ions could be assessed K_{sp} of PbCl_2 was found to be 1.59×10^{-5} even though it was hard to measure the concentrations the result were pretty good. When solubility product > ionic product then unsaturated solution is formed and no ppt. formed by the addition of more solute and vice versa.

Reference:

1. National Institute for Occupation and Health.
2. Classifications-cl inventory.

HOW TO INCREASE THE PERCOLATION RATE TO INCREASE THE WATER LEVEL OF EARTH

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Abstract: In next decay decreasing water level of earth will not be a problem but reality of life so to tackle this we have to do some major events. One of the fundamental researches that can do it sustainably is percolation process. This is an easy process but the major problem about that it is very slow process. If we want to tackle it we have to increase percolation rate so that water level can reach at pre industrialization period as it was and can go for sustainable growth. In design, we use special type of utensil to check percolation rate with different mixtures of soils, says A, B, and C, with different compositions and mixtures. Collect these samples from different farms with different type of soil type A,B,C arranged them in special container so that its percolation rate may vary in spite of that we was applying magnetic field around it as well as used different types of water from different sources rain water, ground water, tap water with salts. This is all quantitative techniques all this data is shown in graphs. When we analyze these graphs find that there is decrease in percolation with time. Now why this decrease how we can increase it. Is this increase of percolation rate effects the quality of water? Rate of percolation decrease with time for same soil we can increase it with increasing water concentration but this also vary with this change, in spite of that temperature gradient plays an important role in percolation rate and artificial measurement is important for that problem

CORONAVIRUS :NCOV-2019 (AS A FEAR)

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Abstract: In December 2019, a pneumonia outbreak was reported in Wuhan China and which raised intense attention not only in China but internationally. Firstly, the virus was suspected to have originated in snakes. But many leading researcher disagree with the conclusion. The virus has 96% similarities to a bat coronavirus so an origin in bats is widely suspected, because the warm –blooded flying vertebrates are ideal hosts for the coronavirus genes. Coronavirus are believed to have a significant proportion of common colds in adults and children and varies from person to person. The name coronavirus comes from the Latin word *corona*, meaning crown or halo. Under an electron microscope, the image of the virus looks like a solar corona. Coronaviruses are a family of viruses that can cause illnesses such as the common cold, severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). A recent cluster of pneumonia cases in Wuhan, China, was caused by a novel betacoronavirus, the 2019 novel strain coronavirus (2019-nCoV). It spread through person to person and symptoms can show up anywhere from 2 to 14 days after exposure. There is no vaccine for coronavirus. At last, to prevent a coronavirus infection, do the same things as similar as to avoid the common cold such as wash your hands and keep your hands and fingers away from your eyes and nose.

Keywords : Novel strain, vertebrates, gene

TO CONVERT UNUSED Wi-Fi SIGNALS INTO USABLE ELECTRIC POWER

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Abstract: Demand for electricity increase, due to population growth, life style choices , economic expansion. Indian's electricity generation is primarily from coal. As a result of interconnection of grid and power plants been increased electricity transfer from one region to other. This results in imbalance of pollution loads between the communities & consumption region. By this present study explain how electricity produce by Wi-Fi signals produce electromagnetic radiations. These electromagnetic radiations convert into electricity by device "Rectena". This device is made from 2D material called Molybdenum disulfide (MOS₂) combine with antenna & rectifier. Firstly antenna picks up electromagnetic radiation & convert into alternating current. Then passes through diode which convert into direct current that use in electric circuit. This device captures signals up to 10GHZ including in range of Wi-Fi devices. Wi-Fi signals for the production of electricity is more prominent method as compare to other methods of production of electricity because it has greater efficiency, no production of disposal, less expensive , environment friendly. It helps to charge our electrical appliances. The Wi-Fi hotspots can use to broadcast its signal without special broadcast licence is 100 mw. Hence 100 mw. Is radiated to all directions. This is the noble method harvests power from environment . This paper represent review on formation of electrical power by using wireless fidelity.

Keywords:- Rectenna , electromagnetic radiation , electricity.

A COMPREHENSIVE STUDY OF WIRELESS SENSOR NETWORK IN HEALTH CARE

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Abstract : With the advancement of technological systems for improving the health care services for quality of life. Wireless Sensor Network is emerging as one of the promising technology and considered as one of the eminent research area in computer science and interdisciplinary subjects as a concept based on artificially intelligent system even in health care sciences. As the existing health care systems provides good information related to health .but there is a need of altering mechanism based on artificially intelligent system for monitoring and surveillance. As realising the importance of health care for elderly chronically ill and in odd conditions especially in case of children and elder persons to provide a quality care in absences of other family member. In this study we have investigated the technological solution to improve the health and social care with addition to existing system. We have evaluated the use of Wireless Sensor Network in improve the quality of life and the challenges of Wireless Sensor Network for health. We have also provided analysis of related technology in health care like RFID, Medical sensors, remote monitoring etc. Helping in making the health care application becoming more productive and become within the reach of ordinary peoples

Recent Trends in Photostabilization of Polymers – A Review

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Abstract: Material degradation is catching attention of world these days, as materials are precious resources. Research is continuously going on in finding the best and economical ways to prevent material degradation and extend life of material for various applications. The use of polymeric material is continuously expanding in industries. So, the study of polymer degradation and polymer stabilization is of considerable practical importance. This paper reviews the recent research in field of photostabilization of polymers.

Keywords: Photostabilisation. Polymer. Degradation

Review Paper on Recovery of Monomer Styrene from Polystyrene

Foam Food Contact Article

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Abstract: Degradation of polystyrene into styrene was studied using solid bases as catalysts. It was found that solid bases were more effective catalysts than solid acids for the degradation of polystyrene into styrene. It was found that the most effective catalyst, BaO which give 90% yield of styrene. It is simple, environment friendly process of degradation.

Synthesis, Characterization and role of Non-covalent interaction of Copper(II) p-Chlorobenzoate/Phenoxyacetate Complexes

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Abstract : In recent years, transition metal coordination complexes have received a great deal of attention in the field of solid state chemistry and crystal engineering due to their Potential applications in catalysis, chemo sensing, porosity, luminescence, non-linear optics, chirality, electrical, magnetic and optical devices. Copper plays an important and indispensable role in different types of biological processes as it is an essential trace element. The Non-covalent interactions endow many fascinating properties such as process ability, self-healing, recycle ability to the lattice. Two novel copper(II) Complex es of p-chloro benzoate/phenoxyacetate were synthesized with nitrogen donor Ligand N,N,N',N'tetramethylethane-1,2-diamine. The newly synthesized complexes have been characterized by elemental analysis, spectroscopic methods FT-IR, UV-vis, thermo gravimetric analyses and single-crystal X-ray structure determination.

Keywords: Copper(II) complexes, Ligand, Copper(II) carboxylate, N,N,N',N'tetramethylethane-1,2-diamine, phenoxyacetate, p-chlorophenylacetate

References: [Lindoy, L.F., et al., (2013); Wong, C.H.; et al., (2013); Seo, J.S. et al., (2000).; Horn, D.; et al., (2001); Eddaoudi, M.; et al., (2002); Arunkumar, E.; et al., (2004).].

ਯੂਨੀਵਰਸਿਟੀ ਧੁਨੀ

ਆਸਾ ਮਹਲਾ ੧॥ ਚਉਪਦੇ॥

ਵਿਦਿਆ ਵੀਚਾਰੀ ਤਾਂ ਪਰਉਪਕਾਰੀ ॥

ਜਾਂ ਪੰਚ ਰਾਸੀ ਤਾਂ ਤੀਰਥ ਵਾਸੀ ॥੧॥

ਘੁੰਘਰੂ ਵਾਜੈ ਜੇ ਮਨੁ ਲਾਗੈ ॥

ਤਉ ਜਮੁ ਕਹਾ ਕਰੇ ਮੇਂ ਸਿਉ ਆਗੈ ॥ ੧॥ ਰਹਾਉ॥

ਆਸ ਨਿਰਾਸੀ ਤਉ ਸੰਨਿਆਸੀ ॥

ਜਾਂ ਜਤੁ ਜੋਗੀ ਤਾਂ ਕਾਇਆ ਭੋਗੀ ॥ ੨॥

ਦਇਆ ਦਿਗੰਬਰੁ ਦੇਹ ਬੀਚਾਰੀ ॥

ਆਪਿ ਮਰੈ ਅਵਰਾ ਨਹ ਮਾਰੀ ॥ ੩॥

ਏਕੁ ਤੂ ਹੋਰਿ ਵੇਸ ਬਹੁਤੇਰੇ ॥

ਨਾਨਕੁ ਜਾਣੈ ਚੋਜ ਨ ਤੇਰੇ ॥ ੪॥

(ਸ੍ਰੀ ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ, ਪੰਨਾ ੩੫੬)



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