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Anti diabetic (AD), stiffness and hardness studies of 2-[4-(Trifluoromethyl) phenyl]-1*H*-benzimidazole crystals - (TFMPHB) macro and nano crystal

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ABSTRACT

TFMPHB full scale and nano precious ones are having significant propel on electronic capacity, stage blending, recurrence conditioning and forced correspondences and different utilities in bio and drug store fields and in enterprises as well. Large scale crystals have smallest significances by appraisal contrasted with nano outline of TFMPHB prepared by mill factory arrangement. The nano form of TFMPHB crystals are of 21 nm respectively, the XRD data reveals the macro crystals are having the formula C14H9F3N2 are of a = 9.2292 Å, b = 9.8117 Å, c = 25.347 Å, orthorhombic with space group Pbca, the macro level SHG (second harmonic generation) NLO (Non linear optical) is higher than that of typical KDP one. Here, both the macro and nano crystals are under studies such as Anti diabetic and hardness profile and reported, TFMPHB are best for electronic sift and for frequency doublers and in gadgets based on influx.

Selection and peer-review under responsibility of the scientific committee of the International Conference on Nanotechnology: Ideas, Innovation and Industries.

1. Introduction

Nano particles have more swing on applications over their partners which are full scale or small scale shapes and nano structure blast will be in exponential level by the accommodation and skill and enablement above beneficial structures TFMPHB is SHG NLO in large scale level and in nano structure it is 21 nm by processing [1–13] as given by Table 1. A nano precious one is a concern atom having in any event one amount petite than 100 nano meters, taking into account quantum section (a nano molecule) and made out of particles in either a held or poly challenge cluster. The element of nano crystals remembers them from predominant valuable ones. Nano precious ones are unadulterated recommendation with degree in the nanometer force unprejudiced to leave or include by an insignificant layer of the surface materials.

2. Experimental

Benzimidazole and its branch are inspected as a proficient assembly of geologically vigorous heterocyclic composite that reveal a hodgepodge of expected performance in bio such as antibacterial, anticancer etc. The dihedral loom between the benzimidazole ring arrangement and the trifluoro-substituted benzene ring is measured and it is nearly 30.1°. In addition, undernourished C—H···F hydrogen bonds and a flimsy C—H···π boundary bond manacles into a 2D arrangement corresponding to (001). A mixture of 4-(trifluoromethyl) benzaldehyde (20 mmol) and o-phenyldiamine (13 mmol) in benzene (3.0 ml) was refluxed for 6–7 h on water immerses. The title compound was dissolve in ethyl acetate and position sideways for slow evaporation to obtain pallid yellow crystals.

3. XRD data, NLO for macro crystals

The TFMPHB macro crystals are grown by slow evaporations solution growth method AND the macro crystals are having the

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ABSTRACT

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1. Introduction

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2. Experimental

Benzimidazole and its branch are inspected as a proficient assembly of geologically vigorous heterocyclic composite that reveal a hodgepodge of expected performance in bio such as antibacterial, anticancer etc. The dihedral loom between the benzimidazole ring arrangement and the trifluoro-substituted benzene ring is measured and it is nearly 30.1°. In addition, undernourished C—H···F hydrogen bonds and a flimsy C—H···π boundary bond manacles into a 2D arrangement corresponding to (001). A mixture of 4-(trifluoromethyl) benzaldehyde (20 mmol) and o-phenyldiamine (13 mmol) in benzene (3.0 ml) was refluxed for 6–7 h on water immerses. The title compound was dissolve in ethyl acetate and position sideways for slow evaporation to obtain pallid yellow crystals.

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Anti-diabetic (AD) and crystal stiffness characterizations of NaBr-added L-alanine (LANB) – A comparative analysis in macro and nano scale crystals

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ABSTRACT

LANB crystals are having substantial opto-electronic application, phase matching, frequency matching and power transmission and in natural science as anti-diabetic (AD) and in other utilities. Macro crystals have smallest amount applications by assessment measure up to nano form of LANB. Macro crystals are put in arrayed by slow evaporation solution growth method and nano crystal by ball milling method. LANB are prepared by L Alanine with NaBr 5 h of stirring for 30 days with a, b, c in Å as 6.03, 12.38, 5. 80 and crystals specialty is SHG-NLO. The nano outline of LANB crystals are of 206 nm and 21 nm correspondingly. The toughness, brittleness, Mohs hardness and the yield strength, Young's modulus and stiffness of LANB is also studied and reported here.

Selection and peer-review under responsibility of the scientific committee of the International Conference on Nanotechnology: Ideas, Innovation and Industries.

1. Introduction

Nano particles have more forces on pertinent relationships more noteworthy than their supplements which are large scale or small scale shapes and nano structure effect will be in exponentiation level by the utility and viability and enablement over different structures. The LANB have great extension for against diabetic by the L Alanine nearness and have increments in hindrance as focus increments and the IC esteem as 30.4 for full scale and in nano structure it is 25.9. Additionally the nm varieties will have great productivity when the size of the example diminishes from 206 to 21 nm. The 1:1 adduct of L-Alanine and sodium bromide (L-ANaBr) precious stone has been developed from watery arrangement by a moderate dissipation method. L-alanine and sodium bromide were utilized in the proportion 1:1 for union. Portrayals were done to consider the warm, optical, and mechanical properties of the developed precious stone. Single-precious stone X-beam diffraction examination shows that the developed gem has a place with the monoclinic framework. The crystalline nature and its different planes of reflections were seen by powder XRD investigation. The mechanical property of the developed precious stone examined utilizing Vickers small scale hardness estimation uncovers that the gem is a delicate material. Amino corrosive family precious stones have been concentrated by numerous material researchers form any years because of their nonlinear action and ferroelectric or against ferroelectric properties [1,2]. L-alanine isomer is one of the 20 amino acids encoded by the hereditary code. A solitary gem of L-alanine has a place with the orthorhombic precious stone framework with a space gathering of $P2_12_12_1$ [3]. As of late, observable research has been centered around semi organic material, which is a natural material blended in with inorganic materials. They have been attracting much attention because of high nonlinearity, chemical flexibility, high mechanical and warm soundness, and great transmittance [4–6]. Amino acids blended in with inorganic material consistently give fascinating outcomes to researchers. Semi-organic nonlinear optical crystals are framed by amino acids with inorganic materials and have the benefits of high optical nonlinearity of the natural amino acids [7]. L-Alanine

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Anti diabetic (AD) studies of picolinium maleate nano crystals

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ABSTRACT

By and large in material applications nano materials and nano crystals are broadly utilized and numerous use in all fields of science and innovation and they have some extraordinary properties. Right now changed over large scale precious stone into nano crystal by ball milling strategy, Crystals are investigated by SXRD technique for parameters. For large scale precious crystals single XRD are utilized, for nano powder XRD are utilized and the crystal is changed over into nano crystal which are utilized for channel applications and against diabetic investigation of the nano. PM nano Crystal hindrance esteems are expanded with legitimate increment in the estimation of fixation, IC50 values are 20.2 for nano crystal of PM and 20.26 at large scale level

Selection and peer-review under responsibility of the scientific committee of the International Conference on Nanotechnology: Ideas, Innovation and Industries.

1. Introduction

Nano crystal is gotten from full scale precious crystals. The valuable crystal is a strong whose atoms are organized in rehashing design and has geometrical shape [1–6]. By and large precious stones are fragile, steady and solid. In nano crystal the range is almost 100 nm level. The nano crystal has various applications in hardware, science and ventures [7–12]. Nano precious stones have some unique properties when contrasted with large scale crystals.

2. XRD

PM crystal is used for anti diabetic properties. Here IC_{50} values for PM nano scale are given below. Table represent the XRD analysis for picolinium maleate crystal. Here IC_{50} values for macro scale are given below. Picolinium maleate crystal having a = 14.656 Å, b = 10.385 Å, c = 9.13 Å, and $\alpha = \gamma = 90°$, $\beta = 102.4°$ and the system is monoclinic and crystal having space group as $P2_{1/C}$ as in Table.1. The structure is referred through powder XRD and TEM studies which is already reported.

3. Antidiabetic characterisation

The PM crystals are prepared by solution growth method, by using ball milling method the crystals are converted to nano scale, the PM nano crystals are having anti diabetic properties as in Figs. 1 and 2, Table 2. The inhibition values are increased with increase in concentration values. Picolinic acid is a organic compound, under the inflammatory conditions picolinic acid are produced. Neuroprotective, immunological, anti proliferative are the some of implicated affects in picolinic acid. Maleic acid is also an organic compound. When compare to fumaric acid it is less stable molecules. Here the presence of picolinium acid and maleate acid have 1:1 ratio. PM has good AD activity.

4. Result and discussion

The PM macro crystals are converted into nano crystal by ball milling method, the crystals are analysed by XRD method for parameter. The crystals have 21 nm as size and IC_{50} value of PM nano scale is 20.2 and used for anti diabetic properties. In macro scale Ic_{50} value are 20.26. The PM crystal have some variation of IC_{50} values when compare macro to nano.

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Anti-inflammatory (AI) and crystalline hardness characterisations of 4-(4-chlorophenyl)-7,7-dimethyl-7,8-dihydro-4h-1-benzopyran-2,5(3h,6h)-dione-(CPDMDHHBPHHD) – Comparative analysis of macro and nano scales crystals

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ABSTRACT

CPDMDHHBPHHD nano crystals are having colossal opto-electronic application, stage coordinating, recurrence coordinating and power transmission and different utilities. Full scale crystals have least applications by esteem contrasted with nano type of CPDMDHHBPHHD arranged by processing strategy. The nano type of CPDMDHHBPHHD crystals are of 228 nm, to 16 nm individually, the XRD information uncovers the full scale crystals are having the equation $C_{17}H_{17}ClO_3$ are of a = 11.9005 Å, b = 5.7971 Å, c = 22.608 Å, β = 93.97°, monoclinic with space group $P2_1/n$, the large scale level NLO is 1.25 occasions than that of standard KDP. Here both the large scale and nano precious stones are experienced with anti-inflammatory activity and nano structure very appropriate for medicate dependent on the qualities. Large scale crystals with anti-inflammatory activity have hardness concentrates as well and brought about hard class of materials. The sample is having Anti diabetic character also and good in electronic filter utilities too for the societal utility by electronic and by bio and pharma applications.

Selection and peer-review under responsibility of the scientific committee of the International Conference on Nanotechnology: Ideas, Innovation and Industries.

1. Introduction

Nano particles have more encroaches on applications over their partners which are large scale or small scale shapes and nano structure effect will be in exponentiation level by the utility and effectiveness and enablement over different structures CPDMDHHBPHHD are SHG NLO in full scale level [1–5] and in nano structure it is 16 nm by processing. A nano crystal is a material having in any occasion one estimation more diminutive than 100 nano meters, taking into account quantum bits (a nano molecule) and made out of particles in either a singular or poly-crystalline course of action. The size of nano crystalline remembers them from greater valuable materials or specimens or crystals/stones. Nano precious crystals are unadulterated drug ones with sizes in the nanometer force adjusted to leave or enveloped by a pitiful covering of surfactant. They in like way offer the flexibility of sub-atomic plan and the confirmation of basically an incredible number of crystalline structures. In this quickening setting, trademark nonlinear materials have been viewed as front line open doors for major and applied evaluations including, in a joint exertion, consistent masters, material investigators and optical structure. Over late decades, there has been dazzling energy for progression and delineation of nonlinear optical material important stones. Second requesting nonlinear optical materials are utilized in optical exchanging, rehash change and electro-optical applications particularly in Electro optical modulators. In spite of tremendous second requesting susceptibilities, unbelievable transmission in UV and discernible region and stable physio-warm execution are required for these applications. Inorganic NLO materials have immense mechanical quality, warm consistency and extraordinary transmit-

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Anti-diabetic (AD) activities of ZnO doped with Ce (7 at%) nano particles (NP)

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ABSTRACT

ZnO doped with Ce7 at% nano particle is the application of nano materials and in many fields. The nano particles of ZnO doped with Ce 7 at% are prepared directly into nano form. The nano particle has antidiabetic activity because of ZnO and by Ce 7 at%. Then ZnO NPs are analysed by PXRD method for parameters and confirmed with earlier data. Nano particles which are used for antidiabetic study has inhibition values which are increased with proper increase in the value of concentration, IC_{50} values are 28.01 for nano particles of ZnO doped with Ce7 at%.

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1. Introduction

A nano particle is a without optical & chemical properties that are not formed bulk materials [1–7]. The nano materials is a single unit small sized between 1 and 100 nm with a surrounding interfacial layer. ZnO with Ce7 at% has good AD activity and IC50 confirms it.

2. Characterisation

ZnO doped with Ce7 at% nano particles are prepared by soft chemical method. The nano particle has an anti diabetic property. The anti diabetic values for nano materials are measured the value of inhibition scale in anti diabetic increase with increased concentration as shown in Figs. 1 and 2 and Table 1, the structural properties are confirmed with TEM and PXRD and referred with JCPDS data of earlier one and already presented.

3. Result and discussion

ZnO doped with Ce7 at% nano particles are used for anti diabetic activity. The nano particles are prepared by soft chemical method. It's converted to nano scale the value of inhibition scale is increases with increase in concentration IC_{50} values ZnO doped with Ce7 at% is 28.01

4. Conclusion

The ZnO doped with Ce7 at% have been synthesised by soft chemical method. The nano particles have been subjected to the anti diabetic studies, the value of inhibition scale is increases with increase in concentration and IC50 values ZnO doped with Ce7 at% is 28.01.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Anti diabetic (AD) studies of bis-glycine hydro bromide (45 nm) nano crystals

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ABSTRACT

In material applications nano materials and nano crystals are widely used and many utilization in all fields of science and technology. In this study we converted macro crystal into nano crystal by ball milling method, crystals are analysed by XRD method for parameters and the crystal is converted into nano crystals of 45 nm which are used for filter applications and anti diabetic study of the nano crystal inhibition values are increased with proper increase in the value of concentration, IC_{50} values are 29.8 for Nano crystal of BGHB.

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1. Introduction

Nano crystal is obtained from macro crystals by milling methodology. The crystal [1–5] is a solid whose molecules are arranged in repeating pattern and have geometrical shape in nano crystal the range is nearly 100 nm level. The nano crystals have numerous applications in electronics, biology and industries and here the AD activity is promptly discussed.

1.1. Synthesis of BGHB

Bisglycine hydro bromide salt was orchestrated by dissolving glycine and hydro bromide corrosive in stoichiometric proportion (3:1) in twofold refined water. The arrangement was blended persistently utilizing an attractive stirrer. The acquired immersed arrangement was additionally refined and permitted to vanish at higher temperature which yields powder from of the incorporated material was filtered by rehashed recrystallization process. Modest seed gems with great straightforwardness were acquired because of unconstrained nucleation. Among them, an imperfection free seed precious stone was chosen and suspended in the mother arrangement, which was permitted to dissipate at room Large size single gems were acquired because of the assortment of monomers at the seed gem destinations from the arrangement, after the nucleation and development process were finished. Following a time of 24 days dismal and straightforward precious stones were gotten with measurements ($17 \times 7 \times 6\ mm^3$) and milled to have nano crystals.

2. Characterisation

2.1. XRD

Bis Glycine Hydro Bromide Nanocrystal having a = 5.39 Å, b = 8.17 Å c = 18.39 Å and $\alpha = \gamma = 90°$, $\beta = 111.81°$. It is monoclinic system and the crystal is milled for 30 h to get 45 nm of size of nano form of BGHB.

SAMPLE	CRYSTAL SIZE
Initial powder	219 nm
Milled after 30 h	45 nm

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Anti-diabetic activites of ZnO doped with Ce (5 at %) nano particles (NPs)

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ABSTRACT

In general nano materials and nano crystals are widely used in material applications and they have some special properties when compared to bulk materials. For nano powder, PXRD is used. But here nano particles of ZnO doped with Ce 5at % are synthesis directly into nano form by soft chemical method. In this ZnO doped with Ce 5 at % nano particles have anti diabetic activities and the nano particles have the inhibition values are increased with proper increase in the value of concentration (10–80). IC_{50} values are 28.45 for nano particles of ZnO doped with Ce5 at %.

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1. Introduction

Nano particles are solids. They have 1–100 nm in size and have some special properties, when compared to bulk materials. The nano particles have regular and repeating pattern of arrangement and also have geometrical shape in nano level. The nano particles have various applications like electronics, biology and industries. Nano particles have some special properties when compared to macro particles [1–12] for bio applications.

2. Antidiabetic characterisation

The ZnO doped with Ce 5 at % nano particles are prepared by soft chemical method, by this method the nano particles are directly synthesized. In this ZnO doped with Ce 5 at % having anti diabetic properties, inhibition values are increased with increased in concentration values (10–80). Here the Ic_{50} values of ZnO doped with Ce 5 at % having 28.45. The presence of ZnO nano particles having anti diabetic properties. The presences of ZnO nano particles can interact chemically as well as physically. And exhibit anti diabetic properties and have anti diabetic activities. And the combination of ZnO doped with Ce 5 at % having anti diabetic activities.

3. Result and discussion

The ZnO doped with Ce 5 at % are analysed and they have anti diabetic activities. The nano particles have IC_{50} value of ZnO doped with Ce5 at % nano scale is 28.45 and used for anti diabetic properties. The nano particles have some variation of IC_{50} as in Figs. 1 and 2 and from Table.1 values when compare macro particles.

4. Conclusion

By using soft chemical method nano particles are successfully obtained. The ZnO doped with Ce5 at% nano particles are having anti diabetic properties, it is having IC_{50} as 28.45 value for nano scale which is best for anti diabetic activity. The inhibition values are increased with increase in concentration values (10–80). IC_{50} values are well suited for anti diabetic analysis when compared to macro scale values.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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EFFICACY OF ORGANIC AND INORGANIC FERTILIZERS IN THE GROWTH AND YIELD OF RADISH (RAPHANUS SATIVUS L)

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ABSTRACT: Radish is a tender tuberous root which could be consumed either in cooked form or raw. It is rich in vitamin C and minerals. Nutrition is one of the main factors which impact the growth and yield of radish. The present investigation is carried out to study the effect of organic and inorganic fertilizers on growth and yield of radish. The various organic manures (seaweed, seagrass and vermicompost) and inorganic fertilizer (NPK) at different concentrations (1, 2 and 4 g for soil amendments) affected the various growth parameters studied. Growth parameters and yield parameters like germination percentage, plant height, leaf area, fresh and dry weight and root diameter was found to be high on 40th day in fertilizer treated plants than control plants. The biochemical parameters were estimated on 40thday. Protein, carbohydrate, phenol and flavonoid contents were found to be high with the application of vermicompost (T_5) followed by seaweed (T_1 & T_2), seagrass (T_3), NPK (T_4) and control (T_0) however vitamin C was low with the application of vermicompost (T_5). Among the organic manures used for the study, vermicompost was proved to be the best in enhancing the vegetative growth and phytochemical synthesis compared to seaweed, seagrass and inorganic fertilizer (NPK). The beneficial effects of vermicompost as an organic fertilizer have sustaining effects to improve the quality of soil in the long run. Therefore, it could be concluded that, the chemical fertilizers could be replaced by the compost for improving the quality of the yield under safe agriculture conditions, in addition to decreasing the production costs and environmental pollution.

KEYWORDS: Radish, Organic Manures, NPK, Growth Parameters, Biochemical Estimation

I. INTRODUCTION

Radish (Raphanus sativus L.) is an important vegetable crop. Soil enriched with nutrients such as nitrogen, phosphorus and potassium through the addition of organic and inorganic fertilizers influence the growth and yield of the crop **(Imthiyas and Seran, 2015).** Organic fertilizers including compost are preferred than chemical fertilizers due to the higher cost of synthetic fertilizers and poor health of soil and water in agricultural field. Different levels of compost in the soil have different effects on growth and yield of the crop. The growth and yield of radish mainly depends on soil and climatic conditions of that area. Different varieties of radish have different soil and climatic requirements for their optimum performance. Among the agro-techniques, nutrition is one of the main factors that strengthens the growth and yield of radish. Nutrition requirement of the crop varies with soil type, soil fertility, agro-climatic conditions and varieties. Being a short-duration and quick growing crop, the root growth should be rapid and uninterrupted. Hence, optimum fertilization through organic and inorganic fertilizers is essential for the production of good quality radish **(Dhanajaya, 2007).**

Vermicompost was identified as the best alternative with regard to industrial and economic viability. It has proved itself as "Natures Wonder Product" to restore soil health and nutritional value in food. The presence of earthworms in soil ecosystems is an indicator of the well-being of a system. Earthworms have the unique ability to convert the waste into wealth such as minerals, nutrients and microbes from soil into plant nutrients. The present investigation is carried out to study the effect of organic and inorganic fertilizers on growth and yield of radish. It is proposed that the information obtained would be beneficial to the growers or local farmers of the area in order to increase the production of radish.

II. MATERIALS AND METHODS

Raphanus sativus L. var. pusa chetki commonly known as Radish was selected for the present study belongs to the family Brassicaceae. The brown seaweed (Sargassum tenerrimum), green seaweed (Ulva lactuca) and sea grass (Zostera marina) were collected from Hare Island, Thoothukudi and were used as organic

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MOLECULAR CHARACTERIZATION OF PROTEIN AND ANTIOXIDANT CAPACITY OF *TURBO BRUNNEUS* R. *CYPRAEA ANNULUS* L. AND *BABYLONIA SPIRATA* L.

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Keywords:

Gastropods, SDS-PAGE, DPPH, Reducing power, Hydrogen peroxide

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ABSTRACT: The aim of this study was to analyze the molecular weight of protein and *in-vitro* antioxidant activity of marine gastropods *Turbo brunneus*, *Cypraea annulus*, and *Babylonia spirata*. The molecular weight of the protein was determined using SDS-PAGE, and its antioxidant potential was carried out by DPPH radical scavenging activity, reducing power activity and H_2O_2 radical scavenging activity. The molecular weight of protein varies from 54 kDa in *T. brunneus*, 38 kDa to 60 kDa in *C. annulus*, and 44 kDa to 116 kDa in *B. spirata*. The DPPH scavenging effect was high in *Cypraea annulus* (78.30%) followed by Babylonia spirata (65.20%) and Turbo brunneus (64.89%). *C. annulus* showed the highest reducing power of 95.36% at 500 µg/ml concentrations and lowest reducing the power of 52.07% at 100 µg/ml concentrations in the *T. brunneus*. The maximum radical scavenging activity was reported in *T. brunneus* (71% at 150 µg/ml concentrations), and minimum activity was reported in *C. annulus* (8.34% at 50 µg/ml concentration). The results show that tissue extracts of three marine gastropods found to possess good antioxidant activity and confirm their use as natural antioxidants in the future.

INTRODUCTION: Marine organisms are considered to be a magnificent source of bioactive molecules. Over the few decades, several new therapeutic agents derived from marine origin have entered preclinical and clinical trials [1]. Molluscs are viewed as one of the important organisms to derive bioactive compounds. They also contain rich nutrients that are valuable to people of all ages [2]. Marine and freshwater products have become attractive as a nutraceutical and functional foods and as a material for the development of drugs and specific health foods [3].

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Proteins are biologically active compounds abundantly present in living organisms consisting of two or more amino acids linked by a peptide bond. Thousands of peptides have been identified from animals, plants, and microorganisms. Recent research has been paid attention on peptides from marine animals since they have been found as secondary metabolites from sponges, ascidians, tunicates, and molluscs.

The structure characteristics of these include various unusual amino acid residues which may be responsible for their bioactivity. In the present scenario, there has been an increment in the number of studies focused on marine bioactive peptides [4]. Biologically active peptides are observed to have diverse activities, including opioid agonistic, mineral binding, immune-modulatory, antimicrobial, antioxidant, anti-thrombotic, hypo cholesterols and antihypertensive

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Keywords:

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Proteins are biologically active compounds abundantly present in living organisms consisting of two or more amino acids linked by a peptide bond. Thousands of peptides have been identified from animals, plants, and microorganisms. Recent research has been paid attention on peptides from marine animals since they have been found as secondary metabolites from sponges, ascidians, tunicates, and molluscs.

The structure characteristics of these include various unusual amino acid residues which may be responsible for their bioactivity. In the present scenario, there has been an increment in the number of studies focused on marine bioactive peptides [4]. Biologically active peptides are observed to have diverse activities, including opioid agonistic, mineral binding, immune-modulatory, antimicrobial, antioxidant, anti-thrombotic, hypo cholesterols and antihypertensive

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Molecular Phylogenetic Analysis of *Turbo brunneus* (R.1798), *Cypraea annulus* (L.1758) and *Babylonia spirata* (L.1758)

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Abstract Over the past few decades, biologists from many disciplines have turned to phylogenetic analyses to interpret variation in biological systems. Phylogenetic relationships with a high potential in the absence of sufficient morphological characters can be resolved by molecular phylogenetic techniques according to coded characters. A number of mtDNA genes have been targeted in marine gastropods for phylogenetic purpose; these include the ribosomal RNA genes 28S, 18S, 16S and 12S, Cytochrome oxidase I (COI) and cytochrome b (Cyt-b). In the present study, SSU rRNA in *Turbo brunneus*, 18S rRNA in *Cypraea annulus* and COI gene in *Babylonia spirata* were successfully amplified and sequenced. Phylogenetic tree of the three species were constructed by using neighbor-joining tree. The optimal tree with the sum of branch length = 1.47445020 was observed. *Turbo brunneus* was phylogenetically closer to the clade of *Cypraea annulus* than that of *Babylonia spirata*. The mitochondrial genomes are informative for mollusc phylogeny, which give a proper phylogenetic approach.

Keywords Gastropods, DNA Sequencing, SSU rRNA, 18S rRNA, COI, Phylogeny

1. Introduction

Marine bioresource is known to be one of the richest among all the living ecosystems. Life originated in the sea and in terms of evolution and biodiversity the sea appears to be superior to the terrestrial ecosystem [1]. As marine species comprise approximately a half of the global biodiversity, they are offering a vast source from which useful therapeutics can be discovered. Ocean exploration often leads to new ideas, new theories and discoveries, including new medicines. The phylum mollusca has a long geological history and their presence on planet earth since the Paleozoic era 600 million years ago has been proved beyond doubt. The class gastropoda is known to have originated during the Jurassic era. Among the invertebrates, Phylum Mollusca is the second largest groups next to Arthropoda [2].

The phylum Mollusca encompasses seven classes, namely Gastropoda, Polyplacophora, Cephalopoda, Bivalvia, Scaphopoda, Aplacophora and Monoplacophora [3]. Among the seven classes, gastropods are highly diversified in shape, coloration, distribution, habitat and show tremendous adaptive radiation. Species of gastropoda with their ornamental shell and succulent meat have been harvested since time immemorial [4]. The majority of the gastropods belong to the subclass prosobranchia that includes all the gastropods that respire by means of gills and in which the mantle cavity, gill and anus are located at the anterior of the body. Also, most carnivorous gastropods are marine prosobranchs. The three orders which make up this subclass of prosobranchia are the oldest archaeogastropoda, the least specialized mesogastropoda, and the largest order, with particularly diverse in mode of life, and the specialized carnivores, the neogastropoda. Increased awareness and importance of chank genetic resources has turned attention back to the speciation and need to have scientific data on the genetic diversity of selected gastropod for species description and planning their conservation and management [5]. Shells of gastropod contain a rich source of taxonomic information that can be used to interpret evolutionary relationships among taxa [6]. However, literatures pertaining to economic characters and genetics on marine molluses are scanty [7].

The progressive information have diverted the attention of the genetic workers to the techniques based on genomic as well as mitochondrial DNA. Nowadays DNA barcoding

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GC-MS ANALYSIS AND ANTI-INFLAMMATORY ACTIVITY OF *MUREX TRIBULUS*

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ABSTRACT: The aim of this study was to screen the presence of bioactive compounds through GC-MS analysis and carry out the anti-inflammatory test of the methanolic tissue extract of *Murex tribulus*, a spiny predatory gastropod that is widespread from the Central Indian Ocean to Western Pacific Ocean. The GC-MS analysis of the methanolic flesh extract revealed the presence of four bioactive compounds. 1, 2 dimethyl hydrazine, urea, cis-9 hexadecenoic acid, and 1, 1, 1, 3, 5, 5, 5 hepta-methyltrisiloxane. Among the compounds identified, 1, 1, 1, 3, 5, 5, 5-Heptamethyltrisiloxane was the most abundant antimicrobial compound (92.87%) present in the methanolic tissue extract of *M. tribulus*. The results of the GC-MS analysis showed that the bioactive compounds present in the tissue extract showed anti-inflammatory responses. Hence *in-vitro* anti-inflammatory activity in the tissue extract of *M. tribulus* was determined by proteinase inhibitory activity and 5-lipooxygenase inhibitory assay. The anti-inflammatory test showed promising results with high percentage of inhibition such as 53.50% at a concentration of 1000 µg/ml in proteinase inhibitory activity and 75.42% at the concentration of 1000 µg/ml in %-lipoxygenase inhibitory assay.

INTRODUCTION: Among the marine invertebrates, the molluscs are the potential source of bioactive substances. The bioactive compounds isolated from the gastropods are considered to have a role in the chemical defence of the animals against their predators. Muricidae, commonly known as murex or rock whelks, have a long history of pharmacological use, being listed in the Materia medica by Discorides in 1st century AD, reported by Arabic scholars in 9th Century, and sold in medieval Jewish pharmacies from 11th -14th Century AD [1, 2].

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Over the years, numerous bioactive compounds have been reported in the family of Muricidae among which some have the property to reduce the oxidation reactions. Many promising lead compounds have been reported from marine sources having anti-inflammatory activity.

In-vitro and *in-vivo* anti-inflammatory activity of tissue extracts and associated indole compounds from the marine Muricidae *Dicathais orbita* were tested for their ability to inhibit the production of the recognised pro-inflammatory modulator nitric oxide (NO) and cytokines, such as tumour necrosis factor alpha (TNFα) and prostaglandin E2 (PGE2) [3]. Muricidae extracts have demonstrated wound healing properties and anti-inflammatory activity in addition to their antimicrobial properties. Muricidae produce a suite of brominated indoles with anti-inflammatory, anti-cancer, and steroidogenic activity as well as choline esters with

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Anti-diabetic (AD) studies of Bis Glycine Hydro Bromide – BGHB macro crystals milled to nano scale of 219 nm as the preliminary fine particles

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ABSTRACT

Generally macro crystals are extensively made use of it in material relevance and much utilization in all areas of science and technology. In this learning macro crystals are synthesised effectively by slow evaporation system, crystals are analysed by SXRD method for parameters and the crystal. Optical absorption spectrum reveals that the grown crystal has good optical transparency in the entire visible region and its energy band gap also fine gap and is of NLO SHG. The bio behaviour of the crystals are mainly used for anti diabetic study of the macro crystal inhibition values are increased with proper increase in the value of concentration and reported here as the novel utility to society. IC$_{50}$ values are 30.2 for macro crystal of 219 nm milled assessment of BGHB by milling process.

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1. Introduction

Nano crystal is acquired from full scale crystals [1–25]. The crystal, whose particles are masterminded in rehashing design and have geometrical shape in nano precious stone the range is about 100 nm level. The nano crystals have various applications in hardware, science and ventures. The journey for gainful and new materials on nonlinear optical strategy has been dynamic since the revelation of SHG in quartz. Nonlinear optical [NLO] materials are required to expect a huge activity in photonics incorporating optical information managing, media transmission sensor defender applications, optical information putting away, and so on. Some regular mixes show colossal NLO reaction a huge piece of the time, sales of hugeness more noteworthy than generally known inorganic materials. They in like way offer the adaptability of sub-atomic course of action and the confirmation of basically an incredible number of crystalline structures. In this vitalizing setting, trademark nonlinear materials have been viewed as forefront open doors for crucial and applied appraisals including, in a joint exertion, consistent pros, material examiners and optical structure. Over late decades, there has been dazzling energy for progression and portrayal of nonlinear optical material significant stones. Second requesting nonlinear optical materials are utilized in optical exchanging, rehash change and electro-optical applications particularly in Electro optical modulators. Notwithstanding huge second sales susceptibilities, unfathomable transmission in UV and noticeable area and stable physio-warm execution are required for these applications. Inorganic NLO materials have gigantic mechanical quality, warm consistency and mind blowing transmittance at any rate unobtrusive optical nonlinearity considering the nonappearance of extended π – electron withdrawal. Simply typical, characteristic NLO material have enormous nonlinearity showed up distinctively corresponding to inorganic material at any rate low optical straightforwardness, poor mechanical and warm quality and low laser hurt edge. Along these lines the evaluation depends on semi-trademark NLO material important stone so as to obtain common NLO gem by joining the upsides of standard and inorganic materials. The semi-ordinary NLO materials have been drawing in a ton of thought because of high nonlinearity, substance flexibility, high mechanical and warm reliable quality and remarkable transmittance. By a wide margin the vast majority of the amino acids openly show the NLO property because of support

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A study of antioxidant and antibacterial activity using honey mediated Chromium oxide nanoparticles and its characterization

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ABSTRACT

Honey is authenticated as the world's prehistoric food source with incomparable therapeutic, biochemical, physical, and curative values. Chromium oxide nanoparticles were precipitously generated by reduction of potassium dichromate solution in collaboration with natural honey holding carbohydrates as a chief component which perform as reducing agent. The outcome suggests that water soluble carbohydrates have aldehyde group cause the formation of Cr_2O_3 nanoparticles. The properties of the prepared Cr_2O_3 nanoparticles were characterized using several techniques such as UV–Visible, FT-IR, SEM, EDAX, XRD and AFM. The FT-IR studies reveals that the broad band of low intensity at 1165.00 cm^{-1} can be found to be the surface Cr-O stretching vibrations. The SEM image illustrates the rocky structure of the prepared nanoparticle. The AFM image exhibits the topography of Cr_2O_3nanoparticles in 3.13 μm resolution for 2D and 3D view with current passing over the probe with the scanning area of 9.842 pm^2. The XRD result concludes the average size of Cr_2O_3 nanoparticles as 24.7205 nm. The antioxidant study shows the fluctuation in percentage of antioxidant activity as the concentration varies. The antibacterial activity explains clearly that the prepared sample has zone inhibition with the 3 pathogens studied. Thus the honey medicated nanoparticle synthesis provides a simple, cost effective, reproducible, rapid, and safe method with numerous applications.

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1. Introduction

Nanoparticles have attracted great interest recently due to their unique physical and chemical properties, which are different from those of either the bulk materials or single atoms [1]. In recent years, many have focused on Chromium oxide (Cr_2O_3) due to their applications in several areas of research. Chromium oxide nanoparticles have several applications such as catalysis of CO and H_2S [2], thermal protection, wear resistance, in glasses, inks and paints, it acts as the colorant in 'chrome green' and 'institutional green'. With growing applications of Cr_2O_3NPs in biological perspectives, Cr_2O_3NPs were evaluated for diverse bio potentials [3]. The antibacterial effect of Cr_2O_3 nanoparticles against Escherichia coli was investigated as a model for gram-negative bacteria. The Cr_2O_3 nanoparticles by reduction of potassium dichromate solution with *Mukiamaderaspatana* plant extract. Therefore, the transition metal nanoparticles have been researched widely because of their good antimicrobial activity [3]. The antioxidant activity was performed by the green synthesized Chromium oxide nanoparticle [4]. It was used to measure the Total Antioxidant Concentration. It is the measure of the ability of NPs to quench reactive oxygen species (ROS). The percentage inhibition of reduction by the nanoparticle was calculated [5] by using the formula:

$$\%\text{Antioxidant activity} = [1 - (OD_{sample} \backslash OD_{control})] \times 100$$

Chromium oxide nanoparticles were rapidly synthesized by reduction of potassium dichromate solution with natural honey containing carbohydrates as a major component which act as reducing agent. Honey mediated green synthesis is a relatively novel concept used during the past few years to synthesize gold, silver, carbon, platinum, and palladium nanoparticles [6]. Honey is one of the healthiest food sources since immemorial time. It consists of 80–85% carbohydrate mainly glucose and fructose, 15–17% water. Honey acts as both a stabilizing and a reducing agent and importantly functions as a precursor in nanoparticle synthesis. This method usually requires room temperature and does not produce

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SOFT A_RS -CLOSED SETS IN SOFT TOPOLOGICAL SPACES

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ABSTRACT. In this paper, we introduce new category of soft set called Soft A_RS -Closed sets. Also we study in details the properties of Soft A_RS - Closed sets and its relation with other soft sets. All these findings will provide a base to researchers who want to work in the field of soft topology and will help to establish a general framework for applications in practical fields.

1. INTRODUCTION

Molodtsov introduced the concept of soft sets from which the difficulties of fuzzy sets, intutionistic fuzzy sets, vague sets, interval mathematics and rough sets have been rectified, [8]. A soft set over the universe U is a parametrized family of subsets of the universe U. Application of soft sets in decision making problems has been found by Maji et al. in [7], whereas Chen gave a parametrization reduction of soft sets and a comparison of it with attribute reduction in rough set theory, [3]. Further soft sets are a class of special information.

Shabir and Naz introduced soft topological spaces in 2011 and studied some basic properties of them, [10]. Meanwhile generalized closed sets in topological spaces were introduced by Levine in 1970 and recent survey of them is in which is extended tosoft topological spaces in the year 2012. Further Kannan, [6] and Rajalakshmi have introduced soft $g-$ locally closed sets and soft semi star generalized closed sets. Soft strongly $g-$ closed sets have been studied

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Key words and phrases. soft A_RS - closed sets, soft A_RS - open sets.

ABSTRACT. In this paper we introduce soft A_RS closed on soft topological spaces and study some of their properties. We also investigate the concepts of contra soft A_RS closed mappings, contra soft A_RS open mappings and also discuss their relationship with other soft mappings. Counter examples are given to show the non coincidence of these functions.

1. INTRODUCTION

The soft set theory is a rapidly processing field of mathematics. Molodtsov, see [1] shown several applications of this theory in solving many practical problems in economics, engineering, social science, medical science, and so on. In 2010 Muhammad Shabir and Munazza Naz used soft sets to define a topology namely soft topology. soft generalized closed set was introduced by K. Kannan in 2012. The investigation of generalized closed sets has led to several new and interesting concepts like new covering properties and new separation axioms. Some of these separation axioms have been found to be useful in computer science and digital topology. In this paper we defined soft ARS - closed mapping, soft A_RS - open mapping and a detailed study of some of its properties in soft

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SOME TYPES OF IDEALS IN SYMMETRIC RINGS

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ABSTRACT. In Ring theory, a branch of abstract algebra, an ideal is a special subset of a ring. Ring theory is an extension of Group theory. Ideals generalize certain subsets of the integers, such as the even number or the multiple of 3. The concept of an order ideal in order theory is derived from the notion of ideal in ring theory. Ideals were introduced by Marshall H. Stone, who derived their name from the ring ideals of Abstract algebra. Ideals were proposed by Richard Dedekind in 1876 in the third edition of his book Vorlesungen Uber Zahlentheore (English: Lecturers on Number Theory). They were a generalization of the concept of ideal numbers developed by Ernt Kummer. Later the concept was expanded by David Hilbert and especially Emmy Noether. In this paper we would like to introduce a new type of ideals in symmetric ring that is in two cases of S_2^* ring, S_3^* ring and we define two type of ideals in S_2^* ring, S_3^* ring. We give some properties of symmetric ideals and symmetric group and we introduce a new concept of reverse composition and plus circle compo.

1. INTRODUCTION

In algebra, which is a broad division of mathematics, Abstract algebra is a study of algebraic structures. Algebraic structures include groups, rings, fields, modules, vector spaces, lattices and algebras. The term abstract algebra was coined in the early 20^{th} century to distinguish this area of study from the other

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results based on the above concepts are studied here and also we define composite regular and reverse composite regular in symmetric group.
Keywords: *Symmetric group, Symmetric Ring, Symmetric Semigroup, Symmetric Semiring, Composite regular , Reverse composite regular,Composition, Reverse Composition, Plus Circle Compo.*

I. Introduction:

Abstract Algebra is a study of algebraic structures. Algebraic structures include groups, rings, fields, modules, vector spaces, lattices and algebras. The term abstract algebra was coined in the early 20th century to distinguish this area of study from the other parts of algebra. Permutations were studied by Joseph-Louis Lagrange in 1770 in his paper Refexions sur la resolutions algebriquedes equations devoted to solutions of algebraic equations in which he introduced Lagrange reselvents. Paolo Ruffini was the first person to develop the theory of permutation groups. The next step was taken by Evarsite Galois in 1832 although his work remained unpublished until 1846, when he considered for the first time what is now called the closure property of a group of permutations. Permutation groups are central to the study of geometric symmetries and to Galois Theory, the study of finding solutions of polynomial equations. Symmetric groups on infinite sets behave quite differently from symmetric groups on finite sets , and are discussed in Scott 1987 , Dixon &Mortimer 1996 and Cameron 1999.The representation theory of semigroups was developed in 1963 by Boris Schelin Using binary relations on a set A and composition of relations for the semigroup product. At an algebraic conference in 1972 Schelin surveyed the literature on B_A, the semigroup of relation on A. In 1997 Schelin and Ralph Mckenzie proved that every semigroup is isomorphic to a transitive semigroup of binary relations. In recent years researchers in the field have become more specialized with dedicated monographs appearing on important classes of semigroups, like inverse semigroups, as well as monographs focusing on applications in algebraic automata theory, and also in functional analysis. In abstract algebra, a semiring is an algebraic structure similar to a ring, but each element must have an additive inverse .

2.Preliminaries:

Definition 2.1:

Let A be a non empty set. A binary operation $*$ on A is a function $*: A \times A \rightarrow A$.The image of an ordered pair $(a , b) \in A \times A$ under $*$ is denoted by $a * b$. A set A with a binary operation $*$ defined on it is denoted by $(A , *)$.In simple ,A binary operation is a "way of putting two things together".

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In this paper, we introduce a new domination parameter, called detour global domination number of a graph. A subset S of V of a connected graph G= (V, E) is a detour global dominating set if S is both detour set and global dominating set of G. The minimum cardinality taken over all detour global dominating sets is called the detour global domination number of G and is denoted by $\gamma_{dg}(G)$. A detour global dominating set of cardinality γ_{dg} (G) is called a γ_{dg}- set of G. We determine $\gamma_{dg}(G)$ for some standard and special graphs and study some general properties for $\gamma_{dg}(G)$

Keywords: *Detour set, dominating set, detour dominating set, global dominating set, detour global dominating set.*

Mathematical subject classification 05C12, 05C75

1. INTRODUCTION

By a graph G, we mean a finite undirected connected graph without loops or multiple edges. Unless and otherwise stated, the graph G = (V, E) has n = $|V|$ vertices and m = $|E|$ edges. For basic definitions and terminologies, we refer [1,5]. For vertices u and v in a graph G, the detour distance D (u, v) is the length of a longest u – v path in G. A u – v path of length D (u, v) is called a u – v detour. The closed detour interval ID $[u, v]$ consists of u, v and all vertices in some u – v detour of G. These concepts were studied by Chartrand et al. [2,3] For S ⊆ $V(G)$, ID $[S]$ = $\bigcup_{u,v \in S}$ ID $[u, v]$. A subset S of V of a graph G is called a detour set if ID $[S] = V(G)$.The detour number dn(G) of G is the minimum cardinality taken over all detour sets in G. These concepts were studied by Chartrand [4].

The concepts of domination number and global domination number of a graph were introduced in [7,10]. A subset S of V of a graph G= (V, E) is called a dominating set of G if every vertex in V - S is adjacent to at least one vertex in S. The domination number $\gamma(G)$ of G is the minimum cardinality taken over all dominating sets in G.A subset S of V of a graph G= (V, E) is a detour dominating set of if S is both detour set and dominating set of G. The detour domination number $\gamma_d(G)$ is the minimum cardinality taken over all detour dominating sets in G.

A subset S of V of a graph G= (V, E) is called a global dominating set (g .d. set) if it is a dominating set of a graph G and its complement $\bar{G}$ of G. The global domination number γ_g(G) of G is the minimum cardinality taken over all global dominating sets in G.

Theorem 1.1: Every end vertex of a connected graph G belongs to every detour set of G.

Theorem 1.2: If G is a connected graph of order n ≥ 2, then 2≤ $max\ \{\gamma(G), dn(G)\} \leq \gamma_d(G) \leq$ n.

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Equitable Triple Connected Two Domination Number of a Graph

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Abstract

The concept of triple connected graphs with real life application was introduced by considering the existence of a path containing any three vertices of a graph G. In this paper we introduce a new domination parameter called equitable triple connected two domination number of a graph. A two dominating set S S of V of a non-trivial graph G is said to be an equitable triple connected two domination set if <S> is triple connected and for every u ϵ V – S there exists a v ϵ S such that uv is an edge of G and $|d(u) - d(v)| \leq 1$. *The minimum cardinality taken over all equitable triple connected two dominating sets is called the equitable triple connected two domination number and is denoted by* γ_{etc2d} *(G). We find the upper and lower bounds and investigate this number for some standard graphs. We also investigate its relationship with other graph theoretical parameters.*

Keywords: *Triple connected graphs, Equitable triple connected two domination number of a graph. Subject Classification: 05C69.*

1. Introduction

The concept of triple connected graphs with real life application was introduced by considering the existence of a path containing any three vertices of a graph G. In this paper we introduce a new domination parameter called equitable triple connected two domination number of a graph. All graphs considered here are finite, undirected without loops and multiple edges. Unless and otherwise stated the graph G = (V, E) considered here have p = $|V|$ vertices and q = $|E|$ edges.

A subset *S* of *V* of a non - trivial graph *G* is called a *dominating set* of *G* if every vertex in *V – S* is adjacent to at least one vertex in *S*. The *domination number γ(G)* of *G* is the minimum cardinality taken over all dominating sets in *G*. A subset S of V of a non - trivial graph is said to be a triple connected dominating set, if S is a dominating set and the induced subgraph <S> is triple connected. The minimum cardinality taken over all triple connected dominating sets is called the triple connected domination number and is denoted by γ_{tc} (G). A subset *S* of *V* of a non - trivial graph *G* is said to be two dominating set if every vertex in V – S is adjacent to atleast two vertices in S. The minimum cardinality taken over all two dominating sets is called the two domination number and is denoted by γ_2 (G). A two dominating set S of a non-trivial graph G is said to be an equitable triple connected two dominating set if <S> is triple connected and for every u ϵ V – S there exists a v ϵ S such that uv is an edge of G and $|d(u) - d(v)| \leq 1$. The minimum cardinality taken over all equitable triple connected two dominating sets is called the equitable triple connected two domination number and is denoted by γ_{etc2d} (G).

Theorem 1.1:

A tree is triple connected if and only if T ≅ P_p, p ≥ 3

Theorem 1.2:

For any graph G, $\left\lceil \frac{p}{\Delta + 1} \right\rceil \leq \gamma$ (G)

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VERTEX MAGIC LABELING ON V_4 FOR SOME CYCLE RELATED GRAPHS

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ABSTRACT. Let V_4 be an abelian group under multiplication. Let $g : E(G) \to V_4 - \{1\}$. The vertex magic labeling on V_4 is defined as the vertex labeling $g^* : V(G) \to V_4$ such that $g^*(v) = \prod_u g(uv)$, where the product is taken over all edges uv of G incident at v is a constant . A graph is said to be V_4-magic if it admits a vertex magic labeling on V_4. In this paper we prove that Rafflesia graph , Cycle Flower graph and $S^{'}(C_n)$ graphs are V_4-magic graphs.

1. INTRODUCTION

In 1963, Sedlack introduced Magic labelings. Later Kong, Lee and Sun used the term magic labeling for edge labeling with non negative integers such that for each vertex, the sum of the labels of all edges incident at any vertex v is the same for all the vertices. For a non trivial Abelian group V_4 under multiplication a graph G is said to be V_4-magic graph if there exists a labeling g of the edges of G with non zero elements of V_4 such that the vertex labeling g^* defined as $g^*(v) = \prod_u g(uv)$ taken over all edges uv incident at v is a constant.

Let $V_4 = \{i, -i, -1, 1\}$ we prove that Rafflesia graph, Cycle flower graph and splitting graph are V_4-magic graphs. For further references see [1,2].

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Key words and phrases. Vertex magic labeling on V_4, V_4-magic graphs, Rafflesia Graph.

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Steiner Domination In Line And Jump Fuzzy Graphs

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Abstract—Line graph L(G) of a graph G is acquired by converting the arcs of G into nodes of the L(G) and connecting the nodes of L(G) only if the corresponding arcs are incident with the same node. The jump graph J(G) is the complement of L(G). In this article bounds on steiner domination numbers of line fuzzy graphs and jump fuzzy graphs are obtained.

Keywords : fuzzy steiner domination, line fuzzy graphs, jump fuzzy graphs.
AMS Subject Classification 2010 : 05C72, 05C69, 51E10

1. Introduction

Rosenfeld launched fuzzy graph theory which has its applications in diverse fields. In particular fuzzy topologies are used in circuit designing and fuzzy steiner distance and domination have applications in routing problems. In engineering field steiner trees have applications in network routing, wireless communications and VLSI design. Various fuzzy graph theoretic concepts has been studied from [6] and [7]. In [1] and [2] the authors described about domination in fuzzy graphs. Steiner domination in crisp graphs was studied from [3], [4] and [5]. A steiner set of a fuzzy graph (V, σ, μ) is a set of nodes S such that any node in G lies in some steiner tree of G. A steiner dominating set of G is a set of nodes which is both steiner set as well as dominating set. The minimum fuzzy cardinality of a minimal fuzzy Steiner dominating set is called fuzzy Steiner dominating number denoted by γ^{fs} and the maximum fuzzy cardinality of a minimal fuzzy Steiner dominating set is called upper fuzzy Steiner dominating number denoted by Γ^{fs}. Here we acquire some bounds on steiner domination numbers of line fuzzy graphs and jump fuzzy graphs.

2. Steiner Domination in Line fuzzy and Jump fuzzy graphs

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Steiner Domination In Line And Jump Fuzzy Graphs

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Abstract—Line graph L(G) of a graph G is acquired by converting the arcs of G into nodes of the L(G) and connecting the nodes of L(G) only if the corresponding arcs are incident with the same node. The jump graph J(G) is the complement of L(G). In this article bounds on steiner domination numbers of line fuzzy graphs and jump fuzzy graphs are obtained.

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1. Introduction

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2. Steiner Domination in Line fuzzy and Jump fuzzy graphs

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THE TOTAL TRIANGLE FREE DETOUR NUMBER OF A GRAPH

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ABSTRACT. For a connected graph $G = (V, E)$ and u, v any two vertices in G, a $u - v$ path P is said to be a $u - v$ triangle free path if no three vertices of P induce a cycle C_3 in G. The triangle free detour distance $D_{\Delta f}(u, v)$ is the length of a longest $u - v$ triangle free path in G. A $u - v$ triangle free path of length $D_{\Delta f}(u, v)$ is called the $u - v$ triangle free detour. In this article, the concept of total triangle free detour number of a graph G is introduced. It is found that the total triangle free detour number differs from triangle free detour number and connected triangle free detour number. The total triangle free detour number is found for some standard graphs. Their bounds are determined. Certain general properties satisfied by them are studied.

1. INTRODUCTION

For a graph $G = (V, E)$, we mean a finite undirected connected simple graph. The order of G is represented by n. We consider graphs with at least two vertices. For basic definitions we refer [3]. For vertices u and v in a connected graph G, the detour distance $D(u, v)$ is the length of the longest $u - v$ path in G. A $u - v$ path of length $D(u, v)$ is called a $u - v$ detour. This concept was studied by Chartrand et.al, [1].

A vertex x is said to lie on a $u - v$ detour P if x is a vertex of $u - v$ detour path P including the vertices u and v. A set $S \subseteq V$ is called a detour set if

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2010 *Mathematics Subject Classification.* 05C12.

Key words and phrases. triangle free detour set, triangle free detour number, total triangle free detour set, total triangle free detour number.

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Research Article

Nano Ideal Generalised Closed Sets in Nano Ideal Topological Spaces

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ABSTRACT
The purpose of this paper is to define and study a new class of closed sets called $NIgsemi^*$-closed sets in nano ideal topological spaces. Basic properties of $NIgsemi^*$ - closed sets are analyzed and we compared it with some existing closed sets in nano ideal topological spaces.
Key words:$NIgsemi^*$- closed set, closed sets in nano ideal topology ,$NIgsemi^*$- open set, nano topology.

1. INTRODUCTION

The concept of ideal topological space was introduced by kuratowski [9]. Also he defined the local functions in ideal topological spaces. In 1990, Jankovic and Hamlett [4] investigated further properties of ideal topological spaces. The notion of I-open sets was introduced by Jankovic et al. [5] and it was investigated by Abd El-Monsef [11]. Later, many authors introduced several open sets and generalized open sets in ideal topological spaces such as $pre\ I$-open sets[2], $semi\ I$-open sets [6], α-I-open sets[6] , αg-I-open sets [23] and gp-I-open sets [23].

In 2013, Lellis Thivagar and Carmel Richard[12] established the field of nano topological spaces which was defined in terms of approximations and boundary region of a subset of an universe using an equivalence relation on it and also defined nano closed sets, nano-interior and nano-closure. K.Bhuvaneswari et al. [9] introduced and studied the concept of nano generalised closed sets in nano topological spaces. Later Many researchers like [3],[9] obtained several generalizations of nano open sets. In 2012, Robert et. Al [1,2] introduced the class of $semi^*$-open sets and $semi^*$-closed sets in Topological Spaces. In 2015, Paulraj Gnanachandra [19] introduced the notion of $nano\ semi^*$-open sets and $nano\ semi^*$-closed sets in terms of nano generalised closure and nano generalised interior in Nano Topological Spaces. In 2020 [18], further properties of $nano\ semi^*$-open sets were investigated.

M. Parimala et al. [14, 15, 17] introduced the concept of nano ideal topological spaces and investigated some of its basic properties. In 2018, M.Parimala and Jafari [15] introduced the notion of $nano\ I$-open sets and studied several properties. Further she defined nIg - open sets and nIg- closed sets in Nano Ideal Topological Spaces.

In this paper, we introduce a new type of generalized closed and open sets called $NIgsemi^*$-closed set and $NIgsemi^*$-open set in nano ideal topological spaces and investigate the relationships between this set with other sets in nano topological spaces and nano ideal topological spaces. Characterizations and properties of $NIgsemi^*$ -closed sets and $NIgsemi^*$-open sets are studied.

2. PRELIMINARIES

Throughout this paper $(U, \tau_R(X))$ (or U) represent nano topological spaces on whichno separation axioms are assumed unless otherwise mentioned. For a subset A of a space $(U, \tau_R(X))$, $N\ cl(A)$ and $N\ int(A)$ denote the nano closure of A and the nano interior of A respectively. We recall the following definitions, which will be used in the sequel.

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New Continuous Function In Nano Topological Spaces

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Abstract

The determination of this paper is to introduce the concept of α_{Ng}continuous function in Nano Topological space and derive their characterizations in terms of α_{Ng} closed set, α_{Ng} interior and α_{Ng} closure. Also we relate α_{Ng} continuous maps with other continuous maps.

Keywords *Nano topological space, α_{Ng} continuous, α_{Ng} closed , α_{Ng} interior and α_{Ng} closure.*

1. INTRODUCTION

Continuous function is one of the main concepts of Topology. Balachandran[1] et al. have introduced g-continuous function in topological spaces. The notion of Nano topology was introduced by LellisThivagar[3] which was defined in terms of approximations and boundary region of a subset of an universe using an equivalence relation on it and he also defined Nano closed sets, Nano-interior, Nano-closure and Nano continuous functions.Suganya[5] et al introduced and studied some properties of α_{Ng} open sets in Nano topological spaces. In this paper we have introduced a new class of functions on Nano topological space called α_{Ng} continuous functions and derived their characterizations in terms of α_{Ng}closed sets, α_{Ng}closure and α_{Ng} interior.

2. PRELIMNARIES

Definition 2.1.[5]A subset A of a Nano topological space (U, τ_R(X)) is called α_{Ng}open set if $A \subseteq NgInt(NCl(NgInt(A))$.

Definition 2.2.[3]Let U be a non empty finite set of objects called the universe and R be an equivalence relation on U named as the indiscernibility relation. Then U is divided into disjoint equivalence classes. Elements belonging to the same equivalence class are said to be discernible with one another. The pair(U,R) is said to be the approximation space. Let X⊆U

1. The lower approximation of X with respect to R is the set of all objects which can be for certain classified as X with respect to R and it is denoted by L_R(X). That is $L_R(X) = \bigcup_{x\in U}\{R(x)/R(x) \subseteq X\}$ where R(x) denotesthe equivalence class determined by X.
2. The upper approximation of X with respect to R is the set of all objects which can be possibly defined as X with respect to R and it is denoted by U_R(X).That is $U_R(X) = \bigcup_{x\in U}\{R(x)/R(x) \cap X \neq \phi\}$
3. The boundary region of X with respect to R is the set of all objects which can be classified neither as X nor as not X with respect to R and is denoted by B_R(X). That is $B_R(X) = U_R(X) - L_R(X)$

Property 2.3.[3]If (U, R) is an approximation space and X, Y ⊆ U, then

1. $L_R(X) \subseteq X \subseteq U_R(X)$
2. $L_R(\phi) = U_R(\phi) = \phi$ and $L_R(U) = U_R(U) = U$
3. $U_R(X \cup Y) = U_R(X) \cup U_R(Y)$

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New Continuous Function In Nano Topological Spaces

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Abstract

The determination of this paper is to introduce the concept of α_{Ng}continuous function in Nano Topological space and derive their characterizations in terms of α_{Ng} closed set, α_{Ng} interior and α_{Ng} closure. Also we relate α_{Ng} continuous maps with other continuous maps.

Keywords *Nano topological space, α_{Ng} continuous, α_{Ng} closed , α_{Ng} interior and α_{Ng} closure.*

1. INTRODUCTION

Continuous function is one of the main concepts of Topology. Balachandran[1] et al. have introduced g-continuous function in topological spaces. The notion of Nano topology was introduced by LellisThivagar[3] which was defined in terms of approximations and boundary region of a subset of an universe using an equivalence relation on it and he also defined Nano closed sets, Nano-interior, Nano-closure and Nano continuous functions.Suganya[5] et al introduced and studied some properties of α_{Ng} open sets in Nano topological spaces. In this paper we have introduced a new class of functions on Nano topological space called α_{Ng} continuous functions and derived their characterizations in terms of α_{Ng}closed sets, α_{Ng}closure and α_{Ng} interior.

2. PRELIMNARIES

Definition 2.1.[5]A subset A of a Nano topological space (U, τ_R(X)) is called α_{Ng}open set if $A \subseteq NgInt(NCl(NgInt(A))$.

Definition 2.2.[3]Let U be a non empty finite set of objects called the universe and R be an equivalence relation on U named as the indiscernibility relation. Then U is divided into disjoint equivalence classes. Elements belonging to the same equivalence class are said to be discernible with one another. The pair(U,R) is said to be the approximation space. Let X⊆U

1. The lower approximation of X with respect to R is the set of all objects which can be for certain classified as X with respect to R and it is denoted by L_R(X). That is $L_R(X) = \cup_{x\in U}\{R(x)/R(x) \subseteq X\}$ where R(x) denotesthe equivalence class determined by X.
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3. The boundary region of X with respect to R is the set of all objects which can be classified neither as X nor as not X with respect to R and is denoted by B_R(X). That is $B_R(X) = U_R(X) - L_R(X)$

Property 2.3.[3]If (U, R) is an approximation space and X, Y ⊆ U, then

1. $L_R(X) \subseteq X \subseteq U_R(X)$
2. $L_R(\phi) = U_R(\phi) = \phi$ and $L_R(U) = U_R(U) = U$
3. $U_R(X \cup Y) = U_R(X) \cup U_R(Y)$

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Some New Nearly Open Sets in Nano Topological Spaces

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Abstract
The objective of this paper is to introduce new class of sets namely α_{Ng} open sets and α_{Ng} closed sets in Nanotopological spaces. Alsowedefineα_{Ng} interior and α_{Ng} closureand some of theirbasic properties arediscussed. Additionaly the relationship betweenα_{Ng} open (closed) sets andother Nano open(closed) sets arealso discussed.

Keywords Nano topological space, α_{Ng} open, α_{Ng} closed, α_{Ng} interior and α_{Ng} closure.

I. Introduction

Levine[5] introduced the class of g-closed sets in1970. S. Pious Missier and P. Anbarasi[6] introduced the concept of α^* open sets and discussed some of their basic properties.
M. Lellis Thivagar[3] introduced Nano topological space with respect to a subset X of a universe which is defined in terms of lower and upper approximations of X. He has also defined Nano closed sets, Nano interior and Nano closure of a set. He also introduced the weak forms of Nano open sets. K. Bhuvaneswari and K. Mythili Gnanapriya[1]introduced Nano g- closed sets and obtained some of the basic results. In this paper, we define a new class of sets called α_{Ng} open and α_{Ng} closed sets in the Nano topological space and study the relationships with other Nano sets.

II. Preliminaries

Definition 2.1.[7]A subset A of a topological space (X,τ) is called α^*open if $A \subseteq int^*(cl(int^*(A)))$

Definition 2.2.[6]Let U be a non empty finite set of objects called the universe and R be an equivalence relation on U named as the indiscernibility relation. Then U is divided into disjoint equivalence classes. Elements belonging to the same equivalence class are said to be discernible with one another. The pair(U,R) is said to be the approximation space. Let X⊆U

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Abstract
The objective of this paper is to introduce new class of sets namely α_{Ng} open sets and α_{Ng} closed sets in Nanotopological spaces. Alsowedefineα_{Ng} interior and α_{Ng} closureand some of theirbasic properties arediscussed. Additionaly the relationship betweenα_{Ng} open (closed) sets andother Nano open(closed) sets arealso discussed.

Keywords Nano topological space, α_{Ng} open, α_{Ng} closed, α_{Ng} interior and α_{Ng} closure.

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II. Preliminaries

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Proposition 2.3.[6]If (U,R) is an approximation space and X, Y ⊆ U, then

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A New Class Of Nearly Open Sets In Nanotopological Spaces

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Abstract

The aim of this paper is to introduce a new class of sets, namely Nano semi-open sets and Nano semi*-closed sets. Further we define Nano semi*-interior and Nano semi*-closure and discuss its properties. Additionally we relate Nano semi*-open sets and Nano semi*-closed sets with some other sets.*

Keywords *and phrases: Nano semi*-open, Nano semi*-closed, Nano semi*-interior, Nano semi*-closure.*

I. INTRODUCTION

In 1963 Levine[5] introduced semi-open sets in topological spaces. After Levine's work, many mathematicians turned their attention to generalizing various concepts in topology by considering semi-open sets. A.Robert and S. Pious Missier [6] introduced the concept of semi*- open sets and discussed some of their basic properties. Levine [9] defined and studied generalizied closed sets in 1970. Das[2] defined semi-interior point and semi-limit point of a subset.M. LellisThivagar[3] introduced Nano topological space with respect to a subset X of a universe which is defined interms of lower and upper approximations of X. He has also defined Nano closed sets, Nano-interior and Nano-closure of a set. He also introduced the weak forms of Nano open sets. K.Bhuvaneswari and K.MythiliGnanapriya[1] introduced Nano g-closed sets and obtained some of the basic results. In this paper, we define a new class of sets called s^*_N open and s^*_N closed sets in Nano topological space and study the relationships with other Nano sets.

II. PRELIMINARIES

Definition 2.1:A subset A of a topological space (X,τ) is **semi-open [5]** if there is an open set U in X such that $U \subseteq A \subseteq Cl(U)$ or equivalently if $A \subseteq Cl(Int(A))$. The class of all semi-open sets in (X,τ) is denoted by **SO(X,τ)**

Definition 2.2: A subset A is a topological space (X,τ) is **pre-open [7]** (resp. α-open[8]) if A⊆int(cl(A)) (resp. A⊆int(cl(int(A)))).

Definition 2.3: If A of a subset of a space X, the **semi-interior** of A is defined as the union of all semi-open sets of X contained in A. It is denoted by **sInt(A)**

Definition 2.4: A subset A of a space X is **generalized-closed** (briefly g-closed)[9] if Cl(A)⊆U whenever A⊆U and U is open in X.

Definition 2.5: If A is a subset A of a space X, the **generalized-closure** [3] of A is defined as the intersection of all g-closed sets in X containing A and is denoted by Cl*(A).

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NEW NOTIONS IN IDEAL TOPOLOGICAL SPACES

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Abstract:- The aim of this paper is to introduce the notion of Fg closed sets in Ideal Topological Spaces. Several properties and characterizations of Fg closed sets in Ideal topological spaces are discussed.

Keywords— Feebly closed set, Semi closed set , I-closed set , Feebly I-closed set , Semi I closed set, Fg I closed sets.

I.INTRODUCTION

The concept of ideal topology in the classic text was introduced by Kuratowski [6]. D.Jankovie and R Hamlelt [2] introduced the concept of I open set in Ideal Topological Space. After that M.E.Abdel, E.Monsef, F.Iashien and A.A.Nasef [7] introduced a new study about the I open set. S. N. Maheshwari and P. C. Jain [9] introduced the concept of feebly open set and feebly closed set in topological spaces, after that many Authors used the concept of feebly open set and feebly closed sets to study another concepts in Topological Spaces.

N.Ievin [8] introduced the concept of semi open sets and semi closed sets. After that Hatir defined semi open set in Ideal Topological Spaces [3]. Then K. Yiezi Al Talkany and H. Suadud Al Ismael [12] were defined the feebly open set in ideal topological space. In this paper we introduced new notion of closed sets in ideal topological spaces called F_gI closed set. Further we investigated its properties and its characterizations. Throughout this paper (X, τ) or simply X denote topological space on which no separation axioms are assumed unless otherwise explicitly stated.

II. PRELIMINARIES

Definition 2.1[5]

An ideal I on a topological space $(\boldsymbol{X}, \boldsymbol{\tau})$ is a nonempty collection of subsets of X, which satisfies the following two conditions:

(i) If $A \in I$ and $B \subseteq A$ implies $B \in I$

(ii) If $A \in I$ and $B \in I$, then $A \cup B \in I$

Definition 2.2[5]

An ideal topological space is a topological space $(\boldsymbol{X}, \boldsymbol{\tau})$ with an ideal I on X and it is denoted by $(\boldsymbol{X}, \boldsymbol{\tau}, \boldsymbol{I})$. Given a topological space $(\boldsymbol{X}, \boldsymbol{\tau})$ with an ideal I on X and if $\boldsymbol{\rho(X)}$ is the set of all subsets of X, a set operator $(*) : \boldsymbol{\rho(X)} \rightarrow \boldsymbol{\rho(X)}$, called a local function of A with respect to τ and I, is defined as follows: for $\boldsymbol{A \subseteq X}$, $\boldsymbol{A^*(I, \tau)} = \{\boldsymbol{x \in X / U \cap A \notin I}$ for every $\boldsymbol{U \in \tau(x)}\}$ where $\boldsymbol{\tau(x)} = \{\boldsymbol{U \in \tau / x \in U}\}$. We simply write A^* instead of $\boldsymbol{A^*(I, \tau)}$.

Definition 2.3

For every Ideal topological space (X, τ, I), there exists a topology $\tau*(I)$, finer than τ, generated by β(I,τ) ={U-i/U ∈τ & i∈ I}. But in general (I, τ) is not always a topology. Additionally $cl^*(A) = A \cup A^*$ defines a kuratowski closure operator for $\tau^*(I)$. If $A \subseteq X$, $cl(A)$ and int(A) will, respectively, denote the closure and interior of A in (X, τ) and $int^*(A)$ denote the interior of A in $(X, \tau*)$. A subset A of an ideal space (X, τ, I) is *-closed (resp. *-dense in itself) if $A^* \subseteq A$ (resp. $A \subseteq A^*$).

Definition 2.4 [7]

Given a space (X, τ, I) and $A \subseteq X$, A is said to be I open if $A \subseteq intA^*$. We denoted by $IO(X, \tau) = \{A \subseteq X, A \subseteq int(A^*)\}$ or simply write I.O for IO(X,T) when there is no chance for confusion.

Proposition 2.5[5]

Let (X, τ, I) be an ideal topological space then every closed I open subset A of X is open set.

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FABRICATION OF ZNS THIN FILMS BY NEBULIZER SPRAY PYROLYSIS TECHNIQUE FOR SOLAR CELL APPLICATIONS

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ABSTRACT

In the present work, Zinc Sulphide was prepared by nebulizer spray pyrolysis technique on glass substrates at varying deposition temperatures. For Zinc Sulphide thin films the temperature was optimized to be 350°C. The structural, morphological, optical and electrical properties of the as deposited ZnS thin films were studied for solar cell application and the results are discussed.

Key words: Spray Pyrolysis, ZnS, XRD, SEM, EDAX, AFM, UV-VIS.

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