CRITERION 3

SSR CYCLE IV

RESEARCH, INNOVATIONS AND EXTENSION

3.3. Research Publication and Awards

3.3.2.1: Total number of books and chapters in edited volumes/books published and papers in national/ international conference proceedings year wise during last five years

To whomsoever it may concern

I hereby declare that the following details and documents are true to the best of my knowledge. They have been checked and verified.

3.3.2. Number of books, chapters and papers in conference proceedings

S. No	Academic Year	No. of Books	No. of Chapters	No. of Conference Proceedings	Total
1	2022-2023	23	25	43	91
2	2021-2022	09	16	19	44
3	2020-2021	14	10	25	49
4	2019-2020	16	15	29	60
5	2018-2019	02	06	06	14

(Dr. K. SUBBULAKSHMI)
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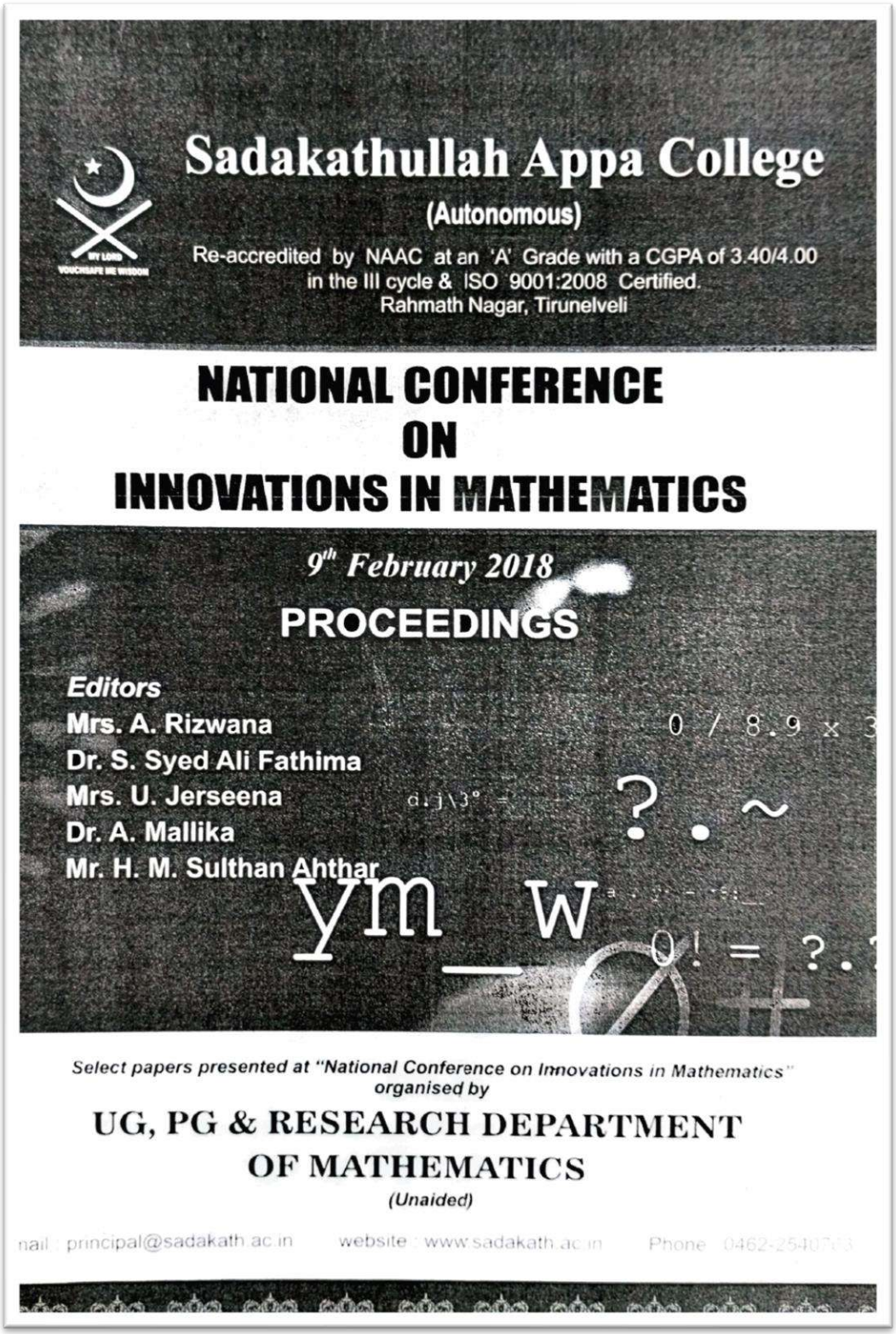
2018-2019

Proceedings

Contents

Dr. Baladeepa Arasi & Dr. V. Maheswari - g^*-Ri i=0,1 spaces in Topological spaces



CONTENT

$\hat{g}^*$-R_i i=0,1 Spaces in Topological Spaces

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Abstract

In this paper, we introduce and study new type of separation axioms namely $\hat{g}^*$-R_0 and $\hat{g}^*$-R_1 spaces using $\hat{g}^*$-open sets in topological spaces. Several properties and characterizations are provided.

Keywords: $\hat{g}^*$-open sets, $\hat{g}^*$-R_0 space and $\hat{g}^*$-R_1 space.

1.Introduction

The notion of semi-open sets which was introduce
d by N. Levine in 1963 **[3]** is one of the well-known notion of generalized open sets. Several types of generalized closed sets were introduced such as ĝ-closed sets **[9]** which was introduced by M.K.R.S. Veera Kumar in 2001.The $\hat{g}^*$-closed set **[8]** in Topological spaces was introduced by M. Pauline Mary Helen and A. Gayathiri. In this paper. $\hat{g}^*$-R_0 and $\hat{g}^*$- R_1 are introduced via $\hat{g}^*$-open sets and some of its basic properties are discussed.

2.Preliminaries

Throughout this paper, X and Y denote the topological spaces (X,τ) and (Y,σ) respectively and on which no seperation axioms are assumed unless otherwise explicitly stated. Let A be a subset of the space X. The interior and closure of a set A in X are denoted by int(A) and cl(A) respectively. The complement of A is denoted by (X-A) or A^c. In this section, let us recall some definitions and results which are useful in the sequel.

Definition2.1.

A subset A of a space X is called *semi-open* if $A \subseteq (cl(int(A))$.**[3]**

Definition2.2.

A subset A of a topological space (X, τ) is called a *ĝ-closed set* (briefly *ĝ-closed*)**[9]** if $cl(A) \subseteq U$ whenever $A \subseteq U$ and U is semi-open in X. The complement of ĝ- closed set iscalled *ĝ-open*.

Dr. V. Maheswari, Dr. K. Bala Deepa Arasi - g^*-separation axioms in Topological spaces

National Conference on Innovation in Mathematics (NCIM – 2018) – February 09, 2018 | 81

ĝ*-Seperation Axioms in Topological Spaces

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Abstract

The aim of this paper is to introduce the notions of ĝ*-T_0, ĝ*-$T_1$and ĝ*-T_2 spaces via ĝ*-open sets in generalized topological spaces. Also, we characterize such spaces and discuss their properties.

Keywords: ĝ*-open sets, ĝ*-T_0 space, ĝ*-T_1 space and ĝ*-T_2 space.

1.Introduction

The notion of semi-open sets which was introduced by N.Levine in 1963 [1] is one of the well-known notion of generalized open sets.The concept of T_i-spaces (i=0,1&2) was defined by Willard in 1970 [5]. Several types of generalized closed sets were introduced such as ĝ-closed sets [4] which was introduced by M.K.R.S. VeeraKumar in 2001.The ĝ*-closed set in Topological spaces[2] was introduced by M.Pauline Mary Helen and A. Gayathiri. In the present paper, ĝ*-separation axioms are introduced via ĝ*-open sets and some of its basic properties are discussed.

2.Preliminaries

Throughout this paper, X and Y denote the topological spaces (X, τ) and (Y,σ) respectively and on which no seperation axioms are assumed unless otherwise explicitly stated. Let A be a subset of the space X. The interior and closure of a set A in X are denoted by int(A) and cl(A) respectively.The complement of A is denoted by (X-A) or A^c. In this section, let us recall some definitions and results which are useful in the sequel.

Definition2.1.

A subset A of a space X is called *semi-open* if $A \subseteq (cl(int(A))$.[1]

Definition2.2.

A topological space X is said to be T_0 space [1] if for every pair of distinct points x and y of X, there exists a open set G such that $x \in G$ and $y \notin G$ or $y \in G$ and $x \notin G$.

Definition2.3

A space X is said to be T_1 space [1] if for every pair of distinct points x and y in X, there exist open sets U and V such that $x \in U$ but $y \notin U$ and $y \in V$ but $x \notin V$.

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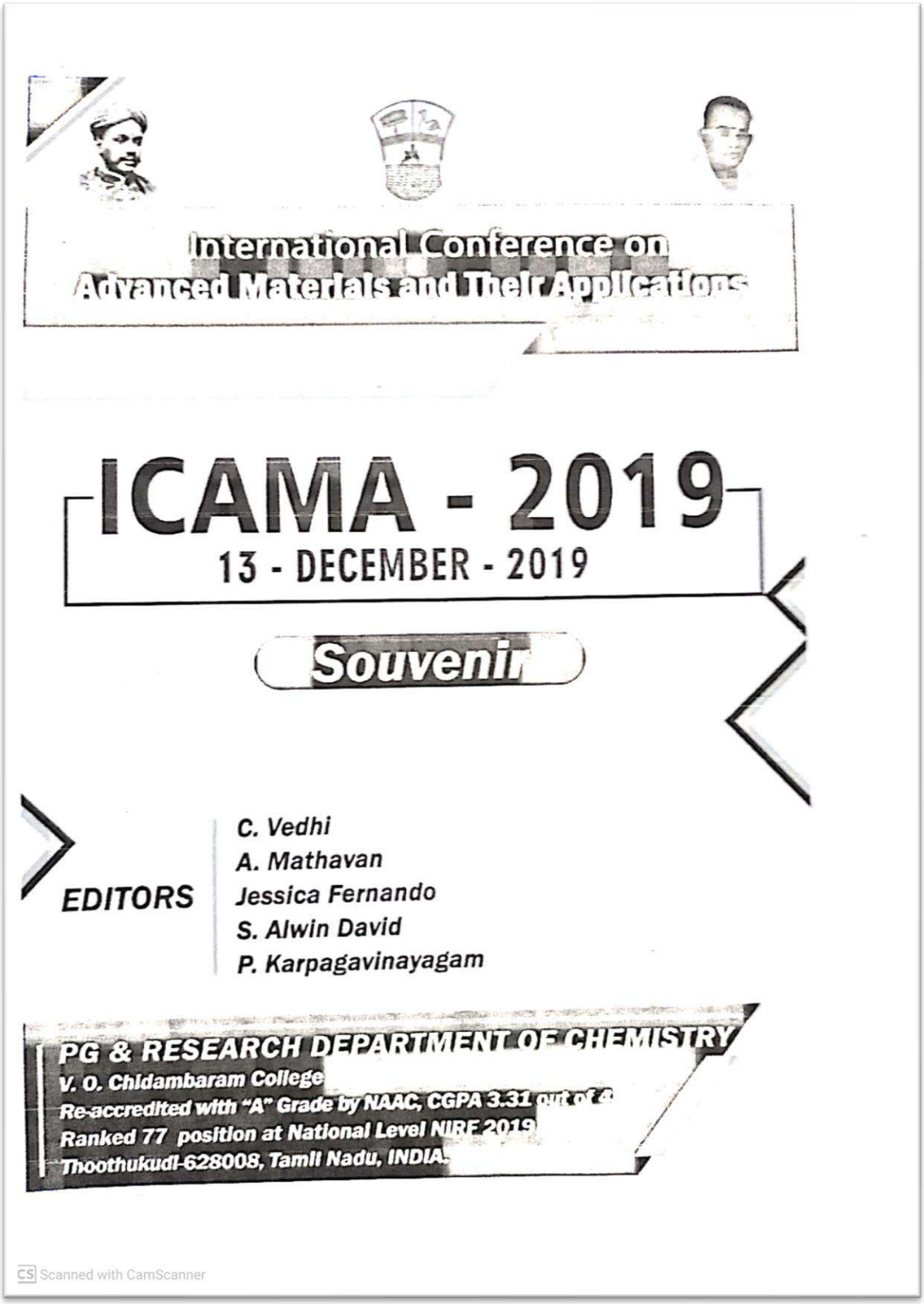
S. Kalaiarasi- Synthesis and Characterization Wo_3/Graphene oxide Nanocomposite



INTERNATIONAL CONFERENCE ON ADVANCED MATERIALS AND THEIR APPLICATIONS – 2019 (ICAMA - 2019)

Synthesis and Characterization of WO_3/Graphene oxide Nanocomposite

PP-40

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Abstract

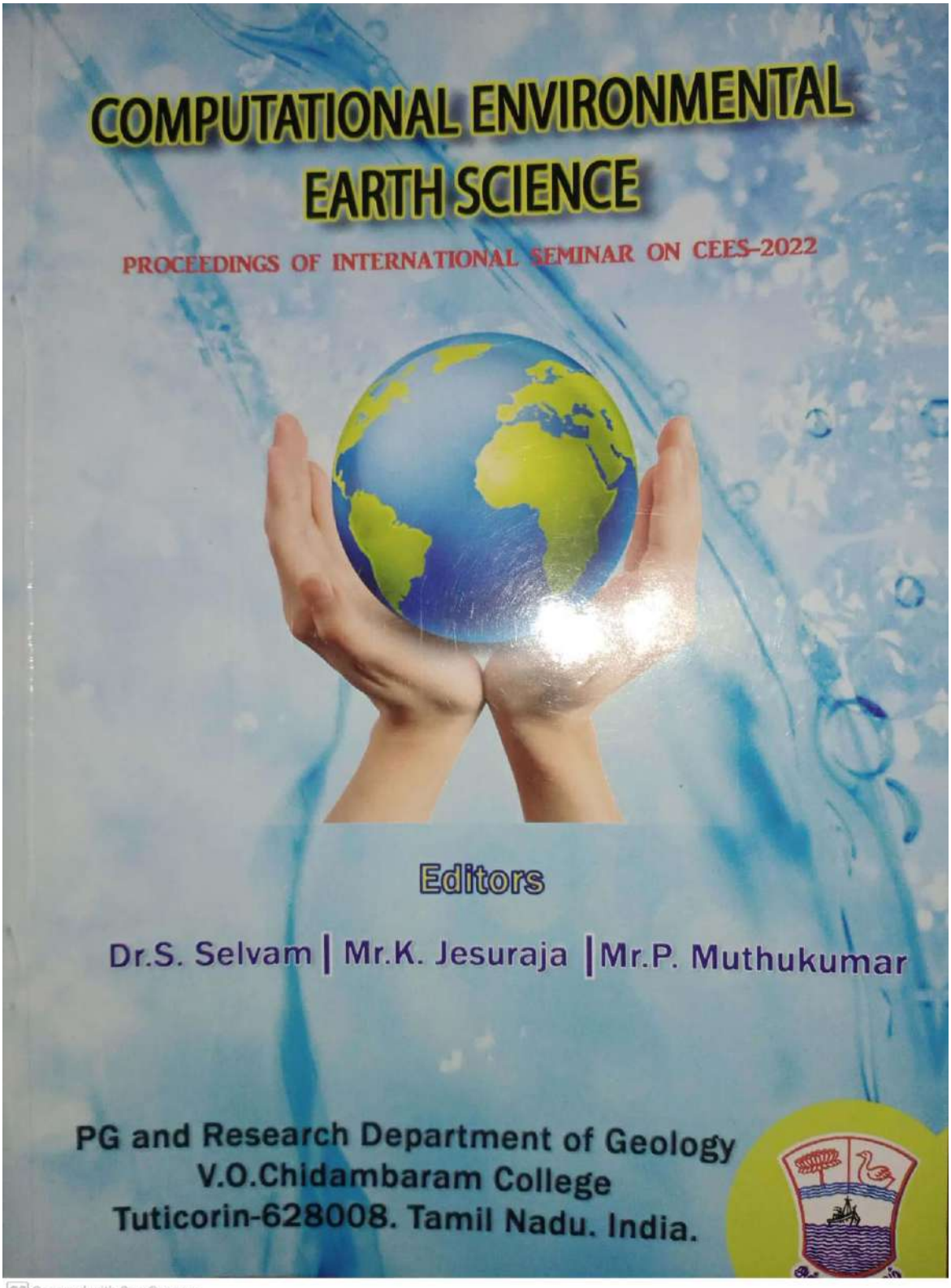
Nano structured metal oxides received considerable research attention due to their unique properties that can be used for designing advanced nanodevices. Thus, in the present study, Tungsten oxide/graphene oxide (WO_3/GO) nanocomposite was synthesized, characterized and implemented in an electrochemical system. Graphene oxide was synthesized by Hummer's method. WO_3 doped Graphene oxide nanocomposite were also successfully synthesized using sodium tungstate as the source of Tungsten .The crystalline structure and optical properties of WO_3 doped GO nanocomposite were characterized by UV-VIS spectroscopy, IR spectroscopy, X-ray diffraction (XRD) studies, Field Emission Scanning Electron Microscope (FESEM) with EDAX spectroscopy. The XRD spectrum showed diffraction peaks corresponding to the crystal planes of crystalline Tungsten oxide. Using Debye scherrer formula, the size of the undoped and Tungsten oxide doped Graphene oxide nanocomposite were also calculated. The morphological studies of the nanocomposite revealed crystal like morphology. The energy dispersive analysis confirmed the presence of Carbon,Tungsten and oxygen in the doped WO_3 /GO lattice. Cyclic voltammetric behaviour showed better electrochemical response with the doped sample when compared with the undoped sample.

Keywords: *Graphene Oxide,WO_3,Cyclic Voltammetry,nanoparticles.*

Introduction

Nanotechnology is a rapidly growing area of importance and interest, incorporating a wide range of research fields. It deals with materials or structures in nanometer scale, typically ranging from sub nanometers to several hundred nanometers.[1]Metal oxide semiconductors with reasonable energy gaps illustrate lower light-harvesting ability in visible light.[2] Graphene is a new generation of carbon allotropes with two-dimensional single-layer of carbon sheets and a

S.Kalaiarasi-Assessment of Fluoride Content in Different Water, Soil, Milk and Tooth Paste



Conference proceeding
International Seminar on "Computational Environmental Earth Science" (CEES 2022)

ASSESSMENT OF FLUORIDE CONTENT IN DIFFERENT WATER, SOIL, MILK AND TOOTHPASTES

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A.Introduction

Fluoride is one of among chemicals that have been shown to cause significant effects in people through drinking water [1]. At its low concentration in drinking water, fluoride has beneficial effects on teeth development, but excessive exposure (greater than the WHO guideline value of 1.5 mg/l), can give rise to a number of adverse effects [2-4]. Fluoride content in water depends not only on the geochemical background and climate-biological factor such as hydrological condition, land-form, rainfall, and evaporation, but also on the adsorption and leaching of fluoride in soil. The adsorption –leaching process directly affects fluoride migration and exchange from soil to water. Studies on adsorption or desorption of fluoride have shown that the nature of soil or rock relates to the release of fluoride from soils and rocks [5-13]. All the vegetation contains some amount of fluoride, which is absorbed from the soil and water [14].

B. Materials and Methods:

a) Laboratory analysis:

The fluoride estimation was carried out at R & D Analytical Laboratory, with the help of Mr. P.Murugeshan, Scientific Office, Heavy Water Plant, and Thoothukudi .The fluoride estimation was carried out in following steps:

Method of Fluoride Estimation of different samples

b) Method of Fluoride Estimation:

Fluoride was determined in the different samples extracts by using Ion Selective Electrode (Orion 9609BNWP). Before estimating fluoride content in the samples extract the instrument was standardized by fluoride standards containing TISAB III. The electrode reading was standardised by using pre prepared 1ppm, 5ppm and 10ppm solutions.

Fluoride Estimation of Different Samples:

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International Seminar on "Computational Environmental Earth Science" (CEES 2022)

the fluoride estimation in 5ml of each sample extract is measured in a plastic container and 1ml of TISAB buffer solution was added to it and the sample was analysed out by Ion Selective Electrode (Orion 9609BNWP) and after each sample fluoride estimation the electrode is to be washed with deionised water and dried properly [15].

Result and Discussion

Drinking Water

The fluoride content of various drinking water from 0.05 to 0.12 mg/l .Therefore, the fluoride content of water in vilathikulam were higher than the fluoride content of other water. Table 1 shows the fluoride levels of drinking water collected from different areas.Fig:1 show the fluoride content of different water samples. The use of fluoride containing water for irrigation for crops that tend to accumulate fluoride should be reduced as much as possible in order to reduce the risk of human exposure to fluoride. However in areas where only fluoride contaminated irrigation water is available then it is advisable to grow crops with relatively low capabilities to absorb fluoride or crops not having high fluoride levels can be transported for consumption in those regions which are having deficient levels of fluoride in drinking water. [16]

Figure 1 Fluoride concentration in the different drinking water

S.NO	Samples area(Water)	Concentration of fluoride in mg/l
1	kovilpatti	0.05
2	Santhankulam	0.10
3	Ottapidaram	0.17
4	Srivaikundam	0.04
5	Vilathikulam	0.12

Table 1 Fluoride levels found in drinking water samples

Conclusion

From the present study, we can conclude that fluoride concentration in several drinking waters can be an additional dietary source of fluoride which can be beneficial in preventing dental caries or deleterious for occurrence of fluorosis. It can be concluded that water and soil fluoride levels have a great influence on fluoride concentration in grain.

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S.Kalaiarasi-Green Synthesis of Cerium Doped Nickel oxide Nanoparticles using Alternanthera sessilis Leaves--

Computational Environmental Earth Science

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GREEN SYNTHESIS OF CERIUM DOPED NICKEL OXIDE NANOPARTICLES USING ALTERNANTHERA SESSILIS LEAVES FOR THE DEGRADATION OF SUDAN BLUE DYE: AN ENVIRONMENTAL REMEDIAL APPROACH

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Abstract

The goal of this work is to synthesize Ce ion-doped NiO nanoparticles using Alternanthera sessilis leaf extract and investigate their outstanding properties in order to identify their diverse photodegradation application capabilities. In this study, undoped and doped nanoparticles were synthesised using Alternanthera sessilis leaf extract using the green synthesis method. Scanning Electron Microscopy (SEM) with EDAX, X-ray Diffraction Spectroscopy (XRD), and Atomic Force Spectroscopy (AFS) were used to characterize the prepared nanoparticles (AFM). XRD has been used to determine the structural properties of nanoparticle crystallite sizes. The SEM images revealed that the samples were crystalline. EDAX analysis detected elemental compositions. The degradation of Sudan dye under visible light irradiation was used to assess photocatalytic performance. Sudan blue dye degradation efficiency was 60.10% for Ce ion-doped NiO nanoparticles and 24.05% for undoped NiO nanoparticles. The results showed that Ce ion-deposited on the surface of NiO nanoparticles has a higher degradation efficiency than undoped NiO nanoparticles for Sudan blue dye colour removal. The antibacterial activity of undoped and doped nanoparticles against gramme-positive and gramme-negative bacteria has been investigated. This medicinal plant is used to treat hepatitis, bronchitis, tight chest, lung diseases and anti-cancer, anti-ulcer, anti-oxidant, anti-malarial, anti-diarrheal, anti-fungal, anti-microbial, anti-inflammatory anti-bacterial and anti-malarial activities.

Keywords: *SEM,EDAX,AFM,Photocatalytic Degradation, Sudan Blue Dye, Alternanthera Sessilis leaf*

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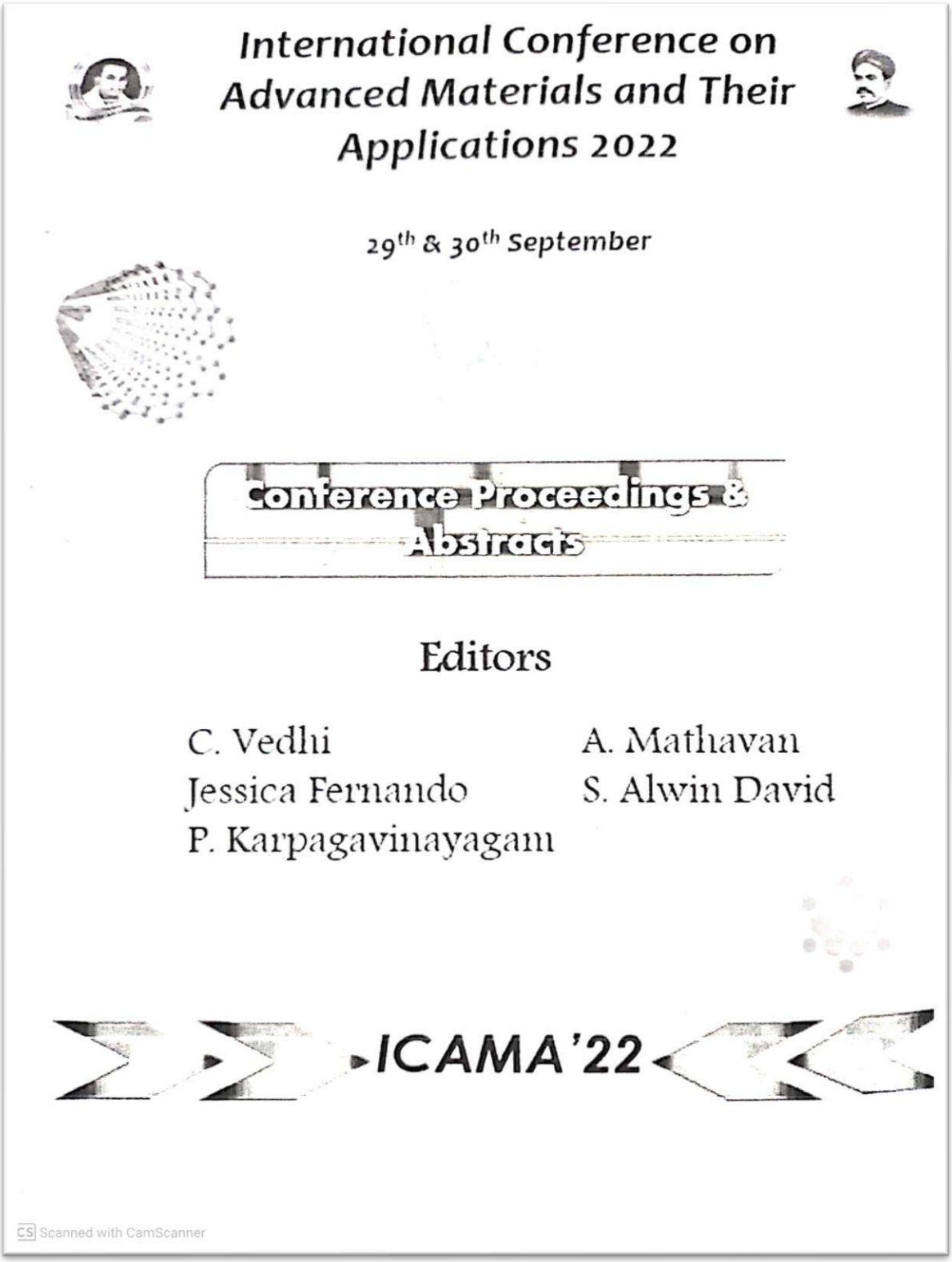
S.Kalaiarasi-Reduced graphene oxide based metal oxide nanocomposites synthesis and electrochemical characterization



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INTERNATIONAL CONFERENCE ON ADVANCED MATERIALS AND THEIR APPLICATIONS (ICAMA -2022)

PP - 09

Reduced graphene oxide based metal oxide nanocomposites: Synthesis and Electrochemical Characterization

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Abstract

The capacitance of carbon-based metal oxide nanocomposite was investigated in this study using a chemical synthesis method to create arGO/MnO_2@CeO_2nanocomposite. These prepared nanocomposites are characterised using Fourier transform infrared (FTIR) spectroscopy, XRD, and Field Emission Scanning Electron Microscope (FESEM) with EDAX spectroscopy. Using Debye scherrer's formula, the size of ther GO/MnO_2@CeO_2 nanocomposite were also calculated. The morphological studies of the nanocomposite revealed crystal like morphology. Cyclic voltammetric behaviour showed better electrochemical response with the nanocomposite.In this review,the current state of graphene-based metal oxide nanocomposite, include their synthesis and properties. Much emphasise has been placed on their diverse range of applications in fields such as electronics, electrochemistry, and electrical engineering.

Keywords: rGO, Electrochemicalsupercapacitor, Nanocomposite, FESEM, Cyclic Voltammetry

Introduction

Graphene is a two-dimensional material, one of the allotropes of carbon, and has a hexagonal structure of carbon atoms. Graphene has unique and remarkable properties, so its use has been extensively investigated for catalysis, including electrocatalysis, photocatalysis, and conventional heterogeneous catalysis[1].In this work, we report the synthesis of nanostructured composites, consisting of manganese and cerium oxide anchored on rGO, by the one-step chemical synthesis method. The prepared sample are investigated by FTIR, XRD, Field Emission Scanning Electron Microscope (FESEM) with EDAX spectroscopyand PL spectroscopy. The electrochemical properties of these materials are evaluated by cyclic voltammetry.

Synthesis of rGO/MnO_2@CeO_2 nanocomposite

A modified Hummer's method was used to create graphene oxide (GO). In-situ reduction co-precipitation was used to create a binary rGO/MnO_2@CeO_2 nar

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