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3.3.1.1 Number of research papers in the Journals notified on UGC CARE list year wise during last five years

HEI Input:

2023-24	2022-23	2021-22	2020-21	2019-20
22	27	15	24	12

DVV Suggested Input:

2023-24	2022-23	2021-22	2020-21	2019-20
11	08	07	12	09


Change Input:

2023-24	2022-23	2021-22	2020-21	2019-20
11	10	08	12	07


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2020-21

Sl. Number	Title of Paper	Author	Department	Journal Name	ISSN Number	Year of Publ.
1	A STUDY ON THE IMPACT OF GST ON THE ECONOMY OF INDIA	Sk. Shakeel	Commerce	THE MANAGEMENT ACCOUNTANT	0972-3529	2020
2	A STUDY ON THE IMPACT OF COVID-19 LOCKDOWN ON SHARE PRICE	Sk. Shakeel	Commerce	THE CHARTERED ACCOUNTANT	0009-188X	2021
3	Carbon Nano Onions– Polystyrene Composite for Sensing S-Containing Amino Acids	Dr. Goutam Nandi	Chemistry	Journal of Composite Science	2504-477X	2020
4	A readily accessible porous organic polymer facilitates high-yielding Knoevenagel condensation at room temperature both in water and under solvent-free mechanochemical conditions	Dr. Goutam Nandi	Chemistry	Catalysis Communications	1566-7367	2021
5	Heteroleptic bipyridine complex: Synthesis, spectral and structural analyses, and interconversion of its {Mo3S7} core to {Mo3S4} core	Dr. Goutam Nandi	Chemistry	Journal of Molecular Structure	0022-2860	2021
6	Thermally stable and robust gadolinium-based metal-organic framework: Synthesis, structure and heterogeneous catalytic O-	Dr. Saptarshi Biswas	Chemistry	Polyhedron	0277-5387	2021


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	arylation reaction					
7	A trinuclear Zn(II) Schiff base azido compound: synthesis, structure and exploration of antimicrobial activity	Dr. Saptarshi Biswas	Chemistry	New Journal of Chemistry	1369-9261	2021
8	In silico prediction of the functional consequences of nsSNPs in human beta-catenin	Amalesh Mondal	Physiology	Gene Reports	2452-0144	2021
9	Long Run and Short Run Linkages Between Credit and Output: An Appraisal of the Districts of West Bengal in India	Bankim Ghosh	Economics	International Journal of Asian Business and Information Management	1947-9638	2021
10	Socio-Cultural Transformation of Santhals in Bolpur-Santiniketan of Birbhum District, West Bengal	Madhumita Sen	Geography	IJCRT	2320-2882	2021
11	Nonlinear structure formation of electron acoustic waves in plasmas	Akash Biswas	Mathematics	Physica Scripta	0031-8949	2020
12	Three-dimensional wave group dynamics of ion acoustic waves in electron-positron-ion plasmas in the presence of an external uniform magnetic field	Akash Biswas	Mathematics	Physics of Plasmas	1070-664X	2021


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2020-21

Title of Paper: A Study on The Impact of GST on The Economy of India

Author: Sk. Shakeel

Journal: The Management Accountant

Link to the journal: <https://icmai-rnj.in/index.php/maj>

Link to the article: <https://icmai-rnj.in/index.php/maj/article/view/154020>

Proof of presence in UGC care list:

UGC-CARE List

You searched for "THE MANAGEMENT ACCOUNTANT ". Total Journals : 1

Search:

Sr.No.	Journal Title	Publisher	ISSN	E-ISSN	UGC-CARE coverage years	Details
1	The Management Accountant	The Institute of Cost Accountants of India	0972-3528	NA	from January-2022 to July-2024	Discontinued from July 2024

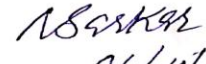
Showing 1 to 1 of 1 entries

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First Page of the paper:

A STUDY ON THE IMPACT OF GST ON THE ECONOMY OF INDIA

Abstract

Goods and Services Tax (GST) came into effect from 1st July 2017 through the implementation of the One Hundred and First Amendment of the Constitution of India by the Indian Government. The GST replaced multiple taxes such as Central Excise Tax (CST), Service Tax, Value Added Tax (VAT) and Entertainment Tax levied by the Central and State Government. It is a comprehensive, multistage, destination-based tax. In this study we analyze the impact of GST on Indian Economy. The present study attempts to evaluate the impact of GST on GDP growth rate, Consumer Price Index (CPI), Revenue and Fiscal Deficit of India. The study also highlights the role of a CMA with regard to GST.



CA Sk. Shakeel
Ph.D Scholar
University of Calcutta
Kolkata



Dr. Sukamal Datta
Principal
Naba Ballygunge Mahavidyalaya
Kolkata

Introduction

GST is a single National uniform tax levied all over India on all goods and services. In GST all indirect taxes such as Excise Duty, Central Sales Tax (CST) and Value Added Tax (VAT) etc have come under one umbrella. Introduction of GST is a very good step towards a comprehensive indirect tax reforms in India which is expected to lead India in the economic growth. The tax rates, rules and regulations are governed by the GST council. GST council is an apex member committee

to modify, reconcile or to procure any law or regulation based on the context of goods and services tax in India. The GST council is responsible for any revision or enactment of rule or any changes of the goods and services in India and for effective monitoring of GST, a network has been created, named as Goods and Services Tax Network (GSTN) which is formed for creating a sophisticated network, accessible to stakeholders, Government, and taxpayers to access information from a single source (portal). It is accessible to the tax authorities for tracking down every transaction. Table 1 shows the journey to GST.

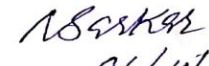
www.icmai.in

July 2020 - The Management Accountant 45


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Title of Paper: A STUDY ON THE IMPACT OF COVID-19 LOCKDOWN ON SHARE PRICE

Author: Sk. Shakeel

Journal: The Chartered Accountant

Link to the journal: <https://www.icaai.org/>

Link to the article: <https://www.icaai.org/post/ejournal-january2021>

Proof of presence in UGC care list:

UGC-CARE List

You searched for "THE CHARTERED ACCOUNTANT". Total Journals : 1

Search:

Sr.No.	Journal Title	Publisher	ISSN	E-ISSN	UGC-CARE coverage years	Details
1	The Chartered Accountant	Institute of Chartered Accountants of India	NA	0009-188X	from June-2019 to Present	View

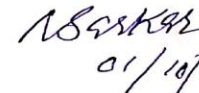
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First Page of the paper:

Capital Market


A Study on the Impact of Covid-19 Lockdown on Share Price

This paper attempts to analyze the impact of COVID-19 lockdown on share prices and also to know the percentage variations in share prices of ten selected companies from five different sectors, i.e., banking sector, steel sector, Oil sector, Insurance sector and Pharmaceutical sector. It covers daily price data of the selected companies for 28 days period, i.e., 14 days before the announcement of lockdown and 14 days after the date of lockdown announcement. For this purpose we are conducting t-test-statistics for null hypothesis. We specify a 95% confidence interval, or a 0.05 level of significance for each test-statistic. The study found significant evidence of impact on share price of companies in Banking and Insurance sector due to lockdown while no significant impact on share price of companies in Insurance sector and Pharmaceutical sector. Oil sector has witnessed mixed results. Read on...



CA. Sk. Shakeel*

* Member of the Institute.



Dr. Sukamal Datta**

** Principal, Naba Ballygunge Mahavidyalaya, University of Calcutta

In the present scenario when the whole world is struggling against COVID-19, a nationwide lockdown was announced from 24th March'2020 by our Prime Minister of India. COVID-19 lockdown degraded the Indian economy. The whole country is suffering from this damage and this has adversely affected the entire economy i.e., Gross Domestic Product (GDP) rate, Consumer Price Inflation (CPI), Revenue Collection, Stock Markets, Employment rate etc. Our study mainly focuses on the impact on share price due to COVID-19 lockdown.


Research Objective

- 1) To study the impact of COVID-19 lockdown on share price.
- 2) To know the percentage variations that has occurred in Share price before and after the COVID-19 lockdown.

Hypothesis

H0: $\mu_1 = \mu_2$ there is no significant impact of COVID-19 lockdown on share price.

H1: $\mu_1 \neq \mu_2$ there is significant impact of COVID-19 lockdown on share price.




www.icai.org
THE CHARTERED ACCOUNTANT | JANUARY 2021 | 79

Title of Paper: Carbon Nano Onions–Polystyrene Composite for Sensing S-Containing Amino Acids


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Author: Goutam Nandi

Journal: Journal of Composite Sciences (SCOPUS Indexed)

Link to the journal: <https://www.mdpi.com/journal/jcs>

Link to the article: <https://www.mdpi.com/2504-477X/4/3/90>

Proof of presence in UGC care list:

Journal of Composites Science

Open Access

Years currently covered by Scopus: from 2017 to 2024

Publisher: Multidisciplinary Digital Publishing Institute (MDPI)

E-ISSN: 2504-477X

Subject area: [Engineering: Engineering \(miscellaneous\)](#) [Materials Science: Ceramics and Composites](#)

Source type: Journal

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First Page of the paper:



Article

Carbon Nano Onions–Polystyrene Composite for Sensing S-Containing Amino Acids

Dipak Gorakh Babar ¹, Nidhi Rani Gupta ², Goutam Nandi ³ and Sabyasachi Sarkar ^{4,*}

¹ Department of Chemistry, University of Mumbai, Vidyanaigari, Santacruz (E), Mumbai 400098, India; dgbabar@gmail.com

² Department of Chemistry, Multani Mal Modi College, Patiala, Punjab 147003, India; nidhigupta0508@gmail.com

³ Department of Chemistry, Katwa College, Katwa 713130, India; gtm.nnd@gmail.com

⁴ Nano Science and Synthetic Leaf Laboratory, Center for Healthcare Science and Technology, Indian Institute of Engineering Science and Technology, Shibpur, Botanic Garden, Howrah 711013, India

* Correspondence: abya@iitk.ac.in or sabby@chem.iests.ac.in; Tel.: +91-33-2668-6464

Received: 29 June 2020; Accepted: 8 July 2020; Published: 10 July 2020



Abstract: A carbon nano-onions (CNOs)–polystyrene (PS) composite-based Pt electrode was used for the voltammetric detection of cysteine (Cys) and methionine (Met). The electrochemical behaviors of Cys and Met were analyzed with Cyclic Voltammetry (CV) and Differential Pulse (DP) Voltammetry at different pHs. The modified CNOs–PS/Pt electrode shows an oxidation peak at +0.4V for Cys and +0.8V for Met, respectively. Admirable sensitivity, easy fabrication, and reproducible performance make the proposed electrode well functional and useful for the qualitative and quantitative detection of sulphur-containing amino acids.

Keywords: modified electrode; cyclic voltammetry; DP voltammetry; cysteine; methionine

1. Introduction

Nanomaterials are used extensively as sensors and have seen pronounced development in recent years. After their combination with current electroanalytical methods, these nanomaterials gain excellent electrocatalytic properties, which can be used in demonstrating the electrochemical performance and sensing of electroactive compounds [1,2]. Carbon nano-materials, such as nanotubes, nanowires, nanoparticles, and graphene, are widely used because they have unique physical and chemical properties that can be used to modify the electrode in its use as an electrochemical sensor [3,4].

The detection of amino acids is extremely important, as they play a very important role in the construction of biological molecules because they are vital ingredients and, hence, the production of accurate and selective detection using a new method is of great importance [5–7]. However, it is not easy to detect amino acids because of the absence of natural chromophores for photometric detection. However, it is a very important assignment to determine these amino acids, particularly in different fields, such as biotechnology, food, and other related industries [8–10]. A number of clinical problem origins are due to the deficiency of cysteine (Cys) as it plays very significant role in biological systems [11–13]. In different biological media, cystine, which is the oxidized product of Cys, assists as a prototype for the thiol group of proteins [14]. Another S-containing amino acid methionine (Met), is also an important amino acid, as its deficiency causes dementia, fatty liver, slow growth, and edema problems. Therefore, the selective, sensitive, and low-cost determination of Cys and Met are very significant in the field of health diagnostics.

Carbon nano-materials, such as carbon nanotubes (CNTs), mesoporous carbon, and boron-doped diamond, and several modified electrodes with an enhanced response for electrochemical investigation,

J. Compos. Sci. 2020, 4, 90; doi:10.3390/jcs4030090

www.mdpi.com/journal/jcs

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Title of Paper: A readily accessible porous organic polymer facilitates high-yielding Knoevenagel condensation at room temperature both in water and under solvent-free mechanochemical conditions

Author: Goutam Nandi

Journal: Catalysis Communications (SCOPUS Indexed)

Link to the journal: <https://www.sciencedirect.com/journal/catalysis-communications>

Link to the article: <https://www.sciencedirect.com/science/article/pii/S1566736721000273>

Proof of presence in UGC care list:

Catalysis Communications

Open Access

Years currently covered by Scopus: from 2000 to 2024

Publisher: Elsevier

ISSN: 1566-7367

Subject area: Chemistry: General Chemistry Chemical Engineering: Process Chemistry and Technology Chemical Engineering: Catalysis

Source type: Journal

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0.633

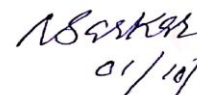
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First Page of the paper:

Catalysis Communications 154 (2021) 106304

Contents lists available at ScienceDirect

Catalysis Communications

journal homepage: www.elsevier.com/locate/catcom

Short communication

A readily accessible porous organic polymer facilitates high-yielding Knoevenagel condensation at room temperature both in water and under solvent-free mechanochemical conditions

Parishmita Sarma^a, Kashyap Kumar Sarmah^a, Dharitri Kakoti^a, Sanjeev Pran Mahanta^b, Nadeesh Madusanka Adassooriya^c, **Goutam Nandi^{d,e}**, Pranab Jyoti Das^{d,e}, Dejan-Krešimir Bučar^f, Ranjit Thakuria^{d,e}

^a Department of Chemistry, Gauhati University, Gauhati 781014, Assam, India
^b Department of Chemical Sciences, Tezpur University, Tezpur 784 028, India
^c Department of Food Science & Technology, Wiyemiya University of Sri Lanka, Makumbura, Gallewela 60170, Sri Lanka
^d School of Chemistry, Sackler Faculty of Exact Sciences, Tel-Aviv University, Ramat-Aviv, 69978 Tel-Aviv, Israel
^e Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, United Kingdom
^f Department of Chemistry, Katwa College (Affiliated to the University of Burdwan) Katwa, Purba Bardhaman, West Bengal, PIN: 713130, India

ARTICLE INFO

Keywords:
Porous organic polymers
Catalysis
Amorphous materials
Mechanochemistry
Knoevenagel condensation

ABSTRACT

A novel nitrogen-rich amorphous porous organic polymer has been synthesized using a microwave-assisted process. Its high chemical stability, reusability and poor solubility enable the use of the porous polymer as a metal-free heterogeneous catalyst for C–C bond formation at ambient temperature under environmentally benign conditions.

1. Introduction

The Knoevenagel condensation reaction is a fundamentally important reaction for the formation of C–C bonds in organic synthetic chemistry [1]. These condensation reactions are generally conducted in organic solvents and are facilitated by a wide range of bases (e.g. ammonia, amines, etc.) [2]. In recent years, the high utility of the Knoevenagel condensation reaction was further promoted through the development of numerous catalysts to enhance reaction yields and shorten times [3–6]. Despite the appreciable variety of available catalysts and their efficiencies [9], however, the need to develop catalysts that enable fast access to condensation products in high yields under environmentally friendly conditions still persists [10–15]. We report herein the use of a readily accessible porous organic polymer (POP) as a cost efficient, stable and reusable catalyst for fast and high-yielding Knoevenagel condensation reactions under pH-neutral conditions in water and at room temperature.

Porous organic polymers (POPs) are widely used materials for applications in gas storage [16,17], separation sciences [18–21] and optoelectronics [22]. POPs are also extensively used as heterogeneous catalysts [20,23,24] owing to their high thermal and chemical (i.e. hydrolytic) stability under extreme reaction conditions [25,26] and can, in terms of functionality, easily compete with other classes of emerging and established porous materials (e.g. metal-organic, covalent organic and zeolitic imidazolate frameworks) [27]. To enhance their catalytic properties, POPs are frequently doped with inorganic nanoparticles [28]. A recent study, for example, has shown that such doped, organic-inorganic hybrid catalysts enable Knoevenagel condensation reactions in water with remarkable efficiency [29].

2. Experimental section

2.1. Synthesis of the AmPOP catalyst

Stoichiometric amounts of melamine (252 mg, 2 mmol) and terephthaloyl chloride (609 mg, 3 mmol) in DMSO (15 ml) with catalytic amounts of triethyl amine (0.5 ml) were placed in a round bottom flask. The obtained solution was refluxed under microwave condition at 420

* Corresponding authors.
E-mail addresses: pnandi@ucla.edu (P.J. Das), ranjit.thakuria@gmail.com (R. Thakuria).

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Available online 13 March 2021
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Title of Paper: Heteroleptic bipyridine complex: Synthesis, spectral and structural analyses, and interconversion of its {Mo3S7} core to {Mo3S4} core

Author: Goutam Nandi

Journal: Journal of Molecular Structure (SCOPUS Indexed)

Link to the journal: <https://www.sciencedirect.com/journal/journal-of-molecular-structure>

Link to the article: <https://www.sciencedirect.com/science/article/abs/pii/S0022286021002696>


Proof of presence in UGC care list:

Journal of Composites Science Open Access ⓘ Years currently covered by Scopus: from 2017 to 2024 Publisher: Multidisciplinary Digital Publishing Institute (MDPI) E-ISSN: 2504-477X Subject area: Engineering: Engineering (miscellaneous) Materials Science: Ceramics and Composites Source type: Journal View all documents > Set document alert Save to source list	CiteScore 2023 5.0 ⓘ SJR 2023 0.583 ⓘ SNIP 2023 1.012 ⓘ
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First Page of the paper:

Journal of Molecular Structure 1234 (2021) 130138

Contents lists available at ScienceDirect

Journal of Molecular Structure

journal homepage: www.elsevier.com/locate/molstr

Heteroleptic bipyridine complex: Synthesis, spectral and structural analyses, and interconversion of its $\{Mo_3S_7\}$ core to $\{Mo_3S_4\}$ core

Goutam Nandi^a, Sabyasachi Sarkar^b, Bezawada Sridhar Reddy^c, TaeYoung Kim^{d,*}, Kumud Malika Tripathi^{c,*}

^a Department of Chemistry, Katwa College, Katwa 713130, West Bengal, India
^b Ramakrishna Mission Vidyamandir, Belurmath, Howrah 711 202, West Bengal, India
^c Department of Chemistry, Indian Institute of Petroleum and Energy, Visakhapatnam 530063, India
^d Department of Material Science and Engineering, Gachon University, 1342 Seongnam-daero, Seongnam-si, Gyeonggi-do 461-701, South Korea

ARTICLE INFO

Article history:
 Received 29 December 2020
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Keywords:
 Trinuclear molybdenum cluster
 Unsymmetrical substitution
 Sulfide vacancies
 Molecular mimic
 Heterogeneous catalyst
 Luminescence

ABSTRACT

Unsymmetrical substitution of the bromide ligands in $[Et_4N]_2[Mo_3(\mu_2-S)(\mu-S)_2Br_2]$ by the 2,2'-bipyridine (bpy) ligand affords neutral heteroleptic cluster $Mo_3(\mu_2-S)(\mu-S)_2Br_4(bpy)$. The single crystal analysis of the product shows that the cluster crystallizes in P-1 space group with $a = 11.448(5)$, $b = 12.842(5)$, $c = 13.079(5)$; $\alpha = 79.734(5)$, $\beta = 85.812(5)$, $\gamma = 86.222(5)$. The asymmetric unit contains one full cluster moiety, one $Et_4N^+Br^-$ salt and one acetonitrile solvent molecule. The free bromide ion (from $Et_4N^+Br^-$) is responsible for strong halogen bonding interaction with three sulfur atoms of the cluster. The complex is formulated as $[Et_4N][Mo_3(\mu_2-S)(\mu-S)_2Br_4(bpy)Br] \cdot CH_3CN$ (**1**). Complex **1** contains a $\{Mo_3S_7\}$ core and its treatment with excess triphenyl phosphine (PPh₃) generates neutral complex **2** containing a $\{Mo_3S_4\}$ core. Complex **2** ($Mo_3(\mu_2-S)(\mu-S)_2Br_4(bpy)(PPh_3)_2$) can reversibly transform to its parent compound **1** when treated with excess elemental sulfur. This transformation involves the interconversion of the disulfide bridges to sulfide bridges, while maintaining a triangular geometry with the three molybdenum centers through μ_2-S bridging. The interconversion was examined by ³¹P NMR and FTIR spectroscopies. This interconversion is analogous to a molecular mimicry of the creation and refilling of desired sulfide vacancies. Complex **1** and complex **2** show strong emission bands at 350 and 345 nm, respectively, when their DMF solutions are excited at 300 nm. This suggests that these complexes have potential applications in photonic devices.

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1. Introduction

Metal sulfur clusters including clusters with transition metals have been widely explored in the area of inorganic chemistry because of their chemical, structural, and biochemical applications [1–3]. Among transition metal clusters, molybdenum-sulfur clusters, have drawn remarkable attention from synthetic chemists [1–3]. A wide variety of homometallic and heterometallic cubane-type clusters or incomplete cuboidal molybdenum-sulfur clusters have been studied in several interdisciplinary areas, since they provide diverse coordination environments to their central cores [2,4]. An attractive feature of triangular metal-sulfur clusters is their ability to act as metallogands. This allows them to accommodate an additional transition metal atom to complete their cuboidal struc-

ture, thereby introducing conventional functionalities and several other interesting properties in them [5]. These inorganic materials have wide applications in Mo-S enzyme mimicking, preparation of natural gas hydrodesulfurization catalysts, proton reduction, nitrogen activation, hydrogen evolution, hydrogenation, etc. [6–11]. Conversely, the redox transformation of trinuclear Mo_3S_7 core to Mo_3S_4 core through μ_2-S to $\mu-S$ interconversion allows for the rational design of lower valent metal sulfur clusters [12]. Moreover, μ_2-S to $\mu-S$ interconversion span a wide range of electronic, structural features and potential applications in molecular mechanics and catalysis due to their versatility and ability to trigger redox reactions [13].

In general, outer ligands in the homometallic or heterometallic triangular metal-sulfur cluster units $M_3(\mu_2-Q)(\mu-Q)_2$ ($M = Mo, W; Q = S, Se$) are usually substituted in a symmetrical manner, resulting in homoleptic clusters with fascinating physical properties such as magnetic conductivity and nonlinear optical activity [2,14,15]. However, unsymmetrical substitution of the outer ligands

* Corresponding author.

Email addresses: tae@kim@gachon.ac.kr (T. Kim), kumud120010@gmail.com, kumud@iipe.ac.in (K.M. Tripathi).

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Title of Paper: A trinuclear Zn(II) Schiff base azido compound: synthesis, structure and exploration of antimicrobial activity

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A trinuclear Zn(II) Schiff base azido compound: synthesis, structure and exploration of antimicrobial activity†

Minmoy Ghosh,^a Samik Biswas,^b Moumita Roy,^a Saptarshi Biswas,^c Parneli Ghosh,^d Subratnath Koner,^e Supratim Mandal^{b,*} and Sandip Saha^{b,**}

In this present work, we report the synthesis and structural characterization of a trinuclear Zn(II) complex $[Zn_3(N_3)_2Zn] \cdot H_2O$ (**1**), which was derived from a bi-compartmental (N_2O_4) Schiff base ligand (H_2L), synthesized by the 1:2 condensation of 1,4-butanediamine and 3-ethoxysalicylaldehyde. The complex was characterized using elemental analysis, IR and UV-Vis spectroscopies, 1H -NMR and single crystal X-ray diffraction studies. The antimicrobial properties of the complex have been investigated. The growing incidence of microbial resistance to available pharmaceuticals has become a major global health concern. The rationale of the study is to evaluate the antibacterial and antibiofilm activities and probable mechanism of action of the novel trinuclear zinc(II) complex. The extent of antibacterial activity was evaluated using the minimal bactericidal concentration method. The anti-biofilm potential of the compound was evaluated using the crystal violet assay and fluorescence microscopy. Radioactively labeled *N*-acetyl glucosamine, leucine, thymidine, and uridine were used to evaluate the effect of the zinc compound on the cell wall, protein, DNA, and RNA biosynthesis. Our zinc complex showed potential antibacterial activity against most of the tested bacterial samples with a maximum sensitivity against *Pseudomonas aeruginosa*. The zinc compound dependent inhibition of DNA synthesis and biofilm formation was found in *Pseudomonas aeruginosa*. Considering the results, we are proposing our novel zinc compound as a promising candidate for the development of antibacterial drugs.

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1. Introduction

Transition metal Schiff base complexes have been investigated extensively over the past few decades due to their importance in the development of coordination chemistry and versatile applications.¹⁻⁴ Polymeric coordination compounds are composed of organic-inorganic hybrid materials, known as coordination polymers (CPs). CPs are generally synthesized using metal ions or metal clusters with a series of different organic ligands.⁵⁻⁸ Depending on their structural diversity, a huge number of such compounds have been reported as making an important contribution in the development of catalytic activities, magnetic studies, gas sorption,

gas separation, drug delivery, fluorosensors, sensing studies, energy storage, and ion exchange properties.⁹⁻¹⁷ Schiff base metal complexes with transition metals, especially from the first-row, are well known from several studies on biological activities.¹⁸⁻²³ Complexes containing Zn(n) are really interesting due to their structural diversity, high thermal and redox stability, light emitting efficiency and potential applications.²⁴ Zn(n) based complexes have also exhibited novel features including optoelectronic properties and semiconductivity.²⁵⁻²⁸ Recently, trinuclear Zn(n) complexes have been reported by Chattopadhyay *et al.* with reduced Schiff bases and are used for the sensing of explosive nitroaniline compounds.^{29,30}

Zinc is an essential metal and is of biological interest being the second most abundant trace element next to iron in living cells.³¹ Many underdeveloped countries have been able to control the child mortality rate from chronic diarrhea after the invention of Baby Zinc, which is now included in the guidelines of the World Health Organization (WHO) for the treatment of childhood diarrhea.³² A literature study also revealed that Zn(n) complexes with drugs are used for the treatment of Alzheimer's disease, and show biological activities including antifungal, antibacterial/antimicrobial, anti-inflammatory and antitumor activities.³³⁻³⁷

^a Department of Chemistry, Acharya Prafulla Chandra College, New Barakpur, Kolkata-700237, India. E-mail: sandipsaha2009@yahoo.com

† Fax: +91-33-2537-8797

^b Department of Microbiology, University of Kalyani, Kalyani, West Bengal-741235, India. E-mail: sapsarshi.mandal@gmail.com

^c Department of Chemistry, Katwa College, Katwa, West Bengal-713130, India

^d Department of Chemistry, Jadavpur University, Kolkata-700032, India

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Title of Paper: Thermally stable and robust gadolinium-based metal-organic framework: Synthesis, structure and heterogeneous catalytic O-arylation reaction

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Thermally stable and robust gadolinium-based metal-organic framework: Synthesis, structure and heterogeneous catalytic O-arylation reaction

Pameli Ghosh^a, Tanmoy Maity^{a,b}, Saptarshi Biswas^c, Rakesh Debnath^a, Subratanath Koner^{a,*}

^a Department of Chemistry, Jadavpur University, Kolkata 700 032, India
^b Solid State and Coordination Chemistry Unit, Indian Institute of Science, Bangalore, Karnataka 560 012, India
^c Katwa College, Katwa, West Bengal 713 130, India

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ABSTRACT

Hydrothermal treatment of gadolinium nitrate and 2,6-naphthalenedicarboxylic acid (H₂NDC) afforded a new metal-organic framework compound, {[Gd₄(NDC)₆(H₂O)₆·2H₂O]_n}_n (**1**). Compound **1** has been characterized by single-crystal X-ray crystallography, elemental analysis, FT-IR spectroscopy, thermogravimetric analysis (TGA) and powder X-ray diffraction analysis. It is crystallized in the monoclinic system with the P2₁/n space group. Four crystallographically distinct Gd (III) centres are interconnected with each other through bridged carboxylate oxygen atoms and water molecules to form tetranuclear secondary building units, which are further connected through the carboxylate ligand and the network propagates along the crystallographic ac plane to form a 2D structure. Subsequent reinforcement from the remaining carboxylate oxygen atoms gives rise to a robust 3D framework structure. Thermogravimetric analysis demonstrates that compound **1** is fairly stable after dehydration under a nitrogen atmosphere.

Notably, compound **1** is capable of catalyzing the O-arylation reaction efficiently between substituted phenols and bromoarene under heterogeneous conditions at 80 °C to afford unsymmetrical diarylethers.
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1. Introduction

Metal-organic frameworks (MOFs) and coordination polymers (CPs) have received ever-growing attention for their fascinating architectures and variable dimensionality, and have enticed researchers to use MOFs in a variety targeted applications, like gas storage and separation [1], luminescence and sensing [2], catalysis [3], magnetism [4] and proton conduction [5], to mention a few. As crystal engineering and supramolecular chemistry have evolved, the design of metal-organic frameworks has attained a higher level of sophistication [6]. However, to have control over the structure of a material still remains a challenge.

Amongst the various applications of MOFs, one of the most distinct research areas is their use in heterogeneous catalysis. Nevertheless, there are some important catalytic reactions where MOF based catalysts have still not been employed extensively. Hence, there are increasing demands for MOFs being employed as catalysts in heterogeneous catalysis [7]. For environmental and economic reasons, there is a huge demand for replacing

homogeneous processes by efficient heterogeneous catalytic systems. Heterogeneous catalysts have many practical advantages in contrast to analogous homogeneous catalysts because of their reusability, easier separation and dose relevance to green and clean process [8]. As a result, in last two decades, MOFs have attracted immense attention in heterogeneous catalysis research. The metal centers of the network, especially coordinatively unsaturated metal centers present in the catalyst or such centers generated in situ under the reaction conditions, act as active sites for the catalysis [9]. Basic requirements for employing MOFs in heterogeneous catalysis include their chemical and thermal stability under the reaction conditions. Low thermal stability of an MOF limits its practical application in catalytic reactions. Further, leaching of metal ions during the reaction is undesirable in liquid phase heterogeneous catalysis. Therefore, the thermal and chemical stability of MOFs are of paramount importance as regards to heterogeneous catalysis. Metal-organic framework based catalysts have been successfully employed in organic transformations, such as Suzuki cross-coupling [10], the Sonogashira reaction [11] and epoxide ring opening reactions [12] etc. We have also reported the use of porous MOFs as heterogeneous catalysts in a variety of catalyzed organic reactions, such as C–C, C–N and C–O coupling

* Corresponding author.
E-mail address: subratan.koner@jadavpuruniversity.in (S. Koner).

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Nonlinear structure formation of electron acoustic waves in plasmas

Akash Biswas^{1,3}, Samiran Ghosh¹ and Nikhil Chakrabarti²

¹ Department of Applied Mathematics, University of Calcutta, 92, Acharya Prafulla Chandra Road, Kolkata-700 009, India

² Saha Institute of Nuclear Physics, 1/AF Bidhannagar, Calcutta-700 064, India

³ Also at ³ Department of Mathematics, Katwa College, Katwa, Purba Bardhaman, PIN-713 130, India

E-mail: nikhil.chakrabarti@saha.ac.in

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Abstract

Electron acoustic waves are found to be susceptible to various structure formation. Distinct appearance of structures depend on parameter space. We have shown that weakly nonlinear electron acoustic wave in presence of an external uniform weak magnetic field is governed by a generalized three-dimensional Korteweg-de Vries equation. The Painlevé analysis shows that this equation is conditionally integrable. Exact solutions with the help of Bäcklund transformation reveal that the nonlinear electron acoustic wave does support breather, bursts, soliton and periodic structures. The results are discussed in the context of experiments and observations.

Keywords: Electron acoustic wave, Soliton, Breather, Burst

(Some figures may appear in colour only in the online journal)

1. Introduction

Experimental observations and numerical simulations [1–4] confirm the existence of electron acoustic wave (EAW). These waves are also observed in space plasma environment such as in auroral region, geotail and several parts of magnetosphere [5–7]. In fact most of the electrostatic high frequency noises excited in the auroral plasma are due to the EAW [8]. EAWs exist in a two-temperature electrons and stationary ion plasma where the density (temperature) of cold electron $n_{c0}(T_c)$ to be sufficiently small compared to the density (temperature) of hot electron $n_{h0}(T_h)$ [6, 9–11]. The linear dispersion relation of EAW is given by [6] $\omega^2 = k^2 c_{sw}^2 (1 + 3k^2 \lambda_{De}^2) / (1 + k^2 \lambda_{Dh}^2)$, where k is the wave number, $\lambda_{De} = \sqrt{T_h / (4\pi n_{c0} e^2)}$ is the hot (cold) electron Debye length and $c_{sw} = \sqrt{T_h / m} (n_{c0} / n_{h0})$ is the EAW speed (m is the electron mass).

High time resolution measurements of electric and magnetic fields confirm that for strong excitation EAW easily evolve into nonlinear stage and form different coherent nonlinear structures in polar magnetosphere and in different auroral regions [12–22]. However, presence of magnetic field makes the plasma anisotropic. Also the charged particles perform cyclotron motions transverse to the field due to the

Lorentz force and the electron cyclotron frequency Ω plays a decisive role in the propagation dynamics of the nonlinear EAWs [23–26]. In case of weakly nonlinear wave, for strong magnetic field, the dynamics of the three dimensional (3D) nonlinear wave is governed by Zakharov–Kuznetsov (ZK) equation [24, 27]. In a physical situation where Ω is small but finite, ZK equation is inadequate to explain the proper dynamics of the nonlinear wave.

The aim of the present work is to investigate the effects of weak magnetic field (Ω is small but finite) on the nonlinear 3D EAWs. The dynamics of the weakly nonlinear EAW under the influence of weak magnetic field is shown to be governed by a generalized 3D Korteweg–de Vries (KdV) equation. The integrability of this equation is studied with the help of Painlevé property, which shows that the nonlinear equation is conditionally integrable. Exact analytical solutions using Bäcklund transformation are derived, which predicts the breather, bursts, soliton and periodic structures of EAWs in different parameter space. According to our knowledge, this has not been demonstrated before. Therefore the nonlinear structures of EAWs we demonstrate here is a novel result in this work. The results of the present investigation well explains the physics of formation of coherent nonlinear structures observed in space plasmas [16, 17].

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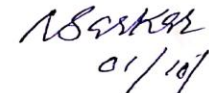
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Akash Biswas,¹ Debkumar Chakraborty,² Sourav Pramanik,³ and Samiran Ghosh⁴

AFFILIATIONS

Department of Applied Mathematics, University of Calcutta, 92, Acharya Prafulla Chandra Road, Kolkata-700009, India

¹Permanent address: Department of Mathematics, Katwa College, Katwa, Purba Bardhaman-713130, India. Author to whom correspondence should be addressed: akash1995.biswas@gmail.com

ABSTRACT

Three dimensional (3D) wave group dynamics of ion acoustic wave is studied in electron-positron-ion (EPI) plasmas incorporating the effects of an external uniform magnetic field through the Laedke-Spatschek equation. In the presence of self-interaction (self-focusing effect), the wave group dynamics is shown to be governed by a (3 + 1) nonlinear Schrödinger equation. The derived nonlinear equations are solved analytically and the solutions predict a wide class of nonlinear structures in EPI plasma in the presence of magnetic field. The boundaries of stable and unstable solutions are also specified in parametric space. The results are expected to provide deeper insights into the ionic processes occurring in both astrophysical and laboratory plasmas.

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1. INTRODUCTION

Electron-positron (EP) plasmas are found in early universe, active galactic nuclei, solar flares, white dwarf, pulsar magnetosphere, etc.¹⁻¹⁰ Positrons are created in interstellar medium when the cosmic ray interacts with atoms or nuclei. Even in experimental setups like multicell trap and stellarator, positrons can be created with sufficient long lifetimes to maintain a steady state for an extended period.¹¹ The presence of heavy ions is quite common in both astrophysical and experimental situations, along with the electrons and positrons. Due to the longer lifetime of positrons, recombination of electrons and positrons becomes relatively unimportant over a wide range of parameters. Even at moderate electron density ($\sim 10^{10} \text{cm}^{-3}$) and temperature (as low as 1 eV), the positron annihilation time is found to be adequately high.¹¹⁻¹³ Undoubtedly, it provides a proper window to look for the basic behavior of low frequency (LF) electrostatic modes in laboratory produced electron-positron-ion (EPI) plasmas. In such EPI plasma, both the electrons and positrons participate in the shielding process and the Debye length (λ_D) is defined as¹⁴

$$\lambda_D = \frac{1}{\sqrt{\lambda_{De}^{-2} + \lambda_{Dp}^{-2}}} = \frac{\lambda_{De}}{\sqrt{1 + \delta_p \eta_p}},$$

where $\delta_p = n_{p0}/n_{e0}$, $\eta_p = T_e/T_p$, ϵ_0 is the permittivity of the free space, $\lambda_{De(p)}$ is the Debye length of the electron (positron), $n_{e(p)0}$ is the equilibrium number density of electron (positron), and $T_{e(p)}$ is the electron (positron) temperature in energy unit. In the long wavelength limit ($k\lambda_D \ll 1$), the phase velocity of the LF ion acoustic wave (IAW) in EPI plasma is given¹⁴ by

$$C_s = C_s \sqrt{(1 - \delta_p)/(1 + \delta_p \eta_p)},$$

where $C_s = (T_e/m_i)^{1/2}$ is the usual ion acoustic speed in electron-ion plasma and m_i is the ion mass. Thus, the presence of positrons reduces the phase velocity of the usual IAWs.

Propagation characteristics of nonlinear LF waves and also their wave group dynamics in both the magnetized and unmagnetized EPI plasmas have been studied extensively.¹⁴⁻²⁸ It is well known that the modulational instability (MI) of the wave is responsible for the nonlinear wave group dynamics.²⁹ The ponderomotive force, arising from the inherent nonlinearity present in the system, causes the MI. It is well established that the nonlinear Schrödinger equation (NLSE) can explain the wave group dynamics (and so MI) properly in a dispersive medium. Within a wide class of NLSE solutions, a rational spatio-temporally localized solution was derived by Peregrine³⁰ and observed

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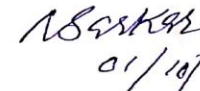
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**INTERNATIONAL JOURNAL OF CREATIVE
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SOCIO-CULTURAL TRANSFORMATION OF SANTHALS IN BOLPUR-SANTINIKETAN OF BIRBHUM DISTRICT, WEST BENGAL

*Mrs. Madhumita Sen

Tribe, the isolated dwelling communities were identified as ecological people for their distinctive outlook to resource creation and livelihood in a natural set up. Tribal communities, especially Santhals in eastern India have changed their traditional livelihood with the introduction of new economy under British rule. Such a change is debatable whether it is internal or external. Santhal of Santiniketan, in close proximity to *ashram* culture has also experienced a change in their cultural profile which is distinctly different from traditional transformation. Culture of Santiniketan associated with Tagore's thought, believes has modulated their mind and spirit to a considerable extent in which they are not only totally dethroned from their traditional culture but also gradually polished with the *ashramik* Culture of Santiniketan. Present focus is an attempt to pursue such as uncommon change of tribal community around *ashram* of Santiniketan.

Key Words: Tribe, Ecological people, Cultural profile, Transformation, Santhal, *ashramik* culture,

Introduction:

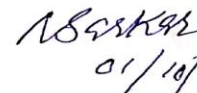
Tribes are an integral part of the Indian civilization, associated with folk culture. Tribes of India can be classified into five cultural types – forest hunting type, hill cultivation type, plain agriculture type, simple artisan and folk artist type as well as industrial and urban workers (Vidyarthi, L.P; Rai, B.K). Now tribal culture is passing through a phase of economic and societal change. Tribal culture is changing due to two factors –

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Title of Paper: Long Run and Short Run Linkages Between Credit and Output: An Appraisal of the Districts of West Bengal in India

Author: Bankim Chandra Ghosh

Journal: International Journal of Asian Business and Information Management (SCOPUS Indexed)

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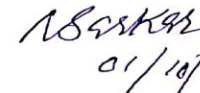
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Long Run and Short Run Linkages Between Credit and Output: An Appraisal of the Districts of West Bengal in India

Ramesh Chandra Das, Vidyasagar University, India
BANKAN GHOSH, Katwa College, India

ABSTRACT

An appropriate link between the financial sector and real sector is required to have a balanced growth and development of a country as well as its regional levels particularly for the countries whose financial developments are not being saturated. In the present study, the authors have examined whether there are long run equilibrium relation between financial development (proxied by commercial bank credit) and real sector's development (proxied by net district domestic products) and short run causations for the districts of the state of West Bengal in India for the period 1993-2014. Applying the Engel-Granger cointegration and Granger causality approaches, the study reveals that there are cointegrating relations between credit and domestic products of the 13 districts out of which errors are corrected for 10 districts. Further, there are unilateral causal relations between the variables in nine districts with 11 producing no such causal relations. The study thus prescribes for strengthening the two sectors' developments so that there can be appropriate linkages between credit and output across the district levels in the longer runs.

KEYWORDS

Cointegration, Credit, Districts, Granger Causality, Net District Domestic Product, Unit Root

INTRODUCTION

Whether financial institutions do have any significant impact on the real sectors of the economy has been the subject of discussion and debate among the economists of different schools. Adam Smith (1789) did not believe that the financial institutions have any influence upon the production activities of the real sectors and so growth of a nation. Smith, in his famous book, "Wealth of Nation" has pointed out that farmers, producers and businessmen are the important carrier of economic growth. To him, roles of business enterprises, competition and free trade would be to lead the farmers, producers and businessmen to expand market size and which, in turn, would stimulate economic development. Schumpeter (1911), on the other hand, postulated the reverse argument. According to him, economies make progress through the trade cycle in a dynamic and discontinuous system. In order to break the circular flow the workings of the innovative entrepreneurs are to be financed by banking funds. Therefore, bank credit can have great impact on the growth of the real sectors of the economy. In another work, Schumpeter (1934) highlighted the importance of financial intermediaries in mobilizing savings, evaluating projects, diversifying risks, monitoring management of firms in debt, and facilitating transactions which are essential for innovation and economic growth. Patrick

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Title of Paper: In silico prediction of the functional consequences of nsSNPs in human beta-catenin

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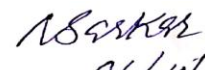
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First Page of the paper:



In silico prediction of the functional consequences of nsSNPs in human beta-catenin gene

Amalesh Mondal^{a,b}, Achintya Mohan Goswami^{c,*}, Tanima Saha^{b,**}

^a Department of Physiology, Katwa College, Katwa, Purba Bardhaman, West Bengal 713130, India

^b Department of Molecular Biology and Biotechnology, University of Kalyani, Kalyani, Nadia, India

^c Department of Physiology, Krishnagar Govt. College, Krishnagar, Nadia, West Bengal 741101, India

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ABSTRACT

Beta-catenin (CTNNB1) is a multifunctional protein involved in the intercellular adherens junctions and in canonical Wnt/ β -catenin signalling. In human, the CTNNB1 gene is located in chromosome 3p21 and the encoded protein is 781 amino acid long. Most of the mutations in β -catenin are activating mutations with missense mutation being the most common type. Mutations in β -catenin are reported to be associated with cancer and other human diseases. The structural and functional consequences for most of the non-synonymous SNPs (nsSNPs), present in the human CTNNB1 gene, are not known. In the present work, extensive bioinformatics analyses are used to discriminate pathogenic and harmless polymorphisms in CTNNB1. The Ensembl database has a huge collection of polymorphic variants. A total 349 nsSNPs of CTNNB1 were subjected to extensive sequence and structure based analyses using state-of-art computational tools. The sequence based screening of 349 nsSNPs had revealed 79 highly deleterious nsSNPs in CTNNB1. It was observed that out of 79 highly deleterious nsSNPs of CTNNB1 protein, the positions for 74 nsSNPs were highly conserved. The sequence based stability analysis revealed decreased stability for 275 variants. The nsSNPs were also predicted to affect post-translational modifications in CTNNB1 like O-linked and N-linked glycosylation, sulfation, phosphorylation, ADP-ribosylation, acetylation etc. The structure based stability analysis of these 79 highly deleterious nsSNPs had revealed 30 variants with structural destabilization. Furthermore, these computationally screened highly deleterious nsSNPs of CTNNB1 can be analyzed in population based genetic studies and may help understand CTNNB1 associated diseases. In the present study, we also showed that CTNNB1 deregulation was associated with survival outcome in patients with lung, gastric and ovarian cancer.

1. Introduction

Beta-catenin (CTNNB1) is an essential component of intercellular adherens junctions and also the transcriptional co-activator of highly conserved canonical Wnt/ β -catenin signalling pathway, which regulates different cellular processes, including cell fate, movement, proliferation, differentiation, apoptosis, polarity, and organogenesis (Xing et al., 2008; Kim and Jeong, 2019). In absence of Wnt signalling, the cytosolic level of β -catenin is low, due to its proteosomal degradation, or translocation to the nucleus (Wang et al., 2020a; Xu and Kimelman, 2007). But in

presence of Wnt signalling, the glycogen synthase kinase-3 β (GSK-3 β) is phosphorylated through an adaptor protein Dishevelled (Dvl), which inhibits the proteosomal degradation of β -catenin and subsequent increases its cytosolic level (Gao et al., 2018). The β -catenin then translocates to the nucleus and interacts with the T-cell factor/lymphoid enhancer factor (TCF/LEF) transcription factor family to regulate gene expression (Molaei et al., 2018).

In human, the CTNNB1 gene is located in chromosome 3p21 and encodes for a polypeptide chain of 781 amino acids (Gao et al., 2018; Wang et al., 2020b; Machin et al., 2002). Most of the mutations in

Abbreviations: CTNNB1, Beta-catenin; SNP, Single Nucleotide Polymorphism; nsSNP, Non-synonymous Single Nucleotide Polymorphism; SIPT, Sorting Intolerant from Tolerant; PSIC, Position-specific independent count; CADD, Combined Annotation-Dependent Depletion; REVEL, Rare Exome Variant Ensemble Learner; PTM, Post-Translational Modification.

* Correspondence to: A. M. Goswami, Department of Physiology, Krishnagar Govt. College, Krishnagar, Nadia, West Bengal 741101, India.

** Correspondence to: T. Saha, Department of Molecular Biology and Biotechnology, University of Kalyani, Kalyani, Nadia, India.

E-mail addresses: achintya02@gmail.com (A.M. Goswami), sahatanima@klyuniv.ac.in (T. Saha).

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