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Title of paper+A2:H8A1	Name of the author/s	Department of the teacher	Name of journal	Year of publication	ISSN number	Link to the recognition in UGC enlistment of the Journal
Ag nanoparticles decorated on rGO sheets: Green synthesis and effective photocatalytic action	Bharti Sharma	Physics	Physica B: Condensed Matter	May, 2023	414789	https://doi.org/10.1016/j.physb.2023.414789
Tuning of structural, optical/ spectral and thermal properties of cubic CeO ₂ nanoparticles via incorporation of zirconia	Bharti Sharma	Physics	Physica B: Condensed Matter	May, 2023	414922	https://doi.org/10.1016/j.physb.2023.414922
Analysis of Five Major Elements in Roots and shoots of two year old plants of teleomeia undulata from twelve provenances of arid region in India	Janak raj	Botany	Biochem Cell Arch	2023	0972-5075	https://doi.org/10.51470/bca.2023.23.1.527
Projected Status of Climate change and Its Impact on Biodiversity in India	Janak raj	Botany	Emerging Trends in Climate Change	2023	2583-4770	https://dx.doi.org/10.18782/2583-4770.125

A Systematic Literature Review on ESG: Resaerch Implications and future Research Agenda Towards a sustainable Transition	Dr Sakshi Mehta	Commerce	American Institute of M	2023	2769-5093
A Comparitve Study of Actual CSR Spnding and Prescribed CSR Spending	Dr Manju Bala	Commerce	GLIMPSES	2023	2250-0561



Ag nanoparticles decorated on rGO sheets: Green synthesis and effective photocatalytic action

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ABSTRACT

In the current study, silver (Ag) nanoparticles and rGO/Ag nanocomposite were prepared by a facile and green approach based on hydrothermal method. The as-synthesized pure Ag nanoparticles and rGO/Ag nanocomposite were characterized using different techniques such as XRD, SEM, TEM, EDX, XPS, UV-Vis and PL spectroscopy. TEM results showed that Ag NPs were typically spherical (size ~15 nm) and almost uniformly attached onto rGO sheets. The appearance of Ag NPs in the rGO/Ag nanocomposite was confirmed by EDX spectra. The reduction in band gap of Ag NPs could be happened through its anchoring over rGO sheets as examined by UV-visible and photoluminescence spectroscopy. Dye degradation performance of pure Ag nanoparticles and rGO/Ag nanocomposite towards methylene blue (MB) was tested by UV-visible spectra, revealing that rGO/Ag nanocomposite has higher photo-induced catalytic activity than that of pure Ag nanoparticles. The superior electrochemical performance of as-prepared rGO/Ag nanocomposite proved it as a potential candidate for electrochemical energy storage applications.

1. Introduction

A wide variety of organic pollutants, produced by industries and households, is responsible for a broad range of worldwide environmental and health problems. To remove dyes and toxic substances from polluted water effluents, a number of physical and chemical techniques were used, including photocatalysis, coagulation, flocculation, etc., among all of these techniques, however photocatalysis have been preferred due to its simple design, ease of process, cost effectiveness, energy efficient, environment friendly and solar light harvesting nature. The most important point to be noted is that there is no generation of secondary pollutants in the whole process [1–4].

The most important is there is no generation of secondary pollutants. In the family of carbon, the graphene has become a rising star due to their remarkable physico-chemical properties e.g. large surface area, superior electrical conductivity, thermal stability, mechanical strength and biocompatibility [5–8]. A large number of efforts have been applied to decorate metal nanoparticles on the surface of graphene and to explore their valuable applications in photocatalysis, energy storage

and solar fuels [9,10]. Improved photocatalytic activities of several metal nanoparticles decorated on reduced graphene oxide have already been predicted recently [11,12]. The decoration of nano-materials/structures on rGO sheets reduces the recombination of photoinduced e⁻-h⁺ pairs because the graphene surface provides high charge carrier mobility owing to its large electrical conductivity [13]. In addition, rGO has several functional groups with oxygen that enable efficient adsorption of various ions and organic molecules via stacking and electrostatic interactions [14]. All of these aspects contribute to an increase in the photocatalytic activity.

As far as photocatalysts are concerned, adsorption plays a very critical role. Before the commencement of degradation of organic pollutants, first the particles of organic pollutants are adsorbed on the surface of photocatalyst. In this way, adsorption plays a critical role for photocatalysis, as no degradation can take place without adsorption. Due to the strong adsorption of organic pollutant molecules on it heterogeneous photocatalysis, the photocatalytic process takes place considerably faster rate. The basics of the heterogeneous photocatalytic process have already been discussed in the reported works [15–19].

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Tuning of structural, optical/ spectral and thermal properties of cubic CeO₂ nanoparticles via incorporation of zirconia

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ABSTRACT

In this communication, the influence of Zr⁴⁺ ions on structural, microstructural, optical and thermal behavior of CeO₂ was investigated. Structural parameters of sol-gel derived samples were assessed by XRD, FTIR and Raman spectroscopies. Refined profile parameters were determined through Rietveld refinement. XRD and Raman studies indicated cubic fluorite phase of CeO₂ and occurrence of oxygen vacancies as defects attributed to distortion in local symmetry of O²⁻ ions around Ce⁴⁺ ions, hence found applications in oxygen storage devices. UV-visible depicted the blue shifting of absorption edge on increasing Zr⁴⁺ ions concentration, into Ce⁴⁺ ions lattice, hence found utility in photonic devices. Violet, blue and green PL emissions were observed and committed due to various defect states and oxygen vacancies. CIE and CCT coordinates demonstrated their potential applications in display devices. The synthesized materials with enhanced structural and optical characteristics have their wide employability as an active component in sophisticated optoelectronic device fabrication.

1. Introduction

Ceria (CeO₂) is one of the most versatile rare-earth oxides possessing cubic fluorite crystal structure. It is highly reactive due to its oxygen storage capacity (OSC) and is utilized for three way catalysis [1,2]. CeO₂ is a promising candidate for its applications in environmental catalysis [3–6], oxygen sensors [7], polishing materials [8], catalysts [9,10], fuel cells [11], energy storage materials [12] wet catalytic oxidation of organic pollutants, cosmetics, biomedical applications [13], ultraviolet blocking agent and luminescent material.

The major drawback of pure CeO₂ is much its low thermal resistance, low-temperature catalytic activity, and textural stability, which are not so compatible to meet the requirements of high-temperature applications and hence discouraged as poorly thermostable material [14–16]. The catalytic activity of ceria can be diminished at higher temperatures due to loss of oxygen storage capacity (OSC).

The redox and catalytic behavior of CeO₂ was enhanced considerably when incorporated with transition metals (such as zirconium) or rare earth oxides. Relative to ceria alone, zirconium incorporated cerium oxide are known to possess high thermal resistance, enhanced oxygen storage capacity and structural modifications resulted in the reduction

of unit cell volume as well as activation energy regarding oxide ion diffusion [16].

Scientists are engaged for the development/generation of new mixed oxides of ceria and zirconia.

B.M. Reddy et al. [17] reported the effect of SiO₂, TiO₂, and ZrO₂ incorporation on the redox and structural properties of CeO₂. They found that OSC of mixed oxides (CeO₂-ZrO₂) are greater than that of pure CeO₂. S. Abdollahzadeh et al. [18] predicted that oxygen storage capacity of pure ceria was enhanced on the addition of zirconia content. E.A. Trusova et al. [19] studied that sol-gel synthesized ceria-doped zirconia powders oriented themselves towards functional ceramic substances for a variety of purposes. The nature of zirconium salt anion strong effect on functional properties. F. Saporitita et al. [20] reported that films of cubic phase of yttria and ceria doped zirconia, may be utilized as electrolyte in solid oxide fuel cells. P.P. Ortega et al. depicted that optical, structural and gas-sensing characteristics of ceria-based substances can be tuned by rare-earth ions doping making a versatile material employable for components of white and CO gas sensing devices. Several relevant studies related to perovskite metal oxides like TiO₂, CeO₂, Bi₂MoO₆ etc. have been carried out by researchers in recent years as they have found wide scientific

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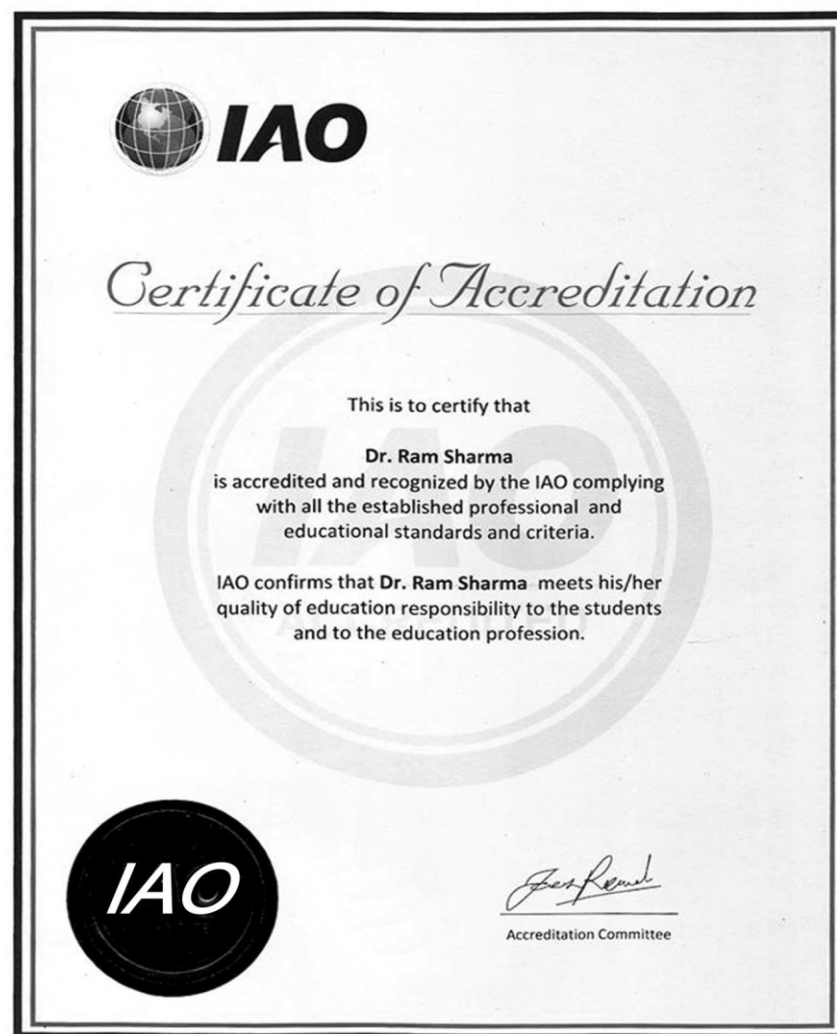
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A COMPARATIVE STUDY OF ACTUAL CSR SPENDING AND PRESCRIBED CSR SPENDING

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LITERATURE REVIEW

Global Level: CSR as Sustainable Development

The latest literature tradition to have impacted our understanding of corporate social responsibility is that of sustainable development. It was the Brundtland Commission (1987) that for the first time systematically emphasized the link between poverty, environmental degradation, and economic development. Its definition of sustainable development, as meeting the needs of the present, without compromising the ability of future generations to meet theirs, extends the responsibility of firms both interand intra-generationally. Thus firms are expected to also consider traditionally unrepresented stakeholders such as the environment and as well as future generations. Although many CSR authors have taken up the notion of a “triple bottom line” (Elkington, 1997) there remain important tensions between the CSR and the sustainable development debate (i.e. Dyllick & Hockerts, 2002)

Galbraith (1977) says the ‘customer is the king’ is no more than a myth. He maintains that the modern organisation exercises power to the extent of shaping tastes of consumers to its products. But this power is often buried down to leave nobler causes to surface.

Andriof *et al* (2002), today’s shareholder thinking concerns the interactive, mutually engaged and responsive relationships that

‘establish the very context of doing business and create the groundwork for transparency and accountability’.

Freeman (1984) presented a more positive view of managers’ support of CSR. Freeman’s stakeholder theory asserts that managers must satisfy a variety of constituents (eg., employees, customers, suppliers and local community) who can influence the firm outcomes.

RESEARCH METHODOLOGY

The Period of the study ranges from 2012 to 2017. Variables employed in the Study CSR%, industrial sub-sectors CSR%, manufacturing sector, service sector CSR%, Company Act 2013

SAMPLING METHOD

Purposive sampling was undertaken for the research study. The data collection frequency for all the variables included in the study were annual CSR disclosures, annual CSR ratings and ranks, company’s director reports, CSR reports and actual CSR data.

SAMPLE SIZE

Companies from India were considered to provide substantial data. For the financial years 2012-2017, the Corporate Social Responsibility of companies were considered for the pre and post-effect of Companies Act 2013, the Corporate Social Responsibility of 75 companies was considered

SCOPE OF THE STUDY

The study was limited to the Indian companies. This study entirely relies on the secondary data collected from various sources. The secondary data was used from financial reports of the companies of the years 2012-2017 Extensive library work was carried out for a detailed review of the literature. Data from the internet, books, academic journals, newspapers and magazines was also used.

OBJECTIVE

To appraise the policies of corporate social responsibility and its implication in India.

HYPOTHESIS

H1: Companies were spending significantly lower in Corporate Social Responsibility than the prescribed amount.

S.NO	Companies	Actual Amount	Prescribed Amount
1	Chennai Petroleum Corporation Ltd.	391	450
2	Reliance Industries Ltd.	357.05	377.07
3	Hindustan Petroleum Corporation Ltd.	270	350
4	Oil and Natural Gas Corporation Ltd.	261.58	405.42
5	Mangalore Refinery and Petrochemicals Ltd.	240	350
6	Tata Chemicals Ltd.	200	135
7	Tata Steel Ltd.	170.59	124.05
8	State Bank of India	123.27	194.25
9	GMR Infrastructure Ltd.	120	150
10	ICICI Bank Ltd.	116.55	104.27

Figure : Actual CSR spent by top 10 companies for FY 2012-13

The analysis showed that the hypothesis that 'Companies were spending significantly lower in Corporate Social Responsibility than the prescribed amount for the financial year 2012-13' was confirmed. A repeated measures t-test was conducted to compare the means of Prescribed Corporate Social Responsibility amount and Actual Corporate Social Responsibility of 96 companies for the financial year 2012-13. The mean of Prescribed Corporate Social Responsibility amount of companies ($M = 71.03$, $SD = 90.79$) was found to be significantly higher than the mean of Actual Corporate Social Responsibility amount ($M = 43.94$, $SD = 73.24$). The results of the repeated measures t-test were expressed as $t(95) = -6.34$, $p = 0.00$ (one-tailed). The results showed that these companies were spending significantly lower in Corporate Social Responsibility than the prescribed amount.

The FY 2012-13 was a period when the Companies Act 2013 had not yet come into force. So it was not mandatory for Indian companies to devote 2% of their average net profit towards corporate social responsibility. With no Act in force, companies were diverting

their funds in areas that they felt there was a need, while other companies did not have structured CSR policies.

Partner in Change (2000) studied 600 companies and 20 CEOs for understanding and judging corporate involvement in social development in India. Around 85% of the respondent companies agreed that Indian corporates should be socially responsible. Only 11% of the respondent companies had a written CSR policy.

About 60% were giving money as a donation for initiatives like health, education and infrastructure. Similarly, Karmayog's survey (2009) found that 229 companies out of 500 companies got a '0' rating on a scale of 0-5 for not showing any CSR activity. Many companies were only giving donations believing that charity and philanthropy equal to CSR (Karmayog, 2009). Most companies used CSR as a marketing tool to gain more popularity in the market. Structured CSR practices were taken up by very few companies. Most companies were either unaware or were not bothered to monitor their company's CSR. It is observed that philanthropy was the main driving force behind all the CSR initiatives of most of the companies.

A few additional observations were noted:

As can be seen in Table 4.3, the top 10 CSR ranks for FY 2012-13 with Chennai Petroleum Corporation Ltd. heading the list. However, Tata Chemicals Ltd., Tata Steel Ltd. and ICICI Bank Ltd. had spent more than 2% of the prescribed CSR.

While the remaining companies in spite of being the top spenders towards CSR had not been able to spend the prescribed CSR amount.

Highlights of CSR Spend in FY 2012-13

1. The actual CSR spent for FY.2012-13 was Rs. 4218.40 crore which was less than the prescribed amount of Rs. 6819.06 crore.
2. The actual CSR spent by the manufacturing sector was Rs.

3438.17 crore as against the prescribed amount of Rs. 4674.77 crore

3. The service sector spent Rs. 780.23 crore as against the prescribed amount of Rs. 2144.29 crore
4. The actual CSR spent by the public sector was Rs. 1985.91 crore as against the prescribed amount of Rs. 3614.74 crore
5. The private sector spent Rs. 2232.49 crore as against the prescribed amount of Rs. 3204.32 crore.
6. Fourteen companies spent more than 2% of the prescribed amount namely Tata Steel Ltd, ICICI Bank Ltd., Hindustan Unilever Ltd., Aclani Enterprises Ltd., Jindal Steel Power Ltd., Jaiprakash Association Ltd., Tata Chemical Ltd., Ambuja Cement Ltd., JSW Energy Ltd., Nestle India Ltd., IDFC Ltd., National Aluminum Companies Ltd, Adani Power Ltd, Ultra Tech Cement Ltd.
7. Out of the fourteen companies, twelve were manufacturing companies and two were service sector companies.
8. Out of the fourteen companies, twelve companies were from private sector and two were from public sector.
9. Thirty-one companies had spent more than one percent of the prescribed CSR amount.
10. Fifty-one companies had spent less than one percent of the prescribed CSR amount.
11. 85.42 % companies could not meet the CSR compliance.
12. The company itself undertook most of the CSR initiatives.
13. Almost seventy-one companies spent their CSR funds on education projects.
14. Sixty-five companies preferred to give donations.
15. Forty-four companies preferred health, hygiene, livelihood and environment.

16. Private sector companies spent more than the public sector in the manufacturing sector as well as service sector towards the CSR spending.
17. The manufacturing sector companies Spent more than the service sector.

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A SYSTEMATIC LITERATURE REVIEW ON ESG:RESEARCH IMPLICATIONS AND FUTURE RESEARCH AGENDAS TOWARD A SUSTAINABLE TRANSITION

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The field of sustainable finance research has emerged as a well-established domain within the finance literature. The growing recognition of sustainability and global concerns pertaining to environmental, social, and governance (ESG) matters, especially within the investors' community, has necessitated the implementation of ESG principles and stimulated a trend towards increased scholarly research and dissemination of knowledge in this domain. This study under takes a comprehensive examination and synthesis of the existing body of literature on ESG to facilitate a comprehensive review and summary. This study incorporates a systematic literature review methodology to consider various aspects related to ESG. The researchers conducted a search in the SCOPUS database using multiple Booleans to identify the relevant literature in this specific domain and subsequently extracted a substantial corpus of literature pertaining to ESG spanning the period from 1989 to 2023. These emerging strands of literature describe the transformation occurring in the finance field. This study aims to identify the prominent theoretical foundations, empirical and methodological approaches, the interaction among ESG dimensions, the impact of ESG on financial and economic outcomes, and the function of ESG in risk prevention. This paper refines the key themes as well as drivers of interest present in the study of ESG to serve as a guide for academic research scholars and practitioners of ESG.

Keywords: ESG; Sustainability, Finance; Ethical financing; Systematic Literature Review.