Sodium doped zirconia drenched SBA-15 as a reusable solid catalyst for concurrent esterification and transesterification of low-quality oils

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Solid catalyst for biofuel production

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Abstract

Sodium doped zirconia impregnated SBA-15 has been prepared without using hydrothermal treatment trailing the wet impregnation route. The prepared catalyst has been characterized by employing various techniques viz., BET for surface area analysis, SEM for morphological study, XPS for element oxidation state determination. It was found that catalyst seized both acidic and basic sites therefore, successfully employed for one-pot or concurrent esterification and transesterification of virgin cottonseed oil and high FFA containing vegetable oils. Under optimum reaction conditions of catalyst concentration of 10 wt% with respect to weight of oil, MeOH/oil molar ratio of 30:1 and at 65 °C reaction temperature, the catalyst could confer > 98 % fatty acid methyl ester yield within 3 h of reaction duration. Regeneration study advocated that the catalyst may well be recycled for 5 successive cycles without any significant trouncing of activity and even yielded 86% fatty acid methyl esters during 6th cycle.

Keywords: Heterogeneous catalysts, mesoporous, basicity, acidity, transesterification, thermodynamic parameters

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Review Article

A review of bipolar plate materials and flow field designs in the all-vanadium redox flow battery

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ABSTRACT

A bipolar plate (BP) is an essential and multifunctional component of the all-vanadium redox flow battery (VRFB). BP facilitates several functions in the VRFB such as it connects each cell electrically, separates each cell chemically, provides support to the stack, and provides electrolyte distribution in the porous electrode through the flow field on it, which are quite similar to the functions of fuel cell BP. However, unlike fuel cells, a BP in the VRFB encounters a highly acidic environment (~2.5 M H_2SO_4) and varying voltage conditions, which seriously restrict the choice of materials selection. Metals become the most unsuitable candidate as BP in the VRFB due to the highly corrosive media. Furthermore, since the conventional VRFB uses a 3D porous electrode, the flow fields on BP play a very crucial role in electrolyte distribution on the electrode surface. In this review, the BP materials and the flow field of various designs are discussed in a holistic manner. As a main part of the review, various types of BP materials (metal-based, graphite-based, and carbon/polymer composite-based) and their processing methods are described in detail. The novel properties of BP materials are characterized by both physical and electrochemical processes. The challenges associated with BP materials such as corrosion, interfacial contact resistance, swelling, and electrolyte leakage are included. Further, the effect of different flow field designs on pressure drop, pumping losses, power-based efficiency, and overpotential of the VRFB at different flow rates and compression ratios are discussed and compared with the properties of the VRFB without flow field. To date, there is no review paper available on BP and flow field design in the VRFB system. Hence, this paper reviews and discusses the progress and challenges in BP and flow field designs for the VRFB system.

1. Introduction

Renewable energy utilization has received huge attention due to its negligible contribution to greenhouse gas emissions that causes global climate change. However, the intermittent and unpredictable behavior of renewable energy sources leads to an unstable power supply that deteriorates the reliability of the distribution network [1,2]. Therefore, the development of an efficient and reliable energy storage system (EES), which can store electrical energy produced from renewable sources and supply it when needed, is vital [3,4]. Among various EESs, the all-vanadium redox flow battery (VRFB) is one of the most popular energy storage technology for grid-scale applications due to its attractive features, such as decoupled energy and power, long cycle life, easy scalability, good recyclability, and zero cross-contamination of active species [5,6] The transition element vanadium exhibits four oxidation states (VO_2^+, VO^{2+}, V^{3+}, and V^{2+}) in nature and a VRFB utilizes all four of these valance states (VO_2^+/ VO^{2+} redox couple (catholyte) and V^{3+}/ V^{2+}redox couple (anolyte)) to store energy electrochemically [7–9]. During the charging of the VRFB, VO^{2+} oxidizes to VO_2^+ in the catholyte and V^{3+}reduces to V^{2+} in the anolyte, whereas the discharging follows the opposite redox reactions. The electrochemical redox reactions that occurred in the VRFB can be described with the help of the following Eqs. (1)–(3). [10,11].

Catholyte:

$$VO^{2+} + H_2O \underset{\text{discharging}}{\overset{\text{charging}}{\rightleftharpoons}} VO_2^+ + 2H^+ + e^- (E^o = 1.0V \text{ vs SHE}) \quad (1)$$

Anolyte:

$$V^{3+} + e^- \underset{\text{discharging}}{\overset{\text{charging}}{\rightleftharpoons}} V^{2+} (E^o = -0.25V \text{vsSHE}) \quad (2)$$

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ग्राम पंचायतों में महिलाओं का राजनीतिक सशक्तिकरण एवं उत्तराखण्ड राज्य की पंचायतों में महिला प्रतिनिधित्व के विशेष सन्दर्भ में।

(Political empowerment of women in Gram Panchayat and with special reference to women's representation in Panchayat of Uttarakhand State)

1. खिलानन्द जोशी, शोध छात्र, राजनीति विज्ञान विभाग, सरदार भगत सिंह राजकीय स्नातकोत्तर महाविद्यालय – रूद्रपुर (उधम सिंह नगर), उत्तराखण्ड।
2. डॉ दिनेश शर्मा, राजनीति विज्ञान विभाग, पण्डित ललित मोहन शर्मा कैम्पस (श्री देव सुमन विश्वविद्यालय) ऋषिकेश, उत्तराखण्ड।

स्त्री एक जननी होने के साथ साथ मानव जीवन का आधार स्तंभ भी है, स्त्री जहाँ एक ओर घर एवं परिवार की रीढ़ एवं आत्मा है, वही वह समाज को जोड़ने एवं दृढ़ता प्रदान करने वाली सर्वाधिक महत्वपूर्ण कड़ी है। महिलायें विश्व की आधी आबादी का प्रतिनिधित्व करती हैं, परन्तु राजनीतिक भागीदारी एवं निर्वाचन क्षेत्रों में इनका प्रतिनिधित्व पुरूषों की अपेक्षा बहुत कम है। भारत विश्व का सबसे बड़ा लोकतंत्र एवं उसकी जननी के रूप में जाना जाता है। साथ ही हमारे देश की गणना ऐसे लोकतंत्रों में की जाती है, जिसने महिलाओं को सर्वप्रथम (1921) मताधिकार प्रदान किया था। हालांकि महिलाओं को केवल मताधिकार देना ही अपर्याप्त था, क्योंकि उस समय उनका राजनैतिक तौर पर प्रतिनिधित्व नगण्य था एवं नीति निर्माण में भी उनका कोई योगदान नही था। कई कारको ने उनकी राजनीतिक सक्रियता एवं भागीदारी में रूकावटें उत्पन्न की, चाहे वह मनोवैज्ञानिक कारक हों या फिर सामाजिक एवं प्राकृतिक कारक।

कोई भी राष्ट्र तब तक प्रगति नहीं कर सकता है, जब तक उस राष्ट्र की आधी आबादी केवल घर की चहारदीवारी तक सीमित हो, स्वतन्त्रोत्तर भारत के संविधान में विभिन्न संवैधानिक प्रावधानों के माध्यम से लैंगिक विषमता को कम करने एवं उन्हें समाप्त करने हेतु प्रयास किये गये। ऐसी परिकल्पना की गई थी कि महिलाओं को पुरूषों के समान अधिकार प्रदान करने से इनमें राजनीतिक जागरूकता उत्पन्न होगी जिससे राजनीति में महिलाओं की भागीदारी बढ़ेगी। परन्तु एक नवीन स्वतंत्र देश में केवल महिलाओं को संवैधानिक अधिकार प्रदान कर देना ही अपर्याप्त था, क्योंकि उस समय भारत में महिलाये सामाजिक एवं शैक्षिक तौर पर बहुत पिछड़ी हुई थीं, अतः परिणाम स्वरूप महिलाओं की विशाल आबादी के बावजूद राजनीतिक सहभागिता में उनकी उपस्थिति नगण्य ही रही। जिसके कारण वह दोयम दर्जे की नागरिक बनी रही। लेकिन चूंकि भारत एक संसदीय लोकतंत्र है, संसदात्मक शासन व्यवस्था में बहुमत का शासन होता है इसलिये महिलाओं की आधी आबादी की उपेक्षा करने का जोखिम कोई भी सरकार नहीं ले सकती और न ही आधी जनसंख्या की उपेक्षा करने से संविधान के समाजवादी, समतावादी एवं लोकतांत्रिक ढांचे के अन्तर्गत राज्य समानता, स्वतंत्रता एवं न्याय की स्थापना के लक्ष्य की प्राप्ति कर सकता है।

आशा शैली के दोहों का भावपक्षीय सौन्दर्य

-श्रीमती हीरा अन्ना
राजकीय महाविद्यालय खटीमा

विख्यात साहित्यकार आशा शैली एक ऐसा व्यक्तित्व है जो संघर्ष तथा चुनौतियों के साथ हर दम खड़ा रहता है। वे कर्मठ हैं, गम्भीर हैं तो धीरज से युक्त भी। संघर्ष में रत रहकर भी वे अपने कार्य व कर्तव्य से विमुख नहीं होतीं। स्वभाव से यायावार बोलों में संयमित, श्वेत वर्ण आशा जी न केवल स्वयं साहित्य सृजन करती हैं, बल्कि दूसरों को भी सत्कर्म के लिए प्रेरित करती हैं।

आशा जी के साहित्य में कहानी, लघु कथा, उपन्यास, लेख, सस्मरण, अनुवाद, समीक्षा, रिपोर्ताज, बाल साहित्य कविता, ग़ज़ल, गीत तथा दोहे शामिल हैं।

दोहा हिन्दी का ऐसा मात्रिक छन्द है जिसमें दो पंक्तियाँ तथा चार चरण होते हैं। दोहा छन्द के विषम चरणों में 13-13 तथा सम चरणों में 11-11 मात्राएँ होती हैं। दोहे लिखने की परम्परा अत्यन्त प्राचीन है। आशा शैली ने दोहे लिख कर इसी परम्परा को आगे बढ़ाया है। उन्होंने अनेक दोहे लिखे हैं जो भिन्न-भिन्न पत्रिकाओं तथा पुस्तकों में प्रकाशित हुए हैं। कुछ पुस्तकों में उनके दोहे संकलित भी हैं।

1-'राम नाम मनका'-आशा शैली का दोहा संग्रह 2020 में प्रकाशित हुआ। इसमें उनके राम नामी 108 दोहे हैं। यह पुस्तक 'आरती प्रकाशन' द्वारा प्रकाशित की गई है। इस दोहा संग्रह के प्रारम्भ में आशा शैली जी ने अपने गुरू को नमन किया है। 'वाणी वन्दना' में गणेश, सरस्वती की आराधना है। इसके पश्चात् 108 दोहों में राम भक्ति है। अन्य संकलनों में प्रकाशित दोहों में कहीं-कहीं राधा-कृष्ण, लक्ष्मण, सीता एवं हनुमान का भी गुणगान है। अन्तिम पृष्ठों के दोहों एवं खैपाइयों में पवन पुत्र हनुमान की वन्दना है।

2-पर्यावरणीय दोहे-आशा शैली के 50 पर्यावरणीय से सम्बन्धित दोहे 'मेरी साँसे, तेरा जीवन' पुस्तक में संकलित हैं। इस पुस्तक की सम्पादक अनीता भारद्वाज हैं। यह पुस्तक सर्वप्रथम 2017 में प्रकाशित हुई थी। यह अर्णव कलश एसोसिएशन द्वारा प्रस्तुत दोहा साझाँ संग्रह है। इसमें लगभग 23 दोहाकारों के दोहे संकलित हैं। रोचक बात यह है कि इस पुस्तक में सभी कवियों के दोहे पर्यावरण से ही सम्बन्धित हैं।

दोहों का काव्यगत सौन्दर्य:-कविता तथा गीत की भाँति दोहों का काव्यगत सौन्दर्य उसके भावपक्ष तथा कलापक्ष के सौन्दर्य से निर्धारित होता है। अत: दोहों के काव्यगत सौन्दर्य को हम निम्नलिखित दो भागों में बाँट सकते हैं।

दोहों का भावपक्षीय सौन्दर्य:-

1:-गेयता का निर्वाह:-जो गाया जा सके वह गेय होता है। सामान्यतया: कविताओं में गेयता का गुण पाया जाता है। इनकी प्रमुख विशेषता यह है कि ये लय के साथ गाए जा सकते हैं। इसके साथ-साथ दोहे कर्णप्रिय भी हैं।

"सहज और निष्काम जो, गहे राम की टेक।
उसके लाखों जन्म के, कर्म जगे हैं नेक।।"

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"जीवन हर पल पर्व हो, करो नाम से नेह।
पावन तन मन हो रहे, पावन होता गेह।।"

आशा शैली के दोहे गुरू नमन से सम्बन्धित हों अथवा गणेश नमन से, भगवान श्रीराम की भक्ति से सम्बन्धित हों अथवा हनुमान जी के वन्दन से सभी में गेयता का निर्वाह है। यही नहीं उनके पर्यावरण से सम्बन्धित सभी दोहे भी लय के साथ गाए जा सकते हैं।

"कैसी आशा पुत्र से, कैसा है अभिमान।
सुत से अच्छे वृक्ष हैं, देते जीवनदान।।"

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"गंगा धरती सींचती, सब की पालनहार।
पर अब है दूषित हुई, करती हाहाकार।।"

2-गुरू की महिमा:-जीवन में गुरू की महिमा अनन्त है। गुरू शिष्य को अनन्त दृष्टि प्रदान करता है। वह अपने शिष्य को अनन्त व असीम ब्रह्म का साक्षत्कार कराने में समर्थ होता है। वह अपने शिष्य को ज्ञान का ऐसा दीपक प्रदान करता है, जिससे वह ठीक मार्ग पर चल सके। गुरू को ईश्वर से भी श्रेष्ठ माना है। गुरू

की कृपा से जीवन धन्य हो जाता है, संध्या सुहावनी हो जाती है। काव्य धनवान हो जाता है। कबीर का कथन है-

"हरि रूठे गुरू ठौर है, गुरू रूठे नहिं ठौर।"

आशा शैली ने भी अपनी पुस्तक 'राम नाम मनका' अपने मार्गदर्शक, परम श्रद्धेय गुरूवर श्री नारायण दत्त श्रीमाली को समर्पित की है। उनका मानना है कि गुरू की कृपा से ही उनकी पुस्तक पूर्ण हो पाई है।

वे गुरू को सदैव प्रणाम करने को कहती हैं क्योंकि गुरू ही ऐसा व्यक्तित्व है, जो हमारे जन्मों का गहन अन्धकार दूर करते हैं। भगवान श्रीराम भी गुरू का महत्व बताते हैं। गुरू को नमन करते हुए आशा शैली जी कहती हैं-

"मोह तिमिर को काटती, गुरू की कृपा अपार।
गुरू तो आँखें खोलते, ज्ञान दीप उजियार।।"

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"जिसने मुझको दे दिया, ज्ञान दीप उजियार।
उस गुरू के श्री चरण में, नत हूँ बारम्बार।।"

3:-विभिन्न देवताओं का गुणगान-आशा शैली ने अपनी पुस्तक 'राम नाम मनका' के अधिकतर दोहों में भगवान श्रीराम की भरपूर वन्दना की है। वे जानती हैं कि भगवान राम सभी का मंगल व शुभ करते हैं। साथ ही वे अपनी लेखनी को सफल करने के लिए भगवान श्री गणेश से भी आशीर्वाद लेती हैं।

"राम सभी का शुभ करें, मंगल करें हमेश।
मेरी लेखनी सफल हो, मंगल करें गणेश।।"

आशा शैली अपने दोहों में माँ सरस्वती की अपने जीवन पर हुई कृपा से धन्य हैं। उनका कहना है कि जब से हंसवाहिनी ने उन पर अपना हाथ धरा है, वे अनाथ से सनाथ हो गई है। वे ऐसी देवी हैं, जिनकी वाणी से नित्य प्रतिदिन शब्दों के फूल बरसते हैं। माँ सरस्वती को सम्बोधित करते हुए वे कहती हैं:-

"हंसवाहिनी ने किया, जिन जन पर उपकार।
झोली भर मिलते उसे, प्रेम पुष्प उपहार।।"

वे प्रभु राम के साथ-साथ लक्ष्मण व सीता माँ की भी वन्दना करती हैं।

"सीय चरण वंदन करूँ, लखन सहित रघुनाथ।
दुख हो चाहे सुख सखे, रहते मेरे साथ।।"

वे राम तथा कृष्ण को एक ही छवि के दो रूप मानती हैं।

"इक छवि के दो भाग हैं, एक कृष्ण इक राम।
पल में कर सायक धरें, पल मुरली ले थाम।।"

वे मानती हैं कि जब माँ अम्बे तथा श्री राम प्रभु दोनों का आशीर्वाद मिल जाता है तो मन के सभी पाप दूर हो जाते हैं।

"ममता अम्बे मात की, राम का आशीर्वाद।
दोनों जब मिल जायें तो, मन से मिटे विषाद।।"

आशा शैली के अनुसार जब राम भक्त हनुमान प्रसन्न हो जाते हैं तो राम स्वंय अपने आप ही प्रसन्न हो जाते हैं। उन्हें तो बजरंगी ने मालामाल कर दिया है। बजरंगी राम के प्रिय हैं। वे बजरंगी से सन्त जनों के प्राण उबारने को कहती हैं। यदि बजरंगी उनके अंग-संग रहें तों उनकी दया का क्या कहना? वे कहती हैं-

"बजरंगी की बात निराली,
पल में लंका दहन कर डाली।
बजरंगी भक्तों के प्यारे,
रक्षा करिये राम दुलारे।
बजरंगी हैं अवघड़ दानी,
बजरंगी की अजब कहानी।"

4:-सगुणोपासक राम-हिन्दी साहित्य में भक्ति धारा के अन्तगर्त भक्ति के दो रूप मिलते हैं। सगुण भक्ति तथा निर्गुण भक्ति। सगुण भक्ति वह भक्ति है जिसमें ईश्वर का कुछ न कुछ रूप, रंग और आकार होता है। अनेक प्रकार की मूर्तियों द्वारा अपने इष्ट की पूजा की जाती है।

सीधा-सादा मतलब होता है कि हम परमात्मा को एक आकार में देखते हैं। जबकि निर्गुण भक्ति के अन्तर्गत ईश्वर का रूप, रंग, आकार तथा मूर्ति पूजा मान्य नहीं होती। इसमें हम ईश्वर को एक अस्तित्व के तौर पर सर्वत्र विद्यमान सत्ता के रूप में देखते हैं।

आशा जी सगुण भक्ति मार्ग की अनुयायी हैं। उनके राम कबीर के निर्गुण राम नहीं हैं। बल्कि दशरथ पुत्र राम हैं। वे अत्यन्त सुन्दर, गुणी, धैर्यवान हैं। वे धनुष धारण करते हैं। आशा जी कहती हैं-

"सुप्रभात श्रीराम कह, नवे सभी को माथ।
पल-पल संग रहते सखे, धनुधारी रघुनाथ।।"

5:-राम नाम स्मरण पर बल:-वैसे तो सभी सगुण-निर्गुण भक्त कवि परमात्मा से भी अधिक परमात्मा

के नाम स्मरण का महत्व बताते हैं। आशा शैली ऐसी सगुण भक्त कवयित्री हैं जो अपन दोहों में राम नाम स्मरण को अत्यधिक महत्व देती हैं। वे हृदय से मनुष्य को राम नाम स्मरण करने को कहती हैं। हरि स्मरण का महत्व बताते हुए वे कहती हैं-

"करिए जग के काम सब, प्रथम लेहु हरि नाम।
जग में आना सफल हो, जब सुमिरो श्रीराम।।"
"धन्य-धन्य वह देह जित, करता प्रेम निवास।
पल छिन रामहि सुमिरते, आवे-जावे श्वास।।"

वे कहती हैं उनके रोम-रोम में बस राम का ही नाम रम रहा है। जब भी उनका मन कहीं इधर-उधर भटकने लगता है तो, राम नाम का स्मरण उनका हाथ थाम लेता है तथा वे भटकने से बच जाती हैं। उनके कण-कण में राम बसे हैं। वैसे तो कहा जाता है कि अयोध्या में राम का निवास है। परन्तु आशा शैली जी की अयोध्या तो वहीं है जहाँ उन्हें श्रीराम प्रभु का स्मरण हो आता है।

वे प्रात: उठकर राम नाम स्मरण पर बल देती हैं। सहज एवं निष्काम भाव से राम नाम जपने को कहती हैं। वे जिस दिन श्रीराम के नाम का उच्चारण नहीं करती, वह दिन मानों व्यर्थ चला जाता है।

"जेहि दिन राम न उच्चरे, सो दिन बिरथा जान।
साँस-साँस में रम रहे, मेरे राम सुजान।।"
"मेरे प्रभु श्रीराम हैं, सकल सृष्टि का मूल।
उनके सुमिरन के बिना, जगत लगे ज्यों धूल।।"
"राम विराजें जगत में, राम जगत आधार।
नित उठ राम उचारिए, होगा बेड़ा पार।।"

प्रभु राम के स्मरण से व्यक्ति का इस भवसागर से बेड़ा पार हो जाता है। वास्तव में राम नाम का जाप ही सम्पूर्ण सृष्टि का मूल है।

6-सत्संगति का महत्व:-सत्संगति का अर्थ है-अच्छे आदमियों की संगति। गुणी जनों का साथ। अच्छे मनुष्य का अर्थ है-वे व्यक्ति जिनका आचरण अच्छा होता है। जो सदैव श्रेष्ठ गुणों को धारण करते है। सत्य का पालन करते हैं। परोपकारी हैं। अच्छे चरित्र के सारे गुण उनमें विद्यमान हैं। ऐसे अच्छे व्यक्तियों के साथ रहना, उनकी बातें सुनना, उनकी पुस्तकें पढ़ना, सत्संगति के अन्तर्गत आता है।

सत्संगति से मनुष्य में मानवीय गुण उत्पन्न होते हैं। उसका जीवन सार्थक बनता है। सत्संगति में ज्ञानहीन मनुष्य को भी विद्वान बनाने की सामर्थ्य होती है। यह मनुष्य के व्यक्तित्व को निखारती है। उसमें सद्गुणों का संचार करती है। अच्छे आदमियों के सम्पर्क से हम में गुणों का समावेश होता चला जाता है।

महात्मा कबीरदास का कथन है-

"कबिरा संगति साधु की, हरै और की ब्याधि।
संगत बुरी असाधु की, आठों पहर उपाधि।।"

आशा शैली भी अपने दोहों में संत व्यक्तित्व की संगत अपनाने पर बल देती है। क्योंकि अच्छी संगत जहाँ व्यक्ति को गुणों से भर देती है। वहीं बुरी संगति हमें धीरे-धीरे घुन की तरह खा जाती है। अच्छी संगति से मन में ज्ञान पैदा होता है। अच्छी संगति में रहने वाला व्यक्ति सदैव राम नाम स्मरण करता है। आशा जी कहती है-

"संग संत का राखिए, उर में उपजे ज्ञान।
राम नाम सुमिरन करें, पल-पल संत सुजान।।"

7:-नश्वर संसार:-आशा शैली अपने दोहों में इस जगत को नश्वर मानती हैं। इस छोटे से संसार में राम नाम का ही अनन्त विस्तार है। वे कहती हैं कि हे मनुष्य! तू भली भाँति सोच-विचार कर ले। तू इस संसार में एक कण के भी बराबर नहीं है। आशा जी कहती हैं-

" प्रात: उठ श्री राम को, सिमर लेहु रे मीत।
यह जग सपना बिनसिहै, ज्यों बालू की भीत।।"
"पचंतत्व के भवन में, जीव किराएदार।
साँस किराया दे रही, पल-पल राम चितार।।"

कवयित्री कहती हैं कि इस संसार में जो भी व्यक्ति आता है। निश्चित ही वह एक दिन इस संसार को छोड़कर जाएगा। अत: हमें इस संसार में समस्त दुविधाओं को भूलकर राम नाम का जाप करना चाहिए।

"आया है सो जायगा, जाने यह संसार।
जग की दुविधा भूल कर, करो नाम आधार।।"

8:-दास्य भक्ति:-भक्ति शब्द की व्युत्पत्ति 'भज्' धातु से हुई है। जिसका अर्थ सेवा करना या भजना है। अर्थात् श्रद्धा और प्रेमपूर्वक इष्ट देवता के प्रति आसक्ति।

व्यास ने पूजा में अनुराग को भक्ति कहा है। भक्ति के नौ भेद हैं। जिसमें श्रवण, भजन-कीर्तन, नाम जप, स्तरण, मन्त्र जप, पाद सेवन, अर्चन, वंदन, दास्य, सख्य, पूजा आरती, प्रार्थना, सत्संग इत्यादि है।

आशा शैली अपने दोहों में स्वंय को भगवान श्रीराम का दास कहती है। अर्थात् राम के प्रति उनकी भरक्ति दास्य भक्ति के अन्तर्गत आती है। इसमें उपासक अपने उपास्य देवता को स्वामी और अपने आपको उसका दास समझता है। वे अपने आपको भगवान् श्रीराम के समक्ष अज्ञानी व भिक्षुक मानती है। वे कहती है।-

''हम हैं भिक्षुक राम के, सजा राम दरबार।
आँचल में भर लो सखे, जो दे राम उदार।।''
''मेरा भरोसा राम पर, राम मेरा अभिमान।
मैं अज्ञानी जनम से, राम नाम का ज्ञान।।''

9:-माधुर्य भक्ति:-वात्सल्य भाव से भी आगे है-वह है माधुर्य भाव। माधुर्य भक्ति के अन्तर्गत भक्त ईश्वर की भक्ति में लीन हो जाता है। वह अपने आराध्य से प्रेम करने लगता है। भक्त जब अपने आराध्य से कान्त भाव से प्रेम करने लगे तो ऐसी भक्ति माधुर्य भक्ति कहलाती है।

आशा शैली अपने दोहों में भगवान् श्रीराम की भक्ति में लीन है तथा उन्हें अपना सर्वस्व मानती है।

''राम विमुख मन बाबरा, जगत रहा भरमाय।
प्रेम बने आधार जब, राम बसें मन आय।।''

माधुर्य भक्ति में हम भगवान् को अपना राजा, स्वामी, सखा, बेटा तथा प्रियतम मानकर प्रेम कर सकते हैं। सभी रसों का आनंद ले सकते हैं। आशा जी कहती हैं-

''राम हमारे बन गए, सखा सनेही मीत।
बसें हृदय में यूँ सखा, जैसे मधुरिम गीत।।''

वे राम को अपना मित्र मानती हैं-

''दुख-सुख मन के खेल हैं, संग हार के जीत।
चौथेपन में साथ लो, रामनाम इक मीत।।''

कवयित्री यह भी कहती है कि भगवान् राम से जब प्रेम हो जाता है तो मानो जीवन एक मधुर गीत बन जाता है। श्वासों में सरगम बसता है तथा पूरा ब्रह्माण्ड मानो संगीत बन जाता है।

''प्रीत राम संग जब लगे, जीवन बनता गीत।
साँसों में सरगम बसे, सकल ब्रह्म संगीत।।
''मेरा तो जीवन बना, राम नाम के हेत।
सजन सनेही सब मिलें, राम कृपा कर देत।।
''प्रेम राम के नाम से, राम जगत आधार।
सखा सनेही सब मिलें, करो नाम से प्यार।।

10:-राम नाम जपना पहचान देता है-आशा शैली कहती हैं कि यदि मैं भगवान श्रीराम की आराधना करती हूँ, तो इससे मेरा मान-सम्मान बढ़ता है। राम ही मेरा अभिमान है। वास्तव में राम-नाम जपने से मुझे पहचान मिली है।

''राम ही मरा मान है, राम मेरा अभिमान।
राम-राम कहते मिली, मुझे मेरी पहचान।।

दरअसल राम नाम का जाप ही पूरे संसार का सार है। वे कहती हैं-

''एक राम का नाम ही, सकल जगत का सार।
इसी नाम का जगत में, चलता है व्यापार।।

क्योंकि राम नाम का जाप हमें समाज में पहचान देता है, इसलिए हमें अपने दोनों हाथों से राम नाम के प्रेम को बटोरना चाहिए तथा पूरे संसार की मोह, माया को त्याग करके अपनी जीवन की डोर प्रभु राम को सौंप देनी चाहिए।

''प्रेम राम के नाम का, दोनों हाथ बटोर।
सारे जग को छोड़ कर, सौप राम को डोर।।
''राम कहे सुख ऊपजे, बिसरे संकट घोर।
राम कृपा जब मन बसे, रस का ओर न छोर।।

11:-राम भक्ति ही जीवन का सार-'राम नाम मनका' पुस्तक में संकलित सभी राम नामी 108 दोहों में आशा शैली राम भक्ति को ही सभी तत्वों का सार मानती हैं। यदि प्रात: शैया त्यागते ही प्रभु राम का नाम लें। इससे हमारी प्रभात मधुमय हो जाती है। राम भजन से विवेक जागता है। द्वेष भावना समाप्त हो जाती है। यदि मानव राम नाम भूल जाता है तो उसके मार्ग पर सर्वत्र काँटें बिछ जाते हैं। आशा जी कहती है-

''जीवन हर पल पर्व हो, करो राम से नेह।
पावन तन-मन हो रहे, पावन होता गेह।।

भगवान राम के चरणों की धूल से ही व्यक्ति का मान-सम्मान बढ़ जाता है। इस नाम के समक्ष संसार की सारी सम्पत्ति व्यर्थ है। भूमि, भवन, धन, मान यह सब कूड़ा-करकट है। इसे हृदय में जपो। एक राम ही है जो

दु:ख में हमारा साथ देता है।

"नमन राम के नाम को, सृष्टि रची रसधार।
निरख शक्ति श्रीराम की, यह जीवन का सार।।

हमारे स्वजन, स्नेही, नाते, रिश्ते सभी राम से ही हैं। यदि हम अपने मन को राम के अनुकूल बना लेंगें तो जीवन की सभी परिस्थितियों हमारे प्रतिकूल नहीं होगी। राम के बिना तो मन पागल हो जाता है। हमारी बुद्धि भ्रष्ट हो जाती है। राम-नाम के जाप से ही मन का सारा मैलापन मिट जाता है। राम नाम के उबटन से मनुष्य के सारे अंग निखर जाते हैं।

राम का नाम जपने से संसार में प्रसन्नता आती है। जगत में सुख आता है। राम-नाम के सुगन्धित झोके से हम आठों पहर महकते रहते हैं। यदि हम मन में राम नाम को धारण कर लेते हैं, तो स्वार्थ से दूर हो जाते हैं। हम मार्ग में कभी नहीं भटकते। आशा जी कहती हैं-

"कण-कण बसता राम है, सौप उसे दी डोर।
जिस पल राम हृदय बसे, वही सुहानी भोर।।

वह मनुष्य धन्य है जो राम से अमिट लगाव रखता है। यदि हम स्वंय को राम को अर्पित कर देते हैं तो वही हमारा आश्रय बनता है। मानव जीवन में सुख-दु:ख तो लगा ही रहता है। अत: हमें सदैव प्रभु राम की कृपा हो जाती है। उसका तो जीवन खिल जाता है।

जिस समय भी हम अपने हृदय में राम को बसा लेते हैं, वही सबसे शुभ समय है। अत: बेकार में समय व्यर्थ न करे। राम से प्रीत करने पर बिकारों पर विजय प्राप्त होती है। मनुष्य को अपना सब कुछ त्याग कर प्रभु राम को अपनी डोर सौंप देनी चाहिए। जिस पल प्रभु राम से प्रीत लगे वह पल धन्य है। यह जग भला किसे सम्मान देता है? राम से प्रेम होने पर मान-अभिमान सब छूट जाता है। परम ज्ञान की प्राप्ति होती है।

"मन तो हरि का धाम है, मन मन्दिर में राम।
राम नाम यदि मन बसे, कौन जगत से काम।।

मनुष्य अपने मन के भीतर तो राम को खोजता नहीं। सारे संसार में उसे ढूँढ़ता रहता है। वास्तव में राम तो हमारे मन में विराजमान है। एक राम का ही नाम है जो मन को आधार देता है। राम नाम का दीपक मोह, लोभ, भ्रम जाल सभी को दूर करता है। इसलिए हरि चरणों में मनुष्य का मन विश्राम प्राप्त करें।

"यश भी, धन भी, प्रेम भी, एक राम का नाम।
हरि चरणों में रति रहे, मन पावे विश्राम।।

दोहों में आज की सबसे जटिल समस्या पर्यावरण संकट पर दृष्टि:-पर्यावरण शब्द दो शब्दों से मिलकर बना है। परि+आवरण। 'परि' का अर्थ है- चारों ओर। 'आवरण' का अर्थ है-घेरा। अर्थात् चारों तरफ का घेरा, जिसमें हम रहते हैं। तथा प्रभावित होते हैं। विज्ञान ने अत्यधिक प्रगति कर, मानव जीवन को अनेक वरदान दिए हैं। विज्ञान की कुछ उपस्थित उपलब्धियाँ मानव जाति के लिए अनेक समस्याएँ खड़ी कर रही हैं। जिसमें से एक है-प्रदूषण।

प्रदूषण का अर्थ है-दोष उत्पन्न होना। अर्थात् मिट्टी, जल तथा वायु के भौतिक, रसायनिक व जैविक गुणों में अवांछनीय परिवर्तन से उनमें दोष उत्पन्न होना ही पर्यावरण प्रदूषण है। इससे आस-पास का वातावरण प्रदूषित तथा हानिकारक हो जाता है। प्रदूषण को कम कर पाने में मनुष्य समर्थ होता नहीं दिख रही है।

पुस्तक 'मेरी साँसे तेरा जीवन' में संकलित आशा शैली के पर्यावरणीय दोहों में वर्तमान समय की इसी सबसे जटिल समस्या पर्यावरणीय संकट पर बात की गई है। आशा जी ने अपने दोहों में पर्यावरण प्रदूषण के निम्न कारण बताए हैं।

(क) ध्वनि प्रदूषण:-यह मानव की कैसी प्रगति है कि कल कारखाने इतने बढ़ गए हैं कि चारों तरफ मशीनों का ही शोर है। यातायात के साधनों, हॉर्नों का शोर, चीखते लाऊडस्पीकर, तेज आवाज में चलते टैलीविजन, इस प्रकार के ध्वनि प्रदूषण से व्यक्ति को कम सुनाई देने लगता है तथा रक्तचाप बढ़ता है। आशा शैली अपने दोहों में कहती हैं-

"कोलाहल से काँपते, धरा, गगन के छोर।
ध्वनि प्रदूषण बहु बढ़ा, है अशान्ति घनघोर।।
"वाहन नित उगले धुआँ, और मचाते शोर।
तेल गंध है फैलती, साँझ घिरी चहुँ ओर।।

(ख) जल-प्रदूषण:-जल जीवन का आधार है। जल में किसी भी अवांछनीय बाह्य पदार्थ का मिलना, जिससे उसकी शुद्धता में कमी आ जाती है, जल प्रदूषण कहलाता है। उद्योगों, कारखानों का जल नदियों, तालाबों

में मिलना जल प्रदूषण कहलाता है। वे नदियों में मलमूत्र त्यागने, जानवरों को नहलाने तथा शवों की राख बहाने से जल प्रदूषण से बहुत व्यथित है। गंगा के प्रदूषित होने से मनुष्य को अनेक गम्भीर रोग लग रहे हैं। गंगा नदी के पानी के प्रदूषण से पूरा पर्यावरण दूषित हो गया है। वे कहती हैं-

"सकल नगर मल सौपता, गंगा है बीमार।
रे मानव अब चेत जा, कर माँ का उपचार।।
"गंगा धरती सींचती, सब की पालनहार।
पर अब है दूषित हुई, करती हाहाकार।।
"नदियाँ माँ का रूप हैं, देती अतुल सनेह।
कूड़ा-कचरा फेंक नर, दूषित करता देह।।

वे उन ठेकेदारों पर भी व्यंग्य करती है जो 'नमामि गंगे अभियान' में गंगा को स्वच्छ करने की बजाए, केवल पैसा कमाना ही अपना उद्देश्य समझते हैं।

"नमामि गंगे का चला, शुद्धिकरण अभियान।
पैसा ठेकेदार का, गंगा का बस गान।।

जल प्रदूषण के कारण जीव-जन्तु घटने लगे हैं। नदी का नीर विषाक्त होने से जलचर तड़प-तड़प कर मर रहे हैं। नदियों में मूर्ति विसर्जन भी किया जाता है। जिससे नदियों का पानी मलिन होता है।

"मूर्ति विसर्जन के लिए, जल क्यों करें विषाक्त।
तड़पें जलचर भी सभी, निरूपाय और आप्त।।

क्यों न मूर्ति विसर्जन के लिए कोई विशेष स्थल चुना जाए? ताकि जल भी दूषित न हो न ही अन्य कोई क्लेश।

"मूर्ति विसर्जन के लिए, रखिए ठोर विशेष।
जल भी दूषित हो नहीं, हो नहीं कोई क्लेश।।

(ग) भूमि प्रदूषण:-आज कल वनों की अन्धाधुन्ध कटाई हो रही है। उपज बढ़ाने के लिए खेतों में रसायनिक खादों को डाला जा रहा है। इससे भूमि प्रदूषण होता है। भूमि में उगने वाला खाद्यान एवं साग-सब्जियाँ प्रदूषित हो रही हैं। इनको खाने से मनुष्य के शरीर पर हानिकारक प्रभाव पड़ रहा है। वृक्षों की अन्धाधुन्ध कटाई का परिणाम देखिए-

"काष्ठ वस्तुओं की खुली, रोज नई दुकान।
सोफे कुर्सी ले रहे, हरे वृक्ष की जान।।
"हर घर में नित बढ़ रहा, वैभव का सामान।
बढ़ती तृष्णा ले रही, नित पेड़ों की जान।।

इस तरह निरन्तर पेड़ों के काटने से मनुष्य निरन्तर विनाश की ओर बढ़ रहा है। पेड़ों के बिना वर्षा नहीं होती। हम सुहानी भोर का अनुभव नहीं कर सकते। पेड़ों की बढ़ रही कटाई के कारण आकाश में बादल घुमड़-घुमड़ कर लौट रहे हैं। धरती प्यास से तड़प रही है। बादल कहाँ से बरसेगें, उनके पास नीर ही नहीं है। वृक्ष काटने का परिणाम देखिए-

"ताल-तलैया सूखते, सूख रहा सब नीर।
धरती तड़पे प्यास में, मनुज बढ़ाए पीर।।

इसके विपरीत धरती पर हरे-भरे वृक्ष हो तो कैसा लगता है?

"नदी-ताल बिरवे हरे, मन को दें हरषाय।
हरे वृक्ष बाग सब, वर्षा लेत बुलाय।।"

13:-जल का महत्व:-हमजल के बिना जीवन की कल्पना नहीं कर सकते। पीने तथा घरेलू उद्देश्यों के अलावा, जल हमारी दुनिया के अस्तित्व के लिए महत्वपूर्ण है। हमारी अच्छाई तथा आने वाले भविष्य के लिए जल का संरक्षण महत्वपूर्ण है। हमें पानी बचाने के लिए पहल करने की जरूरत है। चाहे पानी की कमी हो या नहीं हो। आशा शैली अपने दोहों में पानी का महत्व बताते हुए कहती हैं।

"नीर गँवाये व्यथ क्यों, नीर बिना जग नाहिं।
जल का संरक्षण करो, जो रहना जग माहिं।।"

वे आने वाली नस्लों के लिए इस उपहार को बचा कर रखने की बात करती है।

"आती नस्लों के लिए, रखिए ये उपहार।
जल ही जीवन भूमि पर, जल ही जग का सार।।"

आशा शैली कहती हैं कि पानी के बिना यह संसार कैसे रह पायेगा? मनुष्य को सोच विचार कर, पर्यावरण में सुधार लाने की बात करनी चाहिए।

14:-वृक्ष लगाएँ पर्यावरण बचाएँ:-आशा जी ने न केवल पर्यावरण प्रदूक्षण के कारण बताए हैं, साथ ही पर्यावरण प्रदूषण से बचाव के उपाय भी बताए हैं। इसके लिए वे वृक्ष लगाने पर सर्वाधिक जोर देती हैं। हरे-भरे वृक्ष हमें शुद्ध वायु देते हैं। ये तो विष्णु का रूप हैं। जो संसार के पालनहार हैं। वे वृक्षों को पुत्र से भी श्रेष्ठ मानती है। क्योंकि वृक्ष हमें छप्पन भोग देते हैं। वे कहती

है-

"स्वच्छ हवा छाया सघन, देते वृक्ष महान्।
अरु देते फल-फूल भी, करते हैं कल्याण।।"

पर्यावरण प्रदूषण से चारों दिशाओं में हाहाकार मचा हुआ है। मनुष्य को निरन्तर सोच-विचार करना चाहिए। क्योंकि पर्यावरण निरन्तर बिगड़ रहा है। वृक्षों की करुण स्थिति के बारे में कवयित्री लिखती है-

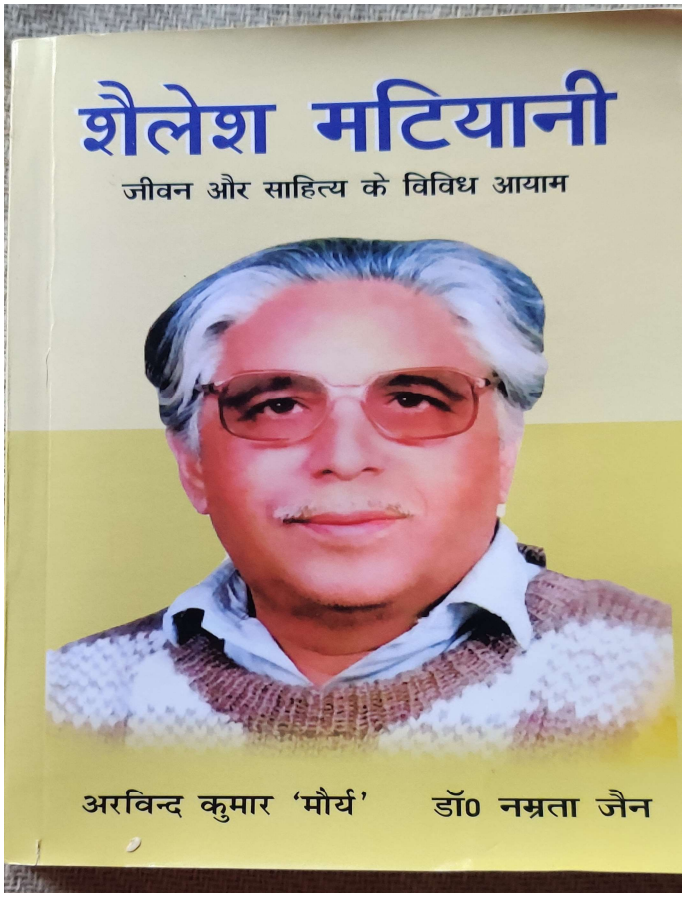
"वृक्ष गगन को ताकते, करते करुण पुकार।
मनव से कैसे बचें, दया करे करतार।।"

इसलिए मनुष्य को अधिक से अधिक वृक्ष लगाकर पर्यावरण को बचाना ही होगा।

"पर्यावरण बचाइए, वृक्ष लगाकर खूब।
हरियाली निसदिन बढ़े, धरती पर हो दूब।।"

अत: कहा जा सकता है कि आशा जी ने एक ओर जहाँ 'राम नाम मनका' पुस्तक में भक्ति सम्बन्धित दोहे लिखे हैं अन्य पत्रिकाओं में भी भक्ति से सम्बन्धित दोहे लिखकर उन्होंने इस समय की सबसे बड़ी समस्या की ओर हमारा ध्यान आकर्षित किया है। इस प्रकार उनके दोहों के लेखन में प्राचीन व नवीन परिपाटी का सुन्दर समन्वय है।

राजकीय महाविद्यालय
खटीमा, जिला ऊधम सिंह नगर
(उत्तराखण्ड)



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शैलेश मटियानी जीवन और साहित्य के विविध आयाम
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5

शैलेश मटियानी के उपन्यासों में दलित चिंतन

डॉ० शांति चंद
असिस्टेंट प्रोफेसर (हिंदी विभाग)
एच०एन०बी०पी०जी० कालेज, खटीमा
कुमाऊँ विश्वविद्यालय नैनीताल

सुदामा पांडे 'धूमिल' की 'रोटी और संसद' नामक कविता में 'दलित' वर्ग की त्रासदी को आईने के समान साफ-साफ प्रतिबिम्बित किया है:-

एक आदमी रोटी बेलता है
एक आदमी रोटी खाता है
एक तीसरा आदमी भी है
जो न रोटी बेलता है, न ही रोटी खाता है
वह सिर्फ रोटी से खेलता है
मैं पूछता हूँ-यह तीसरा आदमी कौन है?
मेरे देश की संसद मौन है

'शैलेश मटियानी' समकालीन आंचलिक उपन्यास विधा के सशक्त हस्ताक्षर हैं। 'दलित' उपन्यासकार के रूप में कथा सम्राट 'मुंशी प्रेमचंद' तथा आंचलिक उपन्यासकार के रूप में 'फणीश्वर नाथ रेणू' के समान विपुल और उत्क्रष्ट साहित्य सृजन किया है। इन्होंने शोषित-पीड़ित, दलित-उपेक्षित, दबे-कुचले और हाशिए पर रखे गये लोगों की पीड़ा को उजागर करने का प्रयास किया है। 'मटियानी जी' ने इनकी आशा-निराशा, दुःख-वेदना और अपमान-प्रतिकार को अपने उपन्यासों का विषय बनाया है। 'दलित' चिंतन का मुख्य उद्देश्य दलित, आर्थिक रूप से पिछड़े, दबे-कुचलों की दुःख-वेदना का यथार्थ चित्रण कर इनकी समस्याओं को उठाकर, उनके अंदर जागरूकता पैदा कर यथोचित समाधान करना। उन्हें स्वाबलंबी बनाने के साथ ही उनमें आत्मसम्मान की भावना पैदा करना भी है।

'मटियानी जी' ने अपने उपन्यासों में हर उस व्यक्ति की व्यथा को छूने का प्रयत्न किया है, जो किसी न किसी रूप में पीड़ित है। यथा- गरीबी-निर्धनता से संबंधित उपन्यास- 'छोटे-छोटे पक्षी', 'कबूतरखाना', निम्न व पिछड़ी

जातियों से संबंधित उपन्यास- 'गोपुली गफूरन', 'डेरेवाले', 'उत्तरकांड', 'नागवल्लरी', विधवा से संबंधित उपन्यास- 'चिट्ठी रसैन', अनमेल विवाह से संबंधित उपन्यास- 'रामकली', वेश्याओं से संबंधित उपन्यास- 'बावन नदियों का संगम', 'दो बूँद जल', 'मंजिल-दर-मंजिल', अविवाहित नारी के यौन-शोषण से संबंधित उपन्यास- 'सवित्तरी', परित्यक्ताओं से संबंधित उपन्यास- 'कोई अजनबी नहीं', 'चौथी मुट्ठी', रिश्तों के आभाव से संबंधित उपन्यास- 'एक मूठ सरसों', 'किस्सा नर्मदाबेन गंगुबाई', जरायमपेशा से संबंधित उपन्यास- 'पुनर्जन्म से बाद' और 'बोरीवली से बोरीबंदर तक'।

'कबूतरखाना' उपन्यास बंबई के प्रसिद्ध मोहल्ले 'भुलेश्वर' को आधार बनाकर रचा गया है। कथानक सेठों के घरों में कार्य करने वाले नौकरों के कारूणिक जीवन पर आधारित है। इनके पास रोटी, वस्त्र और मकान तीनों मूलभूत चीजें नहीं हैं। इनका जीवन बद-नसीबी और विपन्नता से इस प्रकार घिरा हुआ है कि चाहकर भी इससे बाहर नहीं निकल सकते, जबकि इससे बाहर निकलने की छटपटाहट इनमें साफ-साफ दिखाई देती है, गरीबी तथा भुखमरी ही उन्हें अनैतिक कार्य करने को विवश करती है। "इस बंबई को कोई क्या कहे, जहाँ भाई बहन को साथ लेकर उसकी पवित्रता का सौदा करने जाता है। जहाँ पिता अपनी कन्या की पावनता को रक्त सा पी जाता है, जहाँ सैकड़ों मुस्टंडे केवल नारी की कमाई पर पलते हैं-पलते नहीं, ऐय्याशी करते हैं! ----दादागिरी की बदौलत-मर्द होकर औरत की कमाई खाते हैं। बंबई उस कोढी की तरह है, जिसके मुंह पर कोढ़ के लक्षण न फूटें हों, और शरीर का जो सारा कोढ़ कीमती दुशाले से ढका रहता हो!"[1]

इस उपन्यास में 'वेश्यावृति' की समस्या को रेखांकित किया है, स्त्रियाँ जब तक जवान और स्वस्थ रहती हैं, तभी तक अपना शरीर बेचकर परिवार का पालन-पोषण कर सकती हैं, किंतु अस्वस्थ तथा बूढी होने पर दाने-दाने के लाले पड़ जाते हैं। "कबूतरखाना' पंख नोचे हुए कबूतर की अंदरूनी तड़प त्तथा बाहरी गुटरगूं की एक बोलती तस्वीर है। बंबई के सेठ-सेठानियों के कबूतरनुमा नौकर 'गणपत रामा' की मुंहबोली दास्तान है और अंतस को अकुला, मस्तिस्क को झकझोर देनेवाली आपबीती अनुभूतियों का एक ढांचा है, जिसकी पसली-पसली आतिशी शीशे का एक चटका हुआ टुकड़ा है और जिसका रेशा-रेशा रिसता हुआ नासूर!"[2]

गांधी जी सत्य, अहिंसा, एवं सत्याग्रह

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काल प्रवाह के भय से श्रेय कर्म में निरंतर प्रवृत महापुरुष प्रत्येक युग अथवा काल में अनेक मिलते हैं, किंतु उस श्रेय कर्म के द्वारा काल प्रवाह की धारा को ही मोड़ देने की क्षमता रखने वाले गांधीजी जैसे महानायक सहस्त्रावधियो में कहीं एक बार धरा पर जन्म लेते हैं वे युगदृष्टा थे, इस अर्थ में अवतारों और ऋसियो की पवित्र भूमि भारत पर गांधीजी का आविर्भाव विशेष महत्व रखता हैद्य गांधी जी ने बताया कि मानव संस्कृति हिंसा, असत्य, अनीति और विलासिता पर ना टिक कर मातृ प्रेम ,सत्य ,अहिंसा ,सीमित आवश्यकता सर्वोदय और सर्व कल्याण पर टिकी हुई है।

गांधीजी के लिए सत्य जीवन का आधार है और इसी सत्य का पालन करने में उन्होंने वह शांति प्राप्त की जिसका उन्होंने प्रतिपादन किया था। सत्यनारायण की धारणा की व्याख्या करते हुए गांधी जी ने स्पष्ट किया था कि ब्रह्मांड में एक व्यवस्था है ,एक अटल नियम विश्व की प्रत्येक वस्तु और प्रत्येक प्राणी का नियमन कर रहा है। वह नियम अंधा नहीं है क्योंकि कोई भी अंधा या विवेकशून्य नियम जीवधारी प्राणियों के नियमन नहीं कर सकता। नियम एवं नियामक एक ही है और वे इसी नियम को सत्य ,सार्वभोम और शाश्वत कहते थे। उनके लिए सत्य ईश्वर है, चरम है ,जीवन का मूल उद्देश्य है। सत्य के बारे में उनकी धारणा बनी थी जो संस्कृत शब्द सत्य में प्रतिध्वनित होती है। यह शब्द सत धातु से बना है जिसका मतलब है 'वह जो अस्तित्व में है। 'जो कुछ विद्यमान है वह यथार्थ है इसलिए वह सत्य का ही अंश है। फाउकाउल्ट ने सही कहा है कि 'हमे जो कुछ स्वाभाविक दिखाई देता है वह कतई स्वाभाविक नहीं होता।'[1]

गांधी जी के लिए सत्य एक साधन था और वे अहिंसा को इसका निर्विवाद साधन मानते थे। अहिंसा हमारी मानव प्रजाति का उसी तरह का नियम है जिस तरह पशुओं के लिए हिंसा है। मानव की गरिमा इसी में है कि वह उच्चतर नियम का पालन करे। इस तरह की अहिंसा केवल व्यक्तिगत गुण नहीं है बल्कि यह सामूहिक जीवन जीने की शैली है।

गांधी जी का कहना था कि अहिंसा ऐसी शक्ति है जिसे सब साध सकते हैं अहिंसा को जीवन का नियम मान लेने पर यह सिर्फ व्यक्ति के कुछ कृतयों पर ही लागू न हो अपितु संपूर्ण व्यक्तित्व को अनुप्रमाणित करने वाली होनी चाहिए। गांधीजी के अनुसार अहिंसा के मार्ग प्रथम कदम यह है कि हम अपने दैनिक जीवन में सच्चाई ,विनम्रता और दयालुता का व्यवहार करें।

गांधीजी ने अहिंसा के बारे में अपना मत व्यक्त करते हुए कहा कि अहिंसा की बात सभी धर्मों में है लेकिन इसे सर्वोच्च अभिव्यक्ति हिंदू धर्म में मिली है। हिंदू धर्म संपूर्ण प्राणी जगत को एक मानता है। उनका कहना था कि अहिंसा साधन है और सत्य साध्य। यदि हम साधन को ठीक रखें तो देर सबेर साध्य तक पहुँच ही जाएंगे। एक बार इस सूत्र को समझ जाएं तो अंतिम विजय निश्चित है।

गांधीजी का कहना था कि अहिंसा वीरता का सर्वोच्च गुण है ,यह कायरता की आड़ नहीं है, कायरता एवं अहिंसा का कोई मेल नहीं है, अहिंसा वीर का सर्वोच्च गुण है। उनका कहना था "पाप से घृणा करो पापी से नहीं। "गांधी जी की मान्यता थी कि अहिंसा मे डर का कोई स्थान नहीं है जिस तरह हिंसा के प्रशिक्षण में मारने की कला सीखना आवश्यक है, उसी तरह अहिंसा के प्रशिक्षण में ना मारने की कला सीखना आवश्यक है। गांधी जी कहते थे कि कायर को अहिंसा का पाठ नहीं पढ़ाया जा सकता।

गांधीजी की अहिंसा का मूलभूत सिद्आंत अद्वेत पर आधारित है। गांधीजी 'स्व' और 'पर' मे कोई भेद नहीं करते। अद्वेत का पालन करते हुए उनकी हिंसा इस बात की पुष्टि करती है कि 'पर' या अन्य जैसी कोई चीज नहीं है। अगर कुछ है तो वह आत्म या उसका ही कोई अन्य रूप है। इसलिए अन्य लोगों के खिलाफ हिंसा वस्तुतः अपने ही खिलाफ है। प्रत्यक्ष या ब्यक्तिगत हिंसा ,संगठित या छिटपुट हिंसा का जो रूप हम समसामयिक समाज या राजनीति में देखते हैं वह उस समय उभरकर सामने आता है जब हम औरों को पूरी तरह 'अन्य' मानने लगते हैं ।

अहिंसा सर्वश्रेष्ठ सद्गुण हैं, कायरता बड़े से बड़ा दुर्गुण है। अहिंसा का मूल प्रेम में हैद्यकायरता का धीरणा मे। अहिंसक सदैव कष्ट सहीसुर होता है कायर सदा पीड़ा पहुंचाता है। विशुद्ध अहिंसा उच्चतम वीरता है। अहिंसक व्यवाहर कभी पतनकारी नहीं होता, कायरता सदैव पतित बनाती हैं।[2]

यदि इस हिंसा से छूटने के लिए पूरा प्रयत्न करता है, उसकी भावना में अनुकंपा ही होती है, यदि वह सूक्ष्म जन्तु का भी नाश नहीं चाहता, और यथा शक्ति उसे बचाने का प्रयत्न करता है तो वह अहिंसा का पुजारी है।[3]

एलेन ने इंगित किया है, हिंसा का बहुआयामी होना,ऐसी मनोवैज्ञानिक ,भाषायी और सामाजिक राजनीतिक तथा आर्थिक हिंसा का संकेत देता है जो समाज में एक खास समुदाय पर अप्रत्यक्ष रूप से की जाती है ऐसी हिंसा प्रत्यक्ष तो नहीं होती, मगर यह समाज के ढ़ाचे और प्रणाली में ही छिपी रहती है।[4]

एलेन तर्क देते हैं कि 'हमारी सामान्य विश्व दृष्टि' स्वाभाविक रूप से ही हिंसक होती है और हमारा समाजीकरण और हमारी शिक्षा इस तरह से होती है कि हम कभी समझ ही नहीं पाते कि हम कितने हिंसक तरीके से अपने आप से, दूसरों से और प्रकृति से जोड़ते हैं।[5]

सत्याग्रह का अर्थ है सत्य के लिए आग्रह करना ,सत्य के लिए अड़े रहना। गांधीजी के अनुसषर,"सत्याग्रह अन्याय के खिलाफ एक ऐसा अहिंसक संघर्ष है जिसमें मन,वचन तथा कर्म से हिंसा का त्याग करके अहिंसा को एक

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Catalytic Oxidation of Benzyl Alcohol over Supported Gold Nanocatalysts

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Research Article

Abstract
A detailed study was described on the oxidation of benzyl alcohol over MCM-41 supported gold nanocatalysts. Two types of preparation methods, namely, incipient wetness (IWT) and homogeneous deposition precipitation (HDP) methods were adopted to synthesize 1 wt% Au/MCM-41 nanocatalysts. The samples were characterized by analytical techniques such as X-ray diffraction (XRD), adsorption measurements, electron microscopy (TEM and XPS) to understand some of their surface properties. The nanocatalysts were tested for the gas phase reaction of oxidation of benzyl alcohol to benzaldehyde in a fixed-bed glass reactor at atmospheric pressure. The aim was mainly to compare the characteristics difference observed in terms of surface properties, oxidation activity, benzaldehyde selectivity and stability between the two types of Au/MCM-41 nanocatalysts originated from IWT and HDP methods. Among the catalysts tested, HDP based Au/MCM-41 showed better catalytic performance for the title reaction.

Keywords: Nanoparticles, MCM-41, benzyl alcohol, fixed bed reactor, oxidation

1. Introduction
Catalytic oxidation of benzyl alcohol is industrially important to produce a large amount of benzaldehyde. The process is environmentally friendly and low-cost production. Benzaldehyde is largely used in the pharmaceutical, cosmetics, and flavoring industries [1]. In a commercial run, molecular oxygen or air is used as an oxidant since the by-product formed is water [2].

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Transesterification of triglyceride over Ni impregnated Zn/CaO nanocatalysts

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ABSTRACT

A series of Ni loaded Zn/CaO mixed oxides were prepared by wet impregnation process and their catalytic activities were investigated for transesterification of triglyceride. The physico-chemical properties of the catalysts were characterized by powder XRD, SEM, TEM, FT-NMR and temperature programmed desorption (TPD) studies. The prepared catalyst was successfully employed for the transesterification of waste cottonseed oil (WCO) having 4.4 wt% of free fatty acid contents. The catalytic amount of 5 wt% Ni/Zn/CaO catalyst (with respect to WCO), shown higher conversion (~98%) of biodiesel compared to other wt% of catalysts. The catalyst was recovered from the reaction mixture by simple filtration and reused for three consecutive runs.

Selection and peer-review under responsibility of the scientific committee of the National Conference on Advanced Functional Materials 2019.

1. Introduction

The robust population as well as industrial growth, has increased the demand of fossil fuels to significant extent in recent past. However, fossil fuel resources are limited, nonrenewable and bound to deplete, and hence, there is require to replace the fossil fuel with renewable resources. In this context biodiesel, defined as a mixture of FAME (Fatty Acid Methyl Esters), could be employed as an inexhaustible alternate to the fossil based diesel fuel [1]. Biodiesel, at industrial scale, is primarily produced *via* alkali catalyzed triglycerides by transesterification (vegetable or animal fats) with methanol. The choice of homogeneous catalyst for transesterification primarily depends on the feedstock quality which in turn depends upon the quantity of free fatty acids (FFA) present in it. Alkali catalyzed (NaOH, KOH, $KOCH_3$, etc.) process is preferred for the vegetable oils (VOs) having low FFA content (<1 wt%) while for the VOs having high FFA content (>1 wt%), acid catalyzed (HCl, H_2SO_4, sulfonic acid etc.) transesterification is found suitable [2,3]. Removal of the catalyst after reaction, non-reusability, and reactor corrosion are the majors issues related with the use of homogeneous catalysts. With an aim to overcome the difficulties accompanying with homogeneous catalysts, in recent past, researchers used heterogeneous catalyst for triglyceride transesterification [4–8]. Heterogeneous catalysts have numerous benefits over its homogeneous counterpart such as they can be easily recovered from the reaction mixture for further reuse, and lead to the formation of non-contaminated product to avoid the cumbersome product washing step [9–14]. CaO is one of the widely reported heterogeneous catalysts for biodiesel synthesis due to its non-hazardous, readily accessible and lesser price [15]. A variety of CaO based heterogeneous catalysts have been specified in literature for the triglyceride transesterification reaction including CaO-CeO_2 [16,17] and CaO-La_2O_3 [18], nano-magnetic KF/CaO-Fe_3O_4 [19].

In literature, previously [20,21], the effect of various individual metal ions, *viz.*, Mn(II), Fe(II), Co(II), Ni(II), Cu(II), Zn(II) and Cd(II), on CaO transesterification activity has been described. The study suggested that presence of Zn(II) was found to enhance the CaO activity to the maximum extent followed by Ni(II). While other transition metal *viz.*, Mn(II), Fe(II), Co(II), Cu (II) and Cd(II) were not found to enhance the activity of CaO to any significant extent. On the other hand the simultaneous effect of two or more transition metal ions on CaO has not been frequently reported. Thus in present study the mutual effect of Zn(II) and Ni(II) on the transesterification activity of CaO has been investigated.

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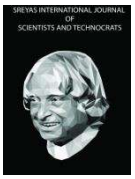

RESEARCH ARTICLE

THE EMERGENCE OF CARBON NANO-ONIONS AS ELECTRODE MATERIAL IN PHOTOVOLTAIC CELLS

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ABSTRACT

In this presentation, the synthesis of a new carbon nanostructured material known as carbon nano-onions (CNOs) is described along with its application in a type of photovoltaic cell. The synthesis of CNOs is conventionally carried out by two methods, namely, catalytic chemical vapour deposition (CCVD) and flame pyrolysis (FP). In CCVD method, hydrocarbon such as acetylene (C2H2) or ethylene (C2H4) is used as a carbon source over an iron-based catalyst. However, in FP method, oil is used as a carbon source in absence of a metal catalyst. The CNOs are characterised by different analytical methods such as X-ray diffraction (XRD), Transmission electron microscopy (TEM), Fourier transform infrared (FTIR) spectroscopy, Thermogravimetric analysis (TGA) and Ultra-Violet visible (UV-vis) spectroscopy to understand their structural and textural properties. As synthesised CNOs are quasi-spherical in shape with diameters less than 100 nm. The pristine CNOs can also be functionalised with hetero atoms to make it stronger and stable. Both doped and undoped CNOs are tested as counter electrode in photovoltaic cells. These nanostructured carbon materials exhibit good electrical properties and long-term stability. Thus CNOs can be suitably integrated with the energy converting devices in future to make it more cost effective and affordable.

Keywords: - Carbon nano-onions, nanomaterial, catalysts, photovoltaic cells, energy producer.

1. Introduction

In the field of alternative renewable energy sources, solar energy is one of the possible solutions to the electrical energy crisis. It could be considered as an independent power producer (IPPs) in near future. The demand to increase the electrical energy has opened up new avenues to design and develop smart materials in the field of nanoscience and nanotechnology.

The transformation of sun's radiant energy directly into electrical energy by dye sensitised solar cells (DSSCs) have been studied by many Researchers. These cells are built at low cost and shows good photo efficiency. These cells will have both transparency and flexibility. However, the use of flat electrodes and liquid electrolyte for dye sensitization of semiconductors face intrinsic problems. Some of these challenges can be addressed by incorporating carbon nanomaterials while fabricating DSSCs.

Carbon nanomaterials (CNMs) play a prominent role since the discovery of the C60 fullerene. After fullerene, carbon nanotubes (CNTs) and graphene have shown research interest due to their peculiar structures and properties [1-3]. Before all this, a unique allotropic form of carbon, known as carbon nano-onions (CNOs) were discovered. However, they were overshadowed by the advent of CNMs. Carbon nano-onions are made up of multi-layered

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Numerical approach for chemical reaction and suction/injection impacts on magnetic micropolar fluid flow through porous wedge with Hall and ion-slip using Keller Box method

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ABSTRACT

In the present investigation, influence of the chemical reaction, magnetic field and slip on micropolar fluid flow via a porous wedge in the existence of Hall and ion-slip are examined. The pertinent highly non-linear PDEs are changed into an arrangement of non-linear coupled ODEs by utilizing similarity transformation. The equations were calculated using the 'Keller Box Method' (KBM). The numerical data for skin-friction coefficients, Nusselt number, Sherwood number, velocities, thermal and concentration fields are portrayed by graphs for various existing parameters and analyzed in detail. The heat transfer characteristics of working magnetic fluid escalated with acceleration in slip and power-law parameters. Moreover, the mass transfer function escalated with material and chemical reaction parameters.

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KEYWORDS
Chemical reaction; Hall and ion-slip; KBM; magnetic field; suction/injection

Nomenclature

a	constant
C	concentration
C_p	heat capacity (J/m^3 K)
B_0	strength of magnetic field
Ec	Eckert number
F_w	suction/injection parameter.
H	heat source/sink parameter
I	inertial parameter
j	reference length (m)
K	micropolar or material parameter
M	magnetic field parameter
m	Falkner-Skan parameter
m_w	mass flux
N	component of microrotation (rad/s)

Self Attested

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ORIGINAL RESEARCH Open Access

Melting heat transfer assessment on magnetic nanofluid flow past a porous stretching cylinder

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Abstract

The assessment of melting heat transfer and non-uniform heat source on magnetic Cu–H_2O nanofluid flow through a porous cylinder was studied. The transformed differential equations describing the motion of Cu–H_2O fluid together with pertinent boundary conditions were handled numerically with the assistance of Keller box method. The ranges of volume fraction of copper particles were taken as 0–25%. The impacts of various governing parameters on the physical measures such as Nusselt number, surface drag force, temperature and velocity were analyzed by representing through graphs and tables. It was noted that the flow was influenced accordingly with the governing parameters. The outcomes showed that the rate of heat exchange improved with elevated Reynolds number, space and temperature-dependent internal heat source and melting parameters. The comparison of our data in relation to those of previous works has been shown.

Keywords: Keller box method, Melting heat transfer, Nanofluid, Non-uniform heat source, Porous medium

Highlights

- Assessment of melting heat transfer and non-uniform heat source on magnetic Cu–H_2O nanofluid flow through a porous cylinder was studied.
- The governing equations are solved by KBM (Keller box method).
- A good agreement was created with the experimental results.
- With increase in porous parameter values, the heat transfer rate declined near the surface.
- The coefficient of surface drag force depreciated with enhancing melting parameter values.

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उत्तराखण्ड और सिख धर्म : गुरुद्वारों के विशेष संदर्भ में

डॉ0 प्रशान्त जोशी
असिस्टेंट प्रोफेसर (गेस्ट फैकेल्टी), इतिहास विभाग, एच.एन.बी.पी.जी. कॉलेज,
खटीमा, ऊधम सिंह नगर, उत्तराखण्ड

सिख संप्रदाय का उद्भव मूलतः हिंदू धर्म की एक शाखा के रूप में हुआ था जिसका प्रवर्तन 15वीं शताब्दी में गुरू नानकदेव (1469–1539 ई0) द्वारा पश्चिमी पंजाब में किया गया।[1] वस्तुतः सिक्खों का इतिहास सिक्ख गुरूओं के इतिहास से प्रारंभ होता है। सिख गुरूओं का उत्तराखण्ड में समय–समय पर आगमन हुआ। विभिन्न स्थानों पर निर्मित गुरूद्वारें यहां सिख धर्म के प्रभाव तथा प्रचार–प्रसार की गवाही देते है।

प्रथम गुरू नानक भक्ति मार्ग के प्रचारकों में से एक थे। हिन्दुओं और मुस्लमानों को एक–दूसरें के समीप लाने का प्रयत्न करने वाले संतों में नानक अग्रणी थे।[2] नानक का जन्म 1469 ई0 में गुजरांवाला जिले के शर्कपुर तहसील के तलवण्डी नामक ग्राम में मेहता कालू चन्द खत्री के घर में हुआ था। नानक को 7 वर्ष की आयु में हिन्दी तथा संस्कृत के अध्ययन के लिए मुल्ला कुतुबुद्दीन के पास भेजा गया।[3] इनका विवाह 18 वर्ष की आयु में **सुलाखिन** नामक कन्या से कर दिया गया, जिससे श्री चंद तथा लक्ष्मी दास नामक दो पुत्रों का जन्म हुआ। इसमें श्री चंद ने भविष्य में उदासी सम्प्रदाय का प्रचार किया किन्तु कबीर की भॉति नानक का मन भी गृहस्थ जीवन में न लगा और उन्होनें 30 वर्ष की आयु में सन्यास ग्रहण कर लिया।

इन्होनें भारत तथा अन्य देशों का भ्रमण कर अपने उपदेशों का प्रचार किया। इन्होनें अनेक सूफी संतों से भी वार्तालाप किया। जिनमें बाबा फरीउद्दीन गंज–ए–शकर का नाम विशेष उल्लेखनीय है। नानक बिना किसी जातीय भेदभाव के लोगों को अपना शिष्य स्वीकार करते थे। नानक एकेश्वरवादी थे। इन्होनें मूर्तिपूजा तथा बाह्य आंडबरों का खण्डन किया। नानक विभिन्न जातियों के मध्य स्थित द्वैय भाव को नष्ट कर उन्हें मानवता के सूत्र में बांधना चाहते थे।[4] नानक कहते है–

क्या अठारहों पुरान तेरे पास है,
क्या तू चारों वेदों का पाठ कर सकता है,
क्या तूने पवित्र दिनों पर स्नान किया है।,
और मनुष्यों को जाति के अनुसार दान दिया है।
क्या तूने उपवास किया है और दिन रात, धार्मिक कर्मकाण्डों को सम्पन्न किये हैं।
क्या तू काजी या मुल्ला या शेख या जोगी या जंगम था,
क्या तूने रंगीन वस्त्र पहने थे या गृहस्थ के कर्त्तव्य पूरे किये थे, बिन ईश्वर के जाने हुए, मृत्यु सभी मनुष्यों को बॉध कर ले जायेगी।

नानक ने गुरू की महत्ता पर बल दिया। नानक के अनुसार प्रत्येक मनुष्य का कर्त्तव्य है कि वह निर्गुण भक्ति के मार्ग का अनुसरण कर मनुष्य रूपी अंश को उसके मूल स्त्रोत ईश्वर में विलीन कर दे। गुरू नानक के शिष्य सिख कहलाए। इन्होनें अपने शिष्य लहना को अपना उत्तराधिकारी बनाया जो अंगद के नाम से दूसरे गुरू बने।

नानक ने लहना का नाम अंगद अर्थात् अपने शरीर का ही भाग रखा और बताया कि उनकी आत्मा अंगद में प्रवेश कर गयी है।[5] गुरू अंगद (1539–1552 ई0) ने गुरू नानक द्वारा प्रारंभ की गयी लंगर–व्यवस्था को स्थायी बना दिया। इससे सिक्खों में जाति मतभेद नष्ट हुए, भाई–चारे की भावना बढ़ी तथा सामाजिक समता का विकास हुआ। गुरू अंगद गुरूमुखी लिपी को प्रारंभ किया। इन्होनें नानक के उपदेशों का संकलन भी प्रारंभ किया जो बाद में गुरू अर्जुन द्वारा संकलित ग्रंथ आदि ग्रंथ में सम्मिलित कर लिया गया।

गुरू अंगद ने अपना उत्तराधिकारी अपने शिष्य अमरदास को चुना। गुरू अमरदास ने गोइन्दवाल को अपना निवास स्थान बनाया। वहां उन्होनें पानी की बावड़ी का निर्माण किया। गुरू अमरदास (1552–1574 ई0) ने लंगर–व्यवस्था में एक नियम बनाया कि गुरू से मिलने से पहले प्रत्येक व्यक्ति के लिए लंगर में भोजन आवश्यक है। उन्होनें यह भी निश्चय किया किया कि दीवाली के त्योहार के अतिरिक्त सिक्ख–सम्प्रदाय के व्यक्तियों की बैठकें बैसाख और माघ के पहले दिन हो। गुरू अमरदास के समय में ही

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Catalytic Vapor Phase Oxidation of Glycerol to Glyceric Acid Over Activated Carbon Supported Gold Nanocatalysts

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A series of activated carbon (AC) supported Au nanocatalysts with different loadings of Au were prepared by using the homogeneous deposition–precipitation (HDP) method. The samples were characterised with myriad techniques such as X-ray diffraction (XRD), CO-chemisorption, N_2 adsorption–desorption measurements, transmission electron microscopy (TEM), inductively

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coupled plasma-optical emission spectrometer (ICP-OES) and X-ray photoelectron spectroscopy (XPS) to understand the structural and textural properties in detail. The catalysts were tested for the vapour phase oxidation of glycerol to glyceric acid under base-free medium in an aerobic condition at normal atmospheric pressure. The Au/AC nanocatalysts with smaller size Au particles (<6 nm) showed higher glycerol conversion and selectivity for glyceric acid, and also a longer catalyst life. While the larger Au particles (>10 nm) showed less activity and selectivity. Among all the nanocatalysts tested, the 1.0 wt.% Au/AC sample having smaller particle size of Au showed the best catalytic performance in terms of glycerol conversion and glyceric acid selectivity. These results suggest that the oxidation activities of Au/AC nanocatalysts are strongly influenced by the size of Au nanoparticle, nature of the support material and through a metal-support interaction.

Keywords: Gold nanoparticles; activated carbon; heterogeneous catalysis; oxidation; glycerol.

1. Introduction

Glycerol is a chemical compound widely derived from bio-sustainable resources. The chemical products produced after glycerol conversion has large applications in industrial products.[1,2] The three hydroxyl groups associated with glycerol molecule give rise to a variety of products. By controlling the reaction parameters, one could selectively oxidise, either the primary or secondary hydroxyl groups of glycerol into different end products. Among them, glyceric acid is the most useful in pharmaceutical industries.[3] Currently, these products are being produced commercially through different processes which are significantly costly and pollute the environment.[4] Hence, an ecofriendly method with sustainable cost is needed for oxidation of glycerol to glyceric acid.

Gold-based catalysts exhibit high activity toward glycerol oxidation.[5,6] Their highly resistive nature to oxygen poisoning in comparison to platinum-based catalysts makes it more feasible to use high oxygen partial pressures in the reactor.[7] Conventionally, the Au-based catalysts require a basic medium to carry out the oxidation reaction.[8] Au catalysts with different particle sizes of gold on different supports (γ-Al_2O_3, TiO_2 and carbon) have been tested for the oxidation reaction of glycerol. Among them, Au nanoparticles supported on carbon-based support materials were found to be more favorable for the glycerol oxidation.[9]

In this investigation, a series of Au/AC nanocatalysts were synthesized by using the HDP method. Activated carbon (AC) was used as an active support material, since it is highly microporous and has an excellent stability and longer life under reaction conditions. The catalyst samples were tested for the vapour phase oxidation of glycerol to glyceric acid under base-free medium at normal atmospheric pressure. To understand the influence of particle size and its interaction with support material, the effects of Au loading, reaction temperature, stability and life of the catalysts were also investigated.

2. Experimental Methods

2.1. *Synthesis of Au/AC nanocatalysts*

AC with surface area of 1340 m^2/g (commercially: NORIT, BET, sieved and crushed to 18/25 BSS) was used as a catalyst support to prepare a series of Au/AC nanocatalysts with varying wt.% of Au content via homogeneous deposition–precipitation (HDP) method.[10,11] Briefly, the solution mixture containing an aqueous solution of $HAuCl_4 \cdot 3H_2O$ (Sigma-Aldrich, 99.9%) with desired gold content and urea were stirred in a beaker with gradual heating until 95°C for 6 h. The gradual heating helps decompose urea into ammonia which gets precipitated homogeneously in the solution as the pH shift toward basic conditions (pH ∼6–8). The support, AC, was now added to the solution mixture while stirring. The freshly prepared 0.1 M $NaBH_4$ was mixed to the above solution mixture to reduce the gold particles over the AC support.[11] The precipitate formed was filtered and washed several times with deionized water to ensure that no chloride ions were left on the surface of the samples. Finally, the samples were first dried in oven at 100°C for 5 h and then calcined at 400°C for 3 h in N_2 atmosphere.

2.2. *Characterization of Au/AC nanocatalysts*

X-ray diffraction (XRD) (M/s. Rigaku Corporation, Japan) was used to investigate the crystallographic

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RESEARCH ARTICLE

APPLICATION OF INSTRUMENTAL METHODS AND TECHNIQUES FOR CHARACTERIZATION OF SOLID CATALYSTS

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ABSTRACT

Characterization of solid catalysts is an important aspect of catalysts development [1]. The elucidation of the structure, composition, and chemical properties of both the solids, adsorbates and the intermediates present on the surfaces of the catalysts during reaction in real-time, is vital to know the relationship between catalyst properties and their performance during the course of the reaction. This knowledge helps to develop more active, selective, and durable catalysts, and to optimize reaction conditions. There are several modern instrumental techniques available to characterize solid catalysts. But no one single technique can give the complete information about the surface structure or functionality of the active component of the catalyst. Therefore, a combination of few pertinent methods is needed to know the salient features of a catalyst under investigation. In this review article some of the basic characterization tools such as X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), transmission electron microscopy (TEM), gas adsorption measurements and Fourier transform infrared spectroscopy (FT-IR) along with their experimental conditions are described in a general way.

Keywords: Characterization, Catalyst, Instrumental Technique, Spectroscopy, Real-time.

1. INTRODUCTION

The characterization of the solid catalysts is an important study to obtain information about the nature, structural and textural functionalities of the active component either supported or unsupported with optimized compositions. Knowledge on this is quite beneficial to develop novel catalysts for industrial processes and for the development of green technology. Characterization in general allows the scientists to understand the inside properties of solid surfaces of catalysts. Analytical techniques in general give information about the catalysts which undergo certain perturbation under examination. These techniques can be grouped based on the nature of the probes employed for excitation, including photons, electrons, ions, thermal and neutrons, or, alternatively, according to the type of information they provide (Figure 1.1).

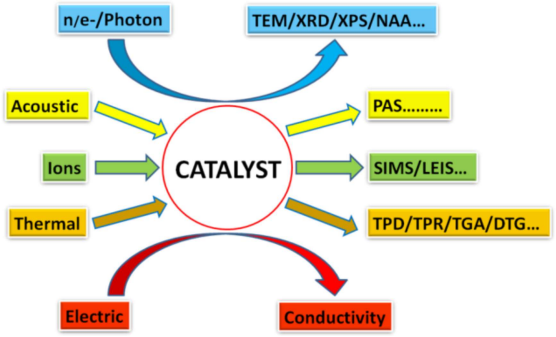

Figure 1.1. Different kinds of probes used for characterization

In this current article, a group of main catalyst characterization techniques have been chosen using a combination of both criteria into structural, thermal, optical, and surface-sensitive techniques. The focus is also more on the characterization of real catalysts. Only the

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Research Article

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Efficient removal of organic pollutants in wastewater using tin oxide nanospheres under photoirradiation

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Abstract

The maximum toxic pollutants discharged by the industrial and domestic wastewater effluents are the pathogens and organic chemicals. Recently, mesoporous tin oxide (SnO_2) nanospheres have gained attention as a suitable material in photodegrdation of poisonous pollutants like methylene blue (MB) and chlorobenzene (CB) when exposed to Ultraviolet and Visible irradiation. In this study, a single step synthesis of SnO_2 nanospheres with large surface area (104 m^2g^{-1}) was prepared from mixing two different types of surfactants. Pertinent physico-chemical characterisation techniques such as X-ray diffraction (XRD), scanning electron microscopy (SEM), high resolution transmission electron microscopy (HRTEM), energy dispersive X-ray spectroscopy (EDS), and N_2 adsorption–desorption measurements were used to get an insight into the structural details of the freshly prepared SnO_2 nanospheres. Results showed that SnO_2 samples were spherical in shape and with an average size of 2-5 nm. According to the pseudo 1st order kinetic study, a rate constant (k) of 0.02693 min^{-1} and 0.02136 min^{-1} for methylene blue (MB) and 0.2385 min^{-1} and 0.2023 min^{-1} for chlorobenzene (CB) were observed under UV and visible irradiation, respectively. High photoactivity of SnO_2 nanospheres may be ascribed to its reduced crystalline size and high surface area. Also, the SnO_2 nanospheres showed high response, selectivity, and good recovery rate towards degradation.

Keywords: Tin Oxide, Nanoparticles, Chlorobenzene, Visible Irradiation, And Methylene Blue

Introduction

Recently, the combination of porous structures and nanomaterials have become the most fascinating areas of research. These materials can be of different shapes and sizes with the mesoporous range usually falling between 2 and 50 nm. They have been given more importance due to their myriad application in the industrial sectors [1]. Among the different kinds of porous materials, mesoporous SnO_2 plays an important role. There are various preparatory methods are known while preparing SnO_2 like. solvent-free infiltration, microemulsion, sol-gel hydrolysis, solvothermal, hydrothermal and so on. Most of the preparatory routes lead to agglomeration of smaller particles into larger crystallite size [2-6]. To make smaller crystallites of SnO_2 nanospheres, they are prepared from mixing suitable surfactants [7].

Surfactants gives the desired pore size to the nanoparticles due to the type of bonding it creates between counter ions. The long alkyl chains of surfactants help in forming many smaller pores in SnO_2 nanospheres at the time of synthesis [8]. Various types and combination of surfactants have shown different morphologies and pore sizes. In our present investigation an attempt has been made to synthesis mesoporous SnO_2 nanospheres using a mixture of cationic and anionic surfactants with specific molar ratios to give a high surface area material.

Photoadsorption of toxic materials from wastewater on semiconducting oxide surfaces is economical and non-toxic in removal of organic dyes [9]. Photo-oxidation is gaining interest because of its efficiency in the degrading toxic pollutants arising

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Research Article

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Photocatalytic Decomposition of Methylene Blue Present in Wastewater Using Nano-Sized Titanium Dioxide Particles

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ABSTRACT

Nanostructured materials and their application have been the subject of many researchers in recent years. Among the materials, nano-sized titanium dioxide (TiO_2) plays an important role due to its high adsorptive capacity, photosensitivity and access to produce in a large scale. Conventional methods have not succeeded in the total removal of various toxic pollutants from water and wastewater during treatment process. Titanium dioxide is used as photocatalysts in many applications. A right approach in synthesising TiO_2 is known to reduce the pollutants level to a considerable extent. In our investigation, a series of nano-sized particles of TiO_2 was synthesised by slow hydrolysis sol-gel process. The samples were characterised for their physicochemical properties by analytical methods like X-ray powder diffraction (XRD), N_2 isotherms, transmission electron microscopy (TEM) and UV-Visible diffuse reflectance spectroscopy. Finally, the nanoparticles of TiO_2 were tested for the photodecomposition of methylene blue dye solution under visible irradiation in a glass reactor.

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Keywords: Nanoparticles, Glass Reactor, Decomposition, Photocatalysts, Band-gap Energy, Titanium dioxide, Methylene Blue, UV-Visible Spectrophotometer, Visible light.

Introduction

Nanoscience and Nanotechnology is newly an emerging field. It emphasises more on synthesis of novel materials with newer or improved properties. Nanoparticles play an important role in many industrial applications. During the past decade, many studies were carried out on the synthesis and physicochemical characterisation of variety of nanostructured materials and tested few them in water and wastewater treatment [1]. Among the reported literature, the decomposition of various toxic compounds using semiconducting metal oxides as photocatalysts have shown encouraging results [2, 3]. It is known that the crystalline anatase phase of titanium dioxide or titania (TiO_2) shows a high photosensitivity near ultraviolet and visible radiation. Titanium dioxide is highly a functional material having myriad application in areas like photovoltaic cells, hydrogen production and photooxidation of volatile organic compounds [4]. Hence, study on the catalytic properties of TiO_2 under photoirradiation have become an important research area to many researchers to find new ways to reduce its band-gap energy (Eg) value of 3.2 eV [5, 6]. Despite many salient features associated with TiO_2, due to its high band-gap value, it becomes less responsive under visible or solar light. One way to overcome the challenge is to modify TiO_2 with dopants like metal (Fe, Co, Ni, Mn etc) or non-metal (N, S, F etc) to enhance the photocatalytic efficiency of TiO_2 [7, 8]. Non-metal dopants like sulphur and nitrogen were being used to reduce the Eg value of TiO_2 to make it favorable to absorb the visible light [9]. Alternately, it is also reported that a new approach in synthesising smaller crystallites of anatase TiO_2 in a nano-size range between 5 and 20 nm will be responsive to visible light [10].

Studies on photodecomposition of water pollutants present in wastewater have been reported using suitable catalysts [11]. Industrial effluents carrying variety of toxic dyes like methylene blue, Congo Red and Bromothymol blue discharged, produce serious environmental problems. Hence their separation or removal from the aqueous stream is a major concern to many. Some of the conventional methods show that total decomposition of the toxic compounds is not possible. In this regard, the nanoparticles of titanium dioxide play a crucial role. The approach is to produce charge carriers (h^+-e^-) on the surface of TiO_2 nanoparticles under ultraviolet irradiation, and to oxidise the pollutants into reactive moieties, and finally to decompose them into carbon dioxide and water.

Methylene blue (MB) is a common water pollutant which is discharged into the effluent stream originating from textile, paper and leather industries. It is known that industrial dyes contribute the maximum amount of toxic compounds causing severe environmental danger. The release of dyes in water can lead to dangerous by-products through oxidation, hydrolysis or other means of chemical reactions take place in wastewater. Therefore, its removal from the wastewater is important.

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An Analysis of Investment Behavior with Reference to The Retail Investors of Kumaun Region of Uttarakhand

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Abstract

Investors have various perceptions and mindset when they decide about their investment among the all available investment avenues. All the investors those having a saved amount from their income they want a best return from any investment avenue or from the investment proposal. Most of the Retail investor wants his saving to be invested in most secure and having liquidity attribute. However, the decision varies for every individual depending upon their risk aptitude. Investment behaviour is related to activities of individual investors regarding searching, evaluating, acquiring, reviewing the investment products and if necessary, disposing such investment products. Investment behaviour reveals how the individual investor allocates the surplus financial resources to various instruments available. The present research paper focus on various behavioral factors which can influence the investors investing decisions.

Keywords:- Investors' behaviour, investment, individual investor, saving objectives, investment avenues.

Introduction

Developing countries like India, needs huge investment in infrastructure and production. Volume of productive investment helps to create opportunities for employment, income growth, savings and economic growth. The savings and investment by people plays a vital role for the economic growth of the nation. The recent efforts placed by government of India, to discourage gold investment and promote other investments, confirms importance of small saving in economy and development of the country. A major portion of India's population cataract in middle income group (middleclass). Savings and investment is an urge for middleclass to maintain and improve their social security. In economics investment deals with savings and consumption of money. Whereas in finance investment denotes putting money in some assets with an expectation of gain usually in long-term, Investment decision may or may not be based on some analysis or research, but every investment is subject to risk.

Although finance has studied for thousands years, behavioral finance which considers the human behavior in finance is a quite new area. Behavioral finance theories, which are based on the psychology, attempt to understand how emotional and cognitive errors influences individual investors' behaviors (investors mentioned in this study are referred to individual investors).

The present study is based on the human psychology for investment, which makes people rational to irrational, is known as behavioral finance. If invested rationally, these small savings may earn good return with reasonable or low risk for Retail investors. Behavioral finance analyses the ways that people make finance decisions besides the impact on financial markets; this also has relevance to corporate decision making, investor behavior and personal financial planning. Our psychological biases and heuristics have real financial effects whether we are

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Entrepreneurial Practices for Youth Empowerment in Uttarakhand: An Evaluation of Psychological Status

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Abstract

Understanding the methods and means by which empowerment may be enhanced through experiential education methods and programs are a useful endeavor. In examining and describing components of wilderness therapy for adolescents, recognized that by providing opportunities for youth to experience mastery performance as a result of their own effort, self-defeating attitudes and behaviors could be replaced with feelings of confidence and capability. This article concludes with recommendations and implications for researchers and practitioners in the field of experiential education who seek to understand ways in which programs can facilitate and foster the development of empowerment.

Keywords: *Entrepreneurial Practices, Youth Empowerment, Psychological Status, Experimental Status.*

INTRODUCTION:

Empowering youth to ascend out of destitution is basic for the sustainable development of a nation. Neediness perseveres in various creating nations because of disparity in, access to, and power over assets and openings (Agheneza, 2009). To annihilate destitution, it is important to engage youth through instructive chances, to build up their aptitudes in pay creating exercises, and to give them related fundamental abilities essential for effective fates. With the end goal to achieve money related suitability, youth need long haul profession objectives (e.g., to end up an

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AN OVERVIEW OF ORGANIZED & UNORGANIZED RETAILING IN INDIA

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ABSTRACT

Retail is currently the most progressive sector of the Indian economy and one of the major pillars of Indian economy. The Indian Retail market is estimated to be US$ 600 Billion and one of the top five retail markets in the world by economic value. India is one of the fastest growing retail markets in the world, with around 1.3 billion people. The retail sector has played a phenomenal role throughout the world in increasing productivity of consumer goods and services. The retail industry in India has come forth as one of the most dynamic and fast paced industries with several players entering the market. The Indian retail industry is the largest among all the industries, accounting for over 10 percent of the country's GDP and around 8 percent of the employment. This paper provides detailed information about the role of unorganized retailing industry in India. It includes the various retail format in India. This paper surveys the unorganized retailers to understand the challenges impacting the retail sector. It concludes with providing the detailed opportunities available for the retail sector. The organized retail constitutes 8% of the total retail marketand is expected to grow at 20% by2020. It is likely to greatly impact businessmen, entrepreneurs, investors and to a great extent the real estate sector. There is great hue and cry that FDI will to a great extent make the small retailers shut the business and opt for alternate employment. The paper focuses on the impact of the unorganized sector in Indian retail market.

Keywords: Retail, Organized, Unorganized, Economy, Retailing, Market

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Research Article

उत्तरकाशी सहकारी बैंक लिमिटेड में कार्यशील पूँजीः एक विवेचनात्मक अध्ययन

आशुतोष कुमार

एसोसिएट प्रोफेसर, वाणिज्य विभाग, हे0न0ब0रा0स्ना0महा0 खटीमा, उधम सिंह नगर, उत्तराखण्ड।
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सारांश

जिला सहकारी बैंक उत्तरकाशी की कार्यशील पूँजी की स्थापना अंश पूँजी, संचित कोष, निक्षेप एवं शीर्ष बैंक तथा सरकार से प्राप्त ऋण द्वारा होती है। प्रस्तुत शोध पत्र में बैंक की कार्यशील पूँजी विभिन्न घटकों का विवेचनात्मक अध्ययन एवं विश्लेषण करने का प्रयास किया गया है। उत्तरकाशी जिला सहकारी बैंक के वार्षिक प्रतिवेदन 1990–91 से 1999–2000 तक के अध्ययन से संज्ञान में आता है कि वर्ष 1999–2000 में कुल अंश पूँजी बढ़कर 89.47 लाख रु. हो गयी है, जिसमें 16.19 लाख रु. के 'अ' श्रेणी के अंश एवं 73.28 लाख रु. के 'ब' श्रेणी के अंश हैं। कुल अंश पूँजी में मात्र 2.81 प्रतिशत वार्षिक की दर से वृद्धि हुई है। बैंक के कुल निक्षेप की मात्रा में तेजी से वृद्धि हुई है और वर्ष 1999–2000 में इसकी राशि 5625.03 लाख रु. हो गयी है। जिला सहकारी बैंक उत्तरकाशी की पूँजी, संचित कोष, निक्षेप, देय ब्याज तथा लाभ में वृद्धि तो हुई है किन्तु इसे आशानुरूप नहीं माना जा सकता। बैंक एवं सरकार से ऋण व अन्य देनदारी में होने वाली कमी कार्यशील पूँजी की मात्रा में भी कमी ला रही है जिससे कार्यशील पूँजी पर्याप्त मात्रा में नहीं बढ़ पा रही है।

मुख्य बिन्दुः कार्यशील पूँजी, अंश पूँजी, संचित कोष, निक्षेप, उच्चावचन एवं मियादी खाता

कार्यशील पूँजी

प्रत्येक व्यावसायिक संस्था को व्यावसायिक कार्यों के संचालन हेतु स्थिर पूँजी तथा कार्यशील पूँजी की आवश्यकता होती है। व्यवसाय के संचालन हेतु स्थायी रूप से कुछ सम्पत्तियों की आवश्यकता पड़ती है, जिन्हें स्थायी उत्तरकाशी सहकारी बैंक लिमिटेड में कार्यशील पूँजीः एक विवेचनात्मक अध्ययन।

सम्पत्ति कहते हैं, जैसे– भूमि, भवन, संयंत्र, मशीनरी, ख्याति आदि और इनमें लगायी गयी पूँजी स्थायी पूँजी कहलाती है। इसके विपरीत व्यवसाय के संचालन सम्बन्धी दिन प्रतिदिन की आवश्यकताओं को पूरा करने हेतु जिन सम्पत्तियों की आवश्यकता पड़ती है, उन्हें चल सम्पत्ति कहते हैं एवं इनमें लगाई पूँजी को चालू या कार्यशील पूँजी कहते हैं। दूसरे शब्दों में स्थायी पूँजी व्यवसायों की स्थायी आवश्यकताओं की पूर्ति के लिए होती है और कार्यशील पूँजी का विनियोग व्यवसाय को क्रियाशील रखने के लिये किया जाता है। अतः कहा जा सकता है कि कार्यशील पूँजी वह पूँजी है जो संस्था के कार्यशील व्ययों की आवश्यकता को पूर्ण करने के लिये विनियोजित की जाती है।

वर्तमान में कार्यशील पूँजी की दो विचारधारायें मान्य हैः– विस्तृत दृष्टिकोण या सकल कार्यशील पूँजी दृष्टिकोण और संकीर्ण दृष्टिकोण या शुद्ध कार्यशील पूँजी दृष्टिकोण। विस्तृत दृष्टिकोण कार्यशील पूँजी के परिमाण पहलू पर बल देता है जबकि संकीर्ण दृष्टिकोण उसके गुणात्मक पहलू को उजागर करता है। व्यापक दृष्टिकोण के आधार पर कार्यशील पूँजी अल्पकालीन व दीर्घकालीन दोनों प्रकार के दायित्वों द्वारा अधिग्रहित चल सम्पत्तियों के योग के बराबर होती है। संकीर्ण दृष्टिकोण के आधार पर चल सम्पत्तियों में से चल दायित्वों को घटाने के पश्चात् जो शेष बचता है, उसे ही कार्यशील पूँजी माना जाता है। प्रस्तुत शोध पत्र में जिला सहकारी बैंक उत्तरकाशी

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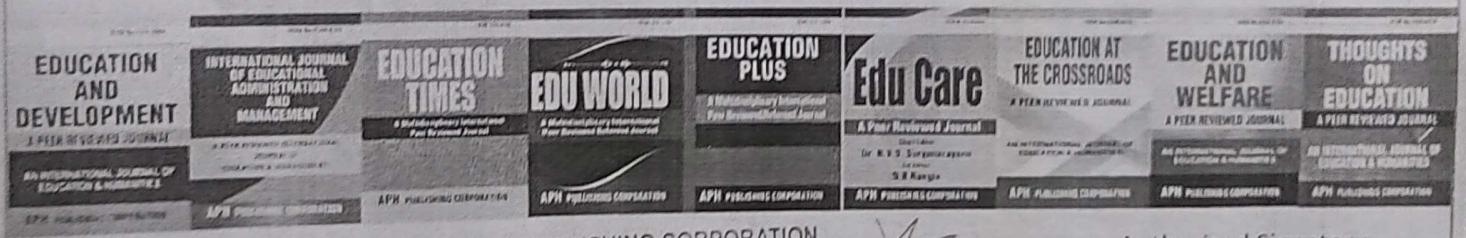

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Analysis of Performance of Personnel Cost of Uttar Pradesh State Road Transport Corporation

Dr. Harendra Mohan Singh* and Dr. Ashutosh Kumar**

Abstract

This paper presents an analysis of the structure of personnel cost of operation and variations in the proportions of various personnel cost components of Uttar Pradesh State Road Transport Corporation. Personnel cost is the cost associated with personnel compensation and fringe benefits of employees (which include permanent and part time employees) contributing to each respective production process. Personnel cost includes salaries and wages, bonuses, overtime, compensation, savings plan, insurance, pension funds etc. as the kind of this, which paid or payable to employees. In the reference of SRTUs the personnel cost made up by addition of expenses on drivers and conductors salary, traffic supervisory salary, total traffic staff salary, workshop & maintenance staff salary, administration & others and provident fund welfare. Personnel cost, being the major cost item, constituted higher share both in total cost of operation and total revenue. While an index number approach is followed for analysing the trends and growth of personnel cost has recorded increasing trend, since the growth rate of this cost is positive and significant. It is found that the growth in personnel cost expenditure from 2009-10 to 2017-18 is 158.84 percent.

Keywords: Road transport, Personnel Cost, Expenditure, Analysis, Performance, Resources, Average, Growth.

INTRODUCTION

Transport is one of the most critical infrastructural development of the country. Road Transport is of great importance both for movement of passengers and goods. It is ideally suited for short and medium distances because of its inherent advantages such as easy availability and flexibility of operations, adaptability to individual needs, door to door services and reliability. It is also the main mechanised transport in hilly and rural areas which are not served by railway and airlines. Road Transport provides one of the basic infrastructure facilities for economic development of backward areas besides being the feeder service to rail traffic, ports and harbours.

At present, there are 71 State Road Transport undertakings (STUs) in the country comprising 21 Corporations registered under the Road Transport Corporation Act (1950), 31 Companies registered under the companies Act (1956), 8 Government Departmental Undertakings and 11 Municipal Undertakings. In these one of the corporation as Uttar Pradesh State Road Transport Corporation (UPSRTC), which came in existence in 15 May,1947 with the operation of bus services on the Lucknow- Barabanki route by U.P. Government Roadways. During the fourth five year plan, the U.P. Government Roadways was rechristened as Uttar Pradesh State Road Transport Corporation

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A STUDY ON THE ROLE OF UTTARAKHAND GRAMIN BANK TO THE ECONOMY OF UTTARAKHAND

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ASTRACT

Finance and banking is the life blood of agriculture, trade, commerce and industry. Commercial banks have little interest in Rural areas, these banks concentrated on deposits rather than credits. The nationalization of major commercial banks also did not improve the situation to any great extent. Less than 1% villages availed financial facilities from Commercial banks. So there was strong need for Regional Rural Banks. These banks are playing significant role in ensuring sustainable development through financial inclusion. According to K.C. Chakrabarty, former Deputy Governor of RBI, "Even today the fact remains that nearly half of the Indian population doesn't have access to formal financial services and are largely dependent on money lenders".

KEY WORD: Regional Rural Banks, Agriculture, Rural development, Credit facilities, Banking

INTRODUCTION

Uttarakhand Gramin Bank is a Regional rural bank in India. It is sponsored by State Bank of India established under RRB Act 1976 came into existence on 1 Nov 2012 after amalgamation of erstwhile RRB viz. Uttaranachal Gramin Bank and Nainital Almora Kshetriya Gramin Bank in Uttarakhand State. It is under the ownership of Ministry of Finance , Government of India. The Bank is headquartered at Dehradun and presently its area of operation in all 13 Districts in Uttarakhand. Nowadays , banking sector acts as the backbone of modern business. Development of any country mainly depends upon the banking system. A bank is a financial institution which deals with deposits and advances and other related services. It receives money from those who want to save in the form of deposits and it lends money to those who need it. The banking is one of the most essential and important parts of the human life. In current faster lifestyle peoples may not do proper transitions without developing the proper bank network.

The importance of the rural banking in the economic development of a country cannot be overlooked. As Gandhi ji said " Real Indian lies in villages" and village economy is the backbone of Indian economy. Without the up aliment of the rural economy as well as the rural people of our country, the objective of economic planning cannot be achieved. In fact, the real growth of Indian economy lied in the freeing of rural masses from acute poverty, unemployment, & socio-economic backwardness.

LITERATURE REVIEW

Kalkundrickars (1990) in his study on Performance and Growth of Regional Rural Banks in Karnataka found that these banks had benefited the beneficiaries in raising their income, productivity, employment and use of modern practices and rehabilitate the rural artisans.

Kumar Raj (1993) carried out a study on the topic "Growth and Performance of RRBs in Haryana." On the basis of the study of all RRB of Haryana, it is found that there was an enormous increase in deposits and outstanding advances.

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डॉ० आशुतोष कुमार
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ह०न०ब०ग०स्ना०महा० खटीमा, ऊधम सिंह नगर,
उत्तराखण्ड

प्रस्तावना – प्रत्येक व्यावसायिक संस्था को व्यावसायिक कार्यों के संचालन हेतु दो प्रकार की पूँजी की आवश्यकता होती है– स्थिर पूँजी एवं कार्यशील पूँजी। व्यवसाय के संचालन हेतु स्थायी रूप से कुछ सम्पत्तियों की आवश्यकता पड़ती है, जिन्हें स्थायी सम्पत्ति कहते है, जैसे– भूमि, भवन, संयंत्र, मशीनरी, ख्याति आदि और इनमें लगायी गयी पूँजी स्थायी या स्थिर पूँजी कहलाती है। इसके विपरीत व्यवसाय के संचालन सम्बन्धी दिन प्रतिदिन की आवश्यकताओं को पुरा करने हेतु जिन सम्पत्तियों की आवश्यकता पड़ती है, उन्हें चल सम्पत्ति कहते हैं एवं इनमें लगाई पूँजी को चालू या कार्यशील पूँजी कहते है।

कार्यशील पूँजी को अल्पकालीन पूँजी, तरल पूँजी, चक्रशील पूँजी तथा शीघ्र पूँजी भी कहा जा सकता है क्योंकि वह पूँजी व्यवसाय में कम अवधि के लिये आवश्यक होती है तथा इस पूँजी से वस्तुएँ बार–बार खरीद बेचकर रोकड़ में परिवर्तित की जाती है तथा व्यवसाय में चक्र की भाँति घूमती रहती है। वर्तमान में कार्यशील पूँजी की दो विचारधारायें मान्य है– १. विस्तृत दृष्टिकोण या सकल कार्यशील पूँजी दृष्टिकोण और २. संकीर्ण दृष्टिकोण या शुद्ध कार्यशील पूँजी दृष्टिकोण। विस्तृत दृष्टिकोण कार्यशील पूँजी के परिमाण पहलू पर बल देता है जबकि संकीर्ण दृष्टिकोण उसके गुणात्मक पहलू को उजागर करता है।

व्यापक दृष्टिकोण के आधार पर कार्यशील पूँजी अल्पकालीन व दीर्घकालीन दोनों प्रकार के दायित्वों द्वारा अभिग्रहित चल सम्पत्तियों के योग के बराबर होती है। यह परिभाषा कार्यशील पूँजी की मात्रा या परिमाण पर अधिक ज़ोर देती है। इस दृष्टिकोण को स्पष्ट करते हुए 'बानविले व डेवे' ने कहा है कि, किसी भी फण्ड की प्राप्ति को जो चालू सम्पत्ति को बढ़ाता है, कार्यशील पूँजी की संज्ञा दी जा सकती है। इस विचारधारा के समर्थकों में फील्ड, मेलोट, बेकर तथा मीड आदि आते है। जो कार्यशील पूँजी का अर्थ दीर्घकालीन एवं अल्पकालीन देयताओं द्वारा प्रदर्शित चालू सम्पत्तियों के योग में लगाते है। एफ० एफ० बुनेट के अनुसार कार्यशील पूँजी सम्पत्ति का वह हिस्सा है जो कम्पनी के सामयिक विकास के लिए उपयोग में लाया जाता है।

इस शोध अध्ययन में कार्यशील पूँजी के विभिन्न घटकों को विश्लेषणात्मक अध्ययन कर जिला सहकारी बैंक उत्तरकाशी की वर्तमान स्थिति का पता लगाने का प्रयास किया गया है।

कार्यशील पूँजी की आवश्यकता :– कार्यशील पूँजी की पर्याप्तता किसी भी उद्योग के लिये अत्यन्त महत्वपूर्ण है। स्थायी पूँजी तो एक बार लगा दी जाती है किन्तु व्यवसाय को निरन्तर कार्यशील रखने और दिन–प्रतिदिन के व्यवहारों हेतु कार्यशील पूँजी की आवश्यकता होती है। कार्यशील पूँजी की आवश्यकता निम्न कारणों से पड़ती है–

(क) ग्राहकों को तुरन्त भुगतान :– यदि संस्था के पास पर्याप्त कार्यशील पूँजी होगी तो वह ग्राहकों को तुरन्त भुगतान कर सकती है और उसे भुगतान की चिन्ता नही करनी पड़ेगी। इससे बाहरी व्यक्ति संस्था की दृढ़ता के प्रति आश्वस्त रहते हैं। नकद भुगतान के कारण संस्था को शीघ्र तथा अधिक मात्रा में निक्षेप प्राप्त होते हैं।

(ख) साख वृद्धि में आवश्यक :– कार्यशील पूँजी इसलिये आवश्यक है कि संस्था अपने भुगतान तुरन्त कर सकें। इससे संस्था की साख में वृद्धि होती है और यदि संस्था को कभी उधार की आवश्यकता

A STUDY OF UNORGANIZED RETAIL SECTOR IN INDIA

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Abstract

Retail sector in India is currently the flourishing sector of the Indian economy. The retail sector has played a phenomenal role throughout the world in increasing productivity of consumer goods and services. The Indian retail industry is the largest among all the industries, accounting for over 14 to 15 percent of the country's GDP and around 8 percent of the employment. The current retail market, currently estimated at around US$ 490 billion, is project to grow at compound annual growth rate (CAGR) of 6 percent to reach US$ 865 billion by 2023. India's retailing industry is essentially owner manned small shops which account for more than 90. This paper provides detailed information about the role of unorganized retailing industry in India. It examines the reasons why unorganized retail sector is dominating in India and what are the reasons for its dominance in India. It also provides in depth study about the importance, opportunities and challenges of unorganized retail sector with comparison to organized retail sector in India. Finally concludes with the mark of Indian consumers' change of attitude towards organized retail sector. The paper mainly focuses on the impact of the unorganized sector in Indian retail market.

Introduction:

Retail consists of the sale of the goods from a fixed location, such as a department store, for the direct consumption by the purchaser. Retailing may include subordinated services, such as delivery of the products. Purchasers may be individuals or businesses. In commerce, a "retailer" buys goods or products in large quantities from manufacturers either directly or through a wholesaler, and then sells smaller quantities to the end-user. Shops may be on residential streets, shopping streets with few or no houses or in shopping mall.

The word retail is derived from the French word ***retaillier*** meaning to cut a piece off or to break bulk. In simple terms, it implies, a first hand transaction with the customers. Retailing involves a direct interface with the customers & coordination of business activities from end to end – right from the concept or design stage of a product or offering, to its delivery & post delivery service to the customers. Retailing refers to a process where the retailer sells the goods directly to the end-user for his own consumption in small quantities.

Retailing means re – tailing to the customers so that they come back. This consists of all the activities involved in selling of goods & services to the consumers for their personal & household consumptions. It covers of goods ranging from cloths, automobiles, etc. Retailing forms an integral part of the marketing mix like product, place, price, promotion people, physical evidence & presentations.

As the final link between consumers and manufacturers, retailers are a vital of the business world. Retailers add value to products by making it easier for manufactures to sell and consumers to buy. It would be very costly and time consuming for you to locate, control and make a purchase from the manufacture every time you wanted to by a candy bar, a sweater or a bar of soap. Similarly, it would be very costly for the manufactures of these products to locate and distribute them to consumers individually. By bringing manufacturers and consumers together at single point, retailers make it possible for products to be sold, and consequently, business to be done.

India started its Retail Journey since ancient time. In ancient India there was a concept of weekly HAAT, where all the buyers & sellers gather in a big market for bartering. It takes a pretty long times to & step to shape the modern retail. In between these two concepts (i.e. between ancient retail concept & the modern one there exist modern kirana/ mom and pop shops or Baniya ki Dukan. Still it is predominating in India, so the Indian retail

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"ROLE OF SERVICE SECTOR IN SHAPING INDIAN RETAIL INDUSTRY"

Authored by

Dr. Ashutosh Kumar, Associate Professor

From

H.N.B Govt. PG College,Khatima
Distt. U.S.Nagar (Uttarakhand)

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A Study On Indian Banking System & Recent Trends In Banking

[1]Prasoon Kamboj, [2]Dr. Ashutosh Kumar
[1]Research Scholar, [2]Associate Professor
[1]Department of Commerce
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Abstract: The banking system is central to a nation's economy. Banks are special as they not only accept and deploy large amounts of uncollateralized public funds in a fiduciary capacity, but also leverage such funds through credit creation. India has a long history of banking system. Today, the banking industry in our country is stronger and capable of withstanding the pressures of competition. It withstood Global Financial Crisis (2008). In the era of Globalization Banking Sector in India is rapidly changing since 1990's due to technological innovation, financial liberalization with entry of new private and foreign banks, and regulatory changes in the corporate sector. Indian banking industry is gradually moving towards adopting the best practices in accounting, internationally accepted prudential norms, with higher disclosures and transparency, corporate governance and risk management, interest rates have been deregulated, while the rigour of directed lending is being progressively reduced.

***Key words*- Banking System, Economy, Credit creation, Risk management**

OBJECTIVES

1- To study the Indian Banking system.
2- To study the growth of Banking system after Independence.
3- To study how innovations have contributed to the development of Indian banking.

NEED OR IMPORTANCE OF THE STUDY

Finance and banking is the life blood of trade, commerce and industry. Now-a- days, banking sector acts as the backbone of modern business. Development of any country mainly depends upon the banking system. Before the establishment of banks, the financial activities were handled by money lenders and individuals. At that time the interest rates were very high. Again there were no security of public savings and no uniformity regarding loans. So as to overcome such problems the organized banking sector was established, which was fully regulated by the government.

RESEARCH METHODOLGY

The Study is based on secondary data accessed from reputed Books, Journals, RBI & Various Official Committee Reports and authentic Websites.

INTRODUCTION

A bank is a financial institution which deals with deposits and advances and other related services. It receives money from those who want to saving of deposits and it lends money to those who need it. The banking is one of the most essential and important parts of the human life. In our country, currently we are having a fairly well developed banking system with different classes of banks – public sector banks, foreign banks, private sector banks – both old and new generation, regional rural banks and co-operative banks with the Reserve Bank of India as the leader of the system Banking in India originated in the last decades of the 18th century.

Brief History of Banking in India: The history of Indian banking can be divided into three main phases.

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Analysis of Performance of Personnel Cost of Uttar Pradesh State Road Transport Corporation

Dr. Harendra Mohan Singh* and Dr. Ashutosh Kumar**

Abstract

This paper presents an analysis of the structure of personnel cost of operation and variations in the proportions of various personnel cost components of Uttar Pradesh State Road Transport Corporation. Personnel cost is the cost associated with personnel compensation and fringe benefits of employees (which include permanent and part time employees) contributing to each respective production process. Personnel cost includes salaries and wages, bonuses, overtime, compensation, savings plan, insurance, pension funds etc. as the kind of this, which paid or payable to employees. In the reference of SRTUs the personnel cost made up by addition of expenses on drivers and conductors salary, traffic supervisory salary, total traffic staff salary, workshop & maintenance staff salary, administration & others and provident fund welfare. Personnel cost, being the major cost item, constituted higher share both in total cost of operation and total revenue. While an index number approach is followed for analysing the trends and growth of personnel cost has recorded increasing trend, since the growth rate of this cost is positive and significant. It is found that the growth in personnel cost expenditure from 2009-10 to 2017-18 is 158.84 percent.

Keywords: Road transport, Personnel Cost, Expenditure, Analysis, Performance, Resources, Average, Growth.

INTRODUCTION

Transport is one of the most critical infrastructural development of the country. Road Transport is of great importance both for movement of passengers and goods. It is ideally suited for short and medium distances because of its inherent advantages such as easy availability and flexibility of operations, adaptability to individual needs, door to door services and reliability. It is also the main mechanised transport in hilly and rural areas which are not served by railway and airlines. Road Transport provides one of the basic infrastructure facilities for economic development of backward areas besides being the feeder service to rail traffic, ports and harbours.

At present, there are 71 State Road Transport undertakings (STUs) in the country comprising 21 Corporations registered under the Road Transport Corporation Act (1950), 31 Companies registered under the companies Act (1956), 8 Government Departmental Undertakings and 11 Municipal Undertakings. In these one of the corporation as Uttar Pradesh State Road Transport Corporation (UPSRTC), which came in existence in 15 May,1947 with the operation of bus services on the Lucknow- Barabanki route by U.P. Government Roadways. During the fourth five year plan, the U.P. Government Roadways was rechristened as Uttar Pradesh State Road Transport Corporation

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MELTING AND CHEMICAL REACTION EFFECTS IN STAGNATION POINT FLOW OF MICROPOLAR FLUID OVER A STRETCHABLE POROUS MEDIUM IN THE PRESENCE OF NONUNIFORM HEAT SOURCE/SINK

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In this present paper, we have investigated a numerical solution to the melting heat transfer on micropolar fluid flow over a stretchable porous medium. The partial differential equations of governing flow are changed to dimensionless ordinary differential equations by using similarity transformation and then solved by the Runge–Kutta–Fehlberg fourth- and fifth-order (RKF-45) method with shooting technique. The novelty of the present study is that it considers the influence of chemical reaction and nonuniform heat source/sink in stagnation point flow over a stretching sheet. The study looks at the impacts of different nondimensional parameters, namely chemical reaction parameter, melting parameter, stretching parameter, and space- and temperature-dependent heat source/sink parameters on velocity, microrotation, temperature, and concentration distributions. Additionally, the skin-friction coefficient, Nusselt number, and Sherwood number are examined in detail and the results are depicted graphically and in tabular form to illustrate the physical importance of the study. The results show that velocity enhances with stretching parameter. The temperature reduces as melting parameter rises, while temperature increases with the stretching parameter and the space- and temperature-dependent heat source/sink parameters. The impact of the chemical reaction parameter is to increase the mass transfer rate.

KEY WORDS: *chemical reaction, melting heat transfer, micropolar fluid, porous medium, nonuniform heat source/sink, stretching sheet*

1. INTRODUCTION

Micropolar fluid theory has attracted much consideration from specialists in recent decades because traditional Newtonian fluids cannot adequately explain the features of fluid with suspended particles. Micropolar fluids are fluids with microstructure additions and nonsymmetric stress tensors, including non-Newtonian fluids consisting of dumbbell molecules or short rigid cylindrical elements, polymer fluids, fluids suspensions, colloidal solutions, liquid crystals, animal and human blood, greasing up oils and liquids containing certain additives, etc. The classical Navier-Stokes theory does not describe the flow properties of micropolar fluids. Eringen (1966) depicts a theory of micropolar fluids that demonstrates microrotation impacts and in addition microinertia. The theory of thermomicropolar fluids was evolved by Eringen (1972) by expanding his theory of micropolar fluids. The theory of micropolar fluids getting a

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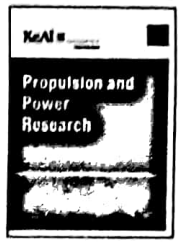

ORIGINAL ARTICLE

Slip flow of micropolar fluid through a permeable wedge due to the effects of chemical reaction and heat source/sink with Hall and ion-slip currents: an analytic approach

Khilap Singh[a], **Alok Kumar Pandey**[b,*], **Manoj Kumar**[a]

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KEYWORDS

Chemical reaction;
Differential transformation method (DTM);
Hall current and ion slip;
Heat source/sink;
Micropolar fluid;
Slip velocity

Abstract This study focuses on the combined impact of heat source/sink and chemical reaction on slip flow of micropolar fluid through a permeable wedge in the existence of Hall and ion-slip currents. The governing highly non-linear PDEs were altered into a set of non-linear coupled ODEs by using similarity transformations. Differential transformation method (DTM) has been implemented in transformed ODEs equations. The comparison with previous literatures was performed and the data of this study was found to be in accordance with each other. The analytical solutions for skin-friction coefficients (surface drag forces), Nusselt and Sherwood numbers are depicted through graphs and tables. The study of boundary layer flow over a wedge surface plays an imperative role in the field of aerodynamics, heat exchanger, ground water pollution and geothermal system etc.

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ORIGINAL PAPER

Entropy Generation Impact on Flow of Micropolar Fluid via an Inclined Channel with Non-Uniform Heat Source and Variable Fluid Properties

Khilap Singh[1] · Alok Kumar Pandey[2] · Manoj Kumar[1]

Published online: 27 May 2020

Abstract
The pupose of current research is to report the impacts of entropy generation on fluid flow via an inclined channel with steady vortex viscosity, changeable dynamic viscosity and thermal conductivity. The model is along with the convective boundary conditions and non-uniform heat source. The problems have non-linear coupled PDE's which are rehabilitated into ODE's by employing similarity transformations. These ODE's are handled numerically by utilizing shooting technique and RKF-45 method. The numerical results of Bejan number (Be), entropy generation (Ns), temperature $\theta(\eta)$, velocity $f(\eta)$, and microrotation $g(\eta)$ are found and discussed in details by graphicaly. The consequence show that the entropy generation (EG) profile augments with temperature dependent thermal and viscous conductivity parameters, while declines with micropolar parameter.

Keywords Convective boundary conditions · Constant vortex viscosity · Entropy generation · Inclined channel · Micropolar fluid · Variable fluid properties

List of Symbols

A	Constant pressure gradient
A*	Space related heat source
B*	Temperature related heat source
Be	Bejan number
Bi	Biot number
Br	Brinkman number
g*	Acceleration due to gravity
Gr	Grashof number

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EKNATH : Hindu Saint and Mystic

Dr. Krishna Kant Mishra
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"The history of religious upheaval in Maharashtra goes back to the time of Jnansvar who completed his Marathi commentary of the Bhagvad Gita in 1290 AD"[1] Janneshwer through his devotional Bhagvatism placed infinite God in the hearts of the people of Maharashtra. In the form of *Vithnal* or *Vithnoba* of Pandharpur; but his teaching were not far form rigid intellectualism of *Vedanta.* However the role of Jnaeshvar cannot be ignored " In actual sense he appeared in the sky as a moon around which evolved a galaxy of reformers; who preached their ardent faith in personal God and a moral law which rules the world", [2] The saints who followed Jnaneshvar were Namdev, Janabai, Gorkumbhar, Sanwla Mali, Vithoba Kechor, Changdev, Narhari Sunar, Eknath, Tukaram, Sena Nai, Ramdas, Bahina Bai and Sant Nipat Niranjan. These saints were an avowed enemies of priestly ridden Hindu religion and society. The contents of their devotional songs released a venom to kill the hydra of mimic ritualism, caste distinction and narrow sectarianism. These saints appear, to have been greatly influenced by Islam and their poetry has a faint but charming echo of the religion of the prophet. In this paper I have chosen Sant Eknath for discussion. In his poetry we find his loving response to Islam.

Eknath is one of the greatest saints of Maharashtra. He was born in Paithon around 1533 A.D. His parents died shortly after his birth and he was brought by his grandparents. His grand father Chakrapani was a great scholar of his time. Eknath become the disciple of Janrardan Swami who taught him *Vedanta, Nyaya, Meemasa, Yoga* etc. and most importantly Sant Jnaneswar's works. in 1599 A.D. Eknath took *Jalsomadhi* by wading into the river Godawari.

Eknath was a proflic writer who wrote the *Bhavarth Ramayana, Rukmani Swayambar* and Many, *Abhangs* and *Bharuds.*

The great saints are born with pure soul. Eknath upon whom once , the betal juice was spitted out by a muslim, never cherished hatred for the religion of Islam. He was convinced that both the Hindus and Muslims are well familiar with their real God. It was not their religion, compelling them to fight against each other but their mismisconcieved notions about their religions. Eknath composed a literary dialogue – *Hindu Turk Samvad:-* In which he tried to show that people fight for establishing the supremacy of their respective religion. *Finally his Samvad* ends in the pleasent understanding of the unity of both the religions.

"Vivad barhla nitidhanrmi
Jat parbrahmi ase na
Turk kahe bat use ki
Khuda ki koi jat naihn"

{The dispute prolergs on the question of ethics and religion. The *brahmna* (God), belongs to no caste (Jat). The Turk says like Hindu that there is no caste of Khuda (God).}

Preaching about the divine will not guides the destiny of ma throughout, Eknath chooses Allah and Maula two very common and current words for God:-

" Allah rakhega waise he rehna'
Maula rakhega waise he rehna
Ek din hoye raje bara adhikari
Ek din hoye kangal bhikhari
Koi din sevak hath jor khare
Koi din najdik na aye ghere"

(The man will live as Allah (God) wills. The man will live as Maula (God) wills. Someday man becomes great officer, the other day be becomes a wretched begger. Some day the servants attend him with folded palms, the other day even the lowest man does not come near him.)

Whether Eknath was influenced by the *Wahadat-ul-wujud* of Ibn ul-Arabi or was *haunted* by 'advait' of Shankracharya; it is a matter of conjecture, though Eknath's God was Vithal of Purandarpur; yet his *vithal* was not a piec of stone. Monotheisn is the conscious awakening of his soul, and has placed his *vithal* on par with *khuda* he sings:

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Heterogeneous catalytic reduction of anthropogenic pollutant, 4-nitrophenol by Au/AC nanocatalysts

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ABSTRACT

Activated carbon-supported gold nanocatalysts (Au/AC) were synthesized by the homogeneous deposition–precipitation (HDP) method by adding drop-wise of $NaBH_4$ into the aqueous solution of $HAuCl_4$. Catalytic activity of these nanocatalysts was investigated for the reduction of the anthropogenic pollutant, 4-nitrophenol (4-NP) to 4-aminophenol (4-AP). The physico-chemical properties of the nanocatalysts were characterized by XRD, TEM, BET surface area, pore size distribution, XPS and UV–Vis spectroscopy techniques. Gold nanoparticles (Au NPs) with high percentage of dispersion on a high surface area activated carbon (AC) support, show excellent catalytic performance in terms of activity and selectivity for 4-NP reduction. The reaction rate was measured to be pseudo-first-order with respect to 4-NP. The pseudo-first-order rate constant and the activation energy were estimated to be 1.2–4.2 $\times 10^{-3}$ s^{-1} at 25 °C and 26.38 kJ mol^{-1}, respectively. Moreover, the catalytic activity was found to increase with increase in Au content of the catalyst. The reusability of the nanocatalyst showed a better reduction of 4-NP to 4-AP even after 5 successive re-cycles. The foregoing study clearly suggests that synthesis of Au/AC nanocatalysts by HDP method is efficient towards the development of a newer and a novel catalyst.

1. Introduction

These days, it has become necessary to get better insight into the kinetic aspects of catalytic conversion of nitro-aromatic compounds viz. nitrophenol and nitrobenzene using porous materials. 4-Nitrophenol (4-NP), usually present in waste-water, is a dangerous pollutant which originates from dye, paper and pharmaceutical industries [1,2]. Hence, 4-NP must be reduced to less harmful substances in order to reuse water. 4-NP can be easily converted to 4-aminophenol (4-AP) using simple and fast catalytic reduction technique and the product 4-AP can be further utilized to synthesize antipyretic and analgesic drugs [3–5]. Catalytic reduction of 4-NP at ambient temperature by $NaBH_4$ in the presence of silver nanoparticles has been reported [6]. Various studies have been reported on reaction mechanism and on kinetics of 4-NP catalytic reduction in the literature [7–9]. Many researchers have reported that noble metal-based nanoparticles supported on metal oxides and carbonaceous materials show excellent catalytic performances towards reduction of nitro-aromatic compounds [10–11]. Au NPs supported on functionalized mesoporous carbon have been used for the catalytic reduction of 4-NP [12]. The catalytic properties of Au NPs dispersed in poly(1,8-diaminocarbazole) film deposited electrochemically on the electrode have also been explored for 4-NP reduction [7].

In the present work, Au/AC nanocatalysts with varying Au content (1 to 4 wt%), were synthesized by HDP method, which is one of the preferred and versatile methods for preparing Au/AC catalysts. This method bears many advantages like usage of simple equipments, better controlling of pore structures and availability of

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Globalization And Conundrum Over Its Nature: Is It Connecting Or Breaking The World?

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ABSTRACT

In the present international economic order, the word "Globalization" is the catchphrase which has attracted and influenced the economic policy makers around the world. The term globalization no doubt, stated about global village but it has brought many debates regarding its actual aspects and nature. There has been an agreement among all the researchers and economists regarding its actual definition. However, there seems a sort of disagreement among them when the question related to its actual nature and implications has come before them. There are many instances when the forces of Globalization have been considered as instruments of connecting the whole world. But there are also many occasions when these forces are considered as dividing in nature. In the same, an emphasis is made on the true nature and consequences of Globalization in the present international economic order.

Keywords: Globalization, Policy, Dividing, Uniting.

Introduction

From the last three to five decades, the level of interconnectedness among the nation has been increased tremendously in the economic, political and diplomatic spheres. But the prime moving force behind this greater connectedness and integration of the state is "Globalization". The Globalization as a force has come in the international order due to the expansion in global trade, finance, and increase in consumerism. There are numerous scholars and economists who have consensus on the definition of "Globalization". They all agree on the point that globalization is characterized by the escalation or the growing degree of integration and inter-linkages in almost all the spheres including social, political, economic, and diplomatic. However, the point of difference among the economists and researchers has come when the discussion regarding the true nature and consequences of the Globalization is started. Most of them have different opinion regarding the true nature of the globalization. These different opinions among them might be due to the continuous change in the environment of international economic order and world affairs. The developments such as the attack of 9/11 on America and global financial crisis have brought significant change in the opinions of many economists and researchers. Some even went to the extent of saying that "the era of globalization is over" (Naim, 2002).

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Consumer Perception towards Global and Local Brands in the Indian Retail Industry

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Fahad Khan

Research Scholar, Department of Commerce,

Kumaun University, Nainital (Uttarakhand)

Abstract

The retail industry is the largest industry and it is witnessing revolution in India. The retail concept is emerging drastically with new formats like general stores, supermarkets, malls, hyper markets and specialty stores, and the wide availability of Global and International Brands in the Indian Retail Market. The industry is at inflexion point, where the growth of organized retailing and rise in consumption levels by the Indian population is turning towards a higher growth trajectory. India's retail market is expected to grow tremendously in next few years. Retail industry in India is expected to rise 25% yearly being driven by strong income growth, changing lifestyles, and favourable demographic patterns. The Indian consumer is enjoying world class shopping experience. Shopping in India has witnessed a revolution with the change in the consumer buying behaviour and the whole format of shopping also altering. The consumer needs differ widely across the country. Distinct strategies should be adopted for different regions and different products. There is a need to analyse the perceptions of the shoppers towards the Global and Local Brands available in the Indian Retail Industry. Hence, the study is undertaken with the main objective of analysing the perception of the consumers towards Global and Local Brands in the Indian Retail Industry.

Keywords: Customer Perception, Buyer behaviour, Retail Industry, Retail formats and Demographic Patterns

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A STUDY OF FACTORS AFFECTING INVESTORS' DECISION TOWARDS MAKING INVESTMENTS IN FINANCIAL MARKET

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ABSTRACT This paper is especially oriented towards those people who have savings but avoid investing their money in the financial market. Investment is the application of our funds somewhere with an aim to gain some more as we are applying. The researcher tried to find out the causes which are obstacles between the flows of fund from savers to the demanding people. The success of financial market depends on the smooth flow of fund from both sides. It was found that there is a gap between borrowers and lenders. To fulfill this gap it is necessary to inspire the common people towards investment. In the developing countries like India out of 1.2 billion people only 5 Crore people are active in investment process, rest all are preventing themselves from investments especially in financial market. However, some people invest their money in traditional avenues like gold, real estate, etc but such type of investment is not enough for our financial growth. This paper tries to find out the factors which actually prevent the investors from doing investment in financial market. The results indicated that decisions to invest in financial market are influenced by some economic and behavioral factors known as preventive factors.

Keywords:- Investment, avenue, financial market, preventing factors, investor, invest, behavior, decision etc.

1. INTRODUCTION

Instead of increasing trend in economic growth, the investment of money in financial market is an untouched area for maximum population of India. Out of maximum percentage of people in India, only a minor part of the population invests their money and gives contribution in economic development. If we want to change the state of being developing and make our country a developed then we have to apply more efforts and motivate the people to invest their idle money in financial market. Individuals who are not investing or preventing themselves from doing investments should be focused to withdraw their savings from banks and employ in financial market for the smooth functioning of economy of our country so that they can get better returns. Investors can do it only when they keep positive thinking towards financial market and overcome some fear factors. The researcher says today's investment will be beneficial for tomorrow, so people

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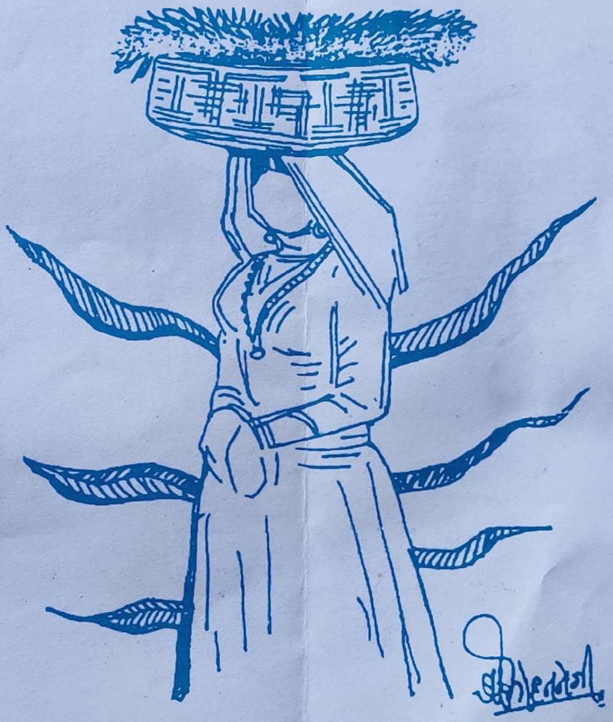

अक्टूबर–दिसम्बर 2019 15 रुपये

डॉ० शांति चंद

'क्या पहचान पिया की होगी' आंचलिक खण्डकाव्य की काव्यकला

'क्या पहचान पिया की होगी' एक श्रेष्ठतम आंचलिक खण्डकाव्य की श्रेणी में समाहित है। प्रस्तुत खण्डकाव्य त्रिभुवन गिरि महाराज द्वारा लेखनीबद्ध दूत परंपरा का काव्य है। संस्कृत काव्य परंपरा में महाकवि कालिदास द्वारा रचित 'मेघदूत', हिन्दी काव्य परंपरा में अब्दुर्रहमान कृत 'संदेश रासक', सूरदास, नंददास और जगन्नाथ के 'भ्रमरगीत' तथा अयोध्याप्रसाद 'हरिऔध' कृत 'प्रियप्रवास' जायसी के 'नागमति वियोग वर्णन' में प्रकृति के विविध उपादानों को दूत बनाकर प्रिय अथवा प्रिया तक संदेश प्रेषित करने की प्राचीन परंपरा रही है।

इस काव्य के विरही नायक की पीड़ा उन समस्त पर्वतीय प्रवासियों की पीड़ा बन जाती है। जो अपने परिवार-नाते रिश्तेदारों और सुंदर-रमणीय में सुदूर परदेश में जाकर एकाकी एवं संघर्ष करते हुए स्वजनों से मिलन की उत्कंठा में छटपटाते रहते हैं।

उदर अग्नि ने मुझे बटोही, बना दिया था लाचारी में।
ओह! अभावों से लड़ने को, जीवन की मारा मारी में।।

प्रोषितपतिका स्वयं भी विरहाग्नि में झुलसती रहती है, किंतु प्रवासी की अनुपस्थिति में रोते-विसूरते पड़े रहने के बजाय प्रिय के पालन-पोषण, सेवा-सुश्रूषा, चूल्हा-चक्की, घर-बन, गाड़-गोठ के समस्त कार्यों को निभाती हुई अपने प्रियतम की राह निहारती रहती है।

कठिन बुढ़ापे में दोनों की, / लाठी वह बन जाती होगी।

x x x x x

गोबर माटी सने हुए पग, / श्रमगंधा बिखराते होंगे।
भरी धोपरी घाम चूटते, / घर वन एक लगाते होंगे।।

प्रोषितपतिका के पास अपने संदेश पहुँचाने के लिए प्रवासी किसी ऐसे संदेशवाहक की तलाश कर रहा है, जो उसकी भावनाओं को समझने के साथ ही पहाड़ों और वहाँ के प्राणियों से भी परिचित हो। तभी अकस्मात् एक कफुवा उसके पास आ बैठता है। मैदानों से पर्वत प्रदेश की ओर लौटते हुए उसी पक्षी को अपना हमदर्द सोचकर कहता है-

जहाँ तुम्हारे मधुर स्वरों से, / कफुवा-कफुवा गूंजे वन-वन।
मेरा भी तो देश वही है, / उसी देश को उड़ जाता मन।।

यक्ष के संदेशवाहक को रास्ता ज्ञात नहीं था। पर वहाँ यह समस्या नहीं है। वह अपनी प्रियतमा की निजी पहचान बताने के साथ ही पर्वतीय पृष्ठभूमि की सामाजिक, आर्थिक, पारिवारिक तथा मानसिक संघर्षों से जूझती सुंदरी का जो चित्रण करता है, उसमें पर्वतीय नारी का समग्र चित्र एवं दृश्य प्रतिबिंबित होता है।

देखो हरे-भरे खेतों में, वह बाली सी लहराती होगी।
खाद भरा डाला लेकर वह, दूर सार को जाती होगी।।

जो स्वयं भी विरहाग्नि में झुलसती रहती है, किंतु विरह में रोते रहने के बजाय वह पति की अनुपस्थिति में उसके सभी दायित्वों को स्वयं संभालती है। घर के बच्चों से लेकर वृद्धों की देखभाल, पालन-पोषण, सेवा सुश्रूषा, चूल्हे-चक्की से लेकर खेती-पाती, घर-वन और गाड़-गोठ के कार्यों को निभाती हुई वह सतत् अपने प्रियतम् की प्रतीक्षा करती रहती है।

मेरे इज-चौप्यू को सुमना, / इज-चौप्यू सा रखती होगी।
कर्म-धर्म सब काम निभाती / उनकी सेवा करती होगी।।

प्रवासी प्रिय को एक ऐसा संदेशवाहक चाहिए, जो उसकी प्रिया तक संदेश पहुँचा सके। उदर की आग ने जिस प्रवासी को जटोही बना दिया, वह मोनाल पक्षी, कफुवा पक्षी, पवन और झरने के माध्यम से अपना संदेश प्रिय तक पहुँचाना चाहता है। सभी से वह एकालाप करता हुआ पूरे पर्वतीय जीवन को जी जीता है।

कफुवा से निवेदन करता है-

सुनो ध्यान से भटक न जाना, / लंबा मारग अटक न जाना।
नहिं विलंब कारण कोई, / संदेशा तुम देकर आना।।

पवन से विनती करता हुआ कहता है-

सुनो पवन बहना क्या मेरा, / संदेशा तुम दे आओगी।
सुनो-सुनो प्रिय की अँखियों में, / तुम मेरी ही छवि पाओगी।।

इस संदेश के बहाने वह पर्वतीय जीवन के समस्त कष्टों, अभावों, समस्याओं, कठिनाइयों और पलायन समस्या के साथ ही प्रवासी जीवन की सम्पूर्ण व्यथा को वर्णित कर देता है। अपनी प्रिया का मुँह अंधेरे से रात्रि-पर्यन्त सर्वांग चित्रण करता है। कफुवा, मोनाल, घुघुती और पवन के माध्यम से संदेश भेजते-भेजते प्रवासी कवि कब अपने जन्म स्थान पहुँच जाता है। वहाँ उसका प्रिया से स्वर्गिक मिलन होता है। चाँद-तारे और पवन इस मिलन का गवाह बनते हैं।

इस खण्डकाव्य में जितना दुःख-पीड़ा, अवसाद प्रवास के दौरान प्रिय-प्रिया को होता है, उन सब का अन्त सुखद मिलन से होता है।

खण्डकाव्य का प्रारंभ कवि इन शब्दों से करता है-

कौन सुने ?क्यों देखे कौन ? / कौन पराया ? अपना कौन ?
ऊँचे-ऊँचे शिखर क्या सुने ? / युग-पाषर युग-युग से मौन।।

प्रवासी अपने समीप एक शाख पर बैठे कफुवा पक्षी को संबोधित करते हुए उससे अपने सुख-दुःख बांटने की बात करता है-

सुनो-सुनो हे! सुहृदय पंछी, / पल दो पल को, सखा बना लो।
इक दूजे से, दुःख-सुख बाँटें, / बात कहो कुछ, मुझे सुनो तो।।

उस कफुवा पक्षी की वाणी प्रवासी के तन-मन में आग लगा देती है, किंतु साथ ही यह भी विश्वास जगाती है कि उसका अपने प्रिय से मिलन एक न एक दिन अवश्य होगा-

GENDER ESSENTIALISM V/S SOCIAL CONSTRUCTIONISM IN THE INDIAN CONTEXT AS PRESENTED IN SAHGAL'S *'A SITUATION IN NEW DELHI'*

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Abstract-

Gender, sex, and sexuality, these words always remained a question of complexity, to which human civilization made a considerable effort to demystify. The concept of woman's exploitation on the basis of their sex is not something new. In this patriarchal world of ours, a woman is always brought down to the level of mere sex slave and subordinate to a man. The concept of gender- role, whether in India or in Abroad, has become that much absorbed in our veins that we started taking it as a part and parcel in our life. But the concept of 'Social Constructionism' goes against the idea of 'Gender Essentialism', which tries to examine behavioural patterns of a human being in reference to the verifying system of civilization. This present paper of mine attempts to discover this conflict of notion in human behaviour, especially in the Indian context as presented by Nayantara Sahgal in her novel 'A Situation in New Delhi', which presents a picture gallery of a number of female characters confirming to one concept or to another, in order to inspect how much the radical fervour of essentialism has changed with the passage of time, giving place to the notion of gender performativity.

Key Words-

Gender, Sex, Sexuality, Patriarchal, Social Constructionism, Gender Essentialism, Gender Performativity.

The existence of gender bias, differentiation between the male and female sex and identity crisis on the basis of anatomy is something that the most of the Indian women face existing in society. Indian society ascribes certain roles to female sex in accordance to their birth as being an obedient daughter doing household works, protecting their virginity, getting married to a man selected by their parents, to be a responsible wife and mother, and attaining perfection in this way (a moment that a woman achieves after giving birth to a child as it was declared even by 'Sylvia Plath' in her poem 'Edge'.)

In Indian patriarchal society, a girl child faces all kinds of oppression against their individuality and struggles for acceptance as equal beings since their birth. Woman who has created this world by giving birth to a new life, is forced to surrender to a secondary role right from her childhood.

But the whole discussion about female identity and gender role gives birth to a question- whether femininity is constructed culturally or biologically. The ancient Hindu philosopher *'Manu'*, for instance in *'Manusmriti'* stresses on dependence of woman on man as an essential principle as he says, *"In childhood must a female be dependent on her father; in youth, on her husband; her lord being dead, on her sons; if she has no sons, on the near kinsmen of her husband; if she be left no kinsmen, on those of her father, a woman must never seek independence* (68). In this sense, he flourished the idea that a woman is a woman biologically not culturally. This dependence on man, inferior status in marriage, lost identity and discrimination is gifted to a woman by mere attainment of vagina.

But this concept was challenged by such feminists as *'Simone of Beauvoir'*, who paved a path for the concept of gender performativity that conflicted with the notion of gender essentialism as she said-

> ***"One is not born, but rather becomes a woman. No biological, psychological or economic fate determines the figure that the human female presents in society, it is civilization as a whole that produces this creature, intermediate between male and eunuch, which is described as Feminine."*** (The Second Sex, pn. 445)

So if we examine closely the situation of modern society, we always find women trapped in a situation which pushes her into the domestic household space and women in our country better know such situation having seen it all closely. But the world has undergone changes, so our country too. This change in a moving away from essentialism to believing in personality as a social construct and this all became possible with a change in attitude of a modern Indian woman from accepting their submissive role

to standing against sexual discrimination and marginalization prescribed as appropriate for their sex by the narrow- mindedness of patriarchal society. Now women don't allow themselves to be crushed by bondage of male domination as an essential by Indian social structure. Women needed a weapon to arouse feelings in them to challenge gender bias on the basis of having particular sex organs and to make themselves believe in their equal status and literature served as this weapon. For this manifestation I have selected *'A Situation in New Delhi'* of *'Nayantara Sahgal'* that focuses on this change. This work makes us realize the value of freedom from forced harassment in a man's world where identity is a royalty as far as women are concerned by portraying female characters like Devi and Skinny Jaipal, who prove that our upbringing and social environment decide our way of living and thinking. These women characters are fine example to prove that we'll be what our society will allow us to be. On another hand, we have characters like Madhu and Pinky, who surrender in front of agonies and traumas in form of gender-roles, prescribed by social structure as an essential.

' A Situation in New Delhi 'is a novel about a vision of future that presents before us a dream of a harmonized human world, in which people don't believe and stress on discrimination in social, physical, educational and political field on the basis of birth. Sahgal always quoted that a writer should have, *"A mission .....to create a vision of the future, he has to have a dream of his own and to suggest possibilities from it ..... it's the artist's job and the writer's job particularly in any society to show the way".* (Of Divorce, pn.6), and that's what she has tried to do and has done in her novels. She has excelled in presenting, *"gender oppression and their subtle exposure of marginalized and repressed position of woman in a male-dominated society "*(Neena Arora,pn.5) as well as those women who break this stereotype image by selecting those roles that don't fit into this universal patriarchal perspective of inferior status of women. This particular novel deals with a number of women characters as Devi- the education minister, Nadira – a woman devoted to her husband, Suvarnapriya Jaipal- a rebellious girl and a great dancer, Madhu – a girl raped in university campus, women like Pinky and Veena Puri who have joyfully accepted role of traditional Indian women and women like Lydia and Nell ,who are minor characters but successfully presented a movement of gradual change in the essentialized presentation of gender bias. This novel concludes with giving us a fine demonstration of airy revolutionary thoughts, which remarkably affected the restricting authorities which imposed their orthodox notions on the female sex, resulted in destroying their personalities and identities beneath it.

So here we have a couple of women belonging to both domains. The first group consists of women like Veena, Pinky, Nadira, Madhu, Tazi and Reba that represents the pathetic plight of those Indian women who easily became a victim of the brutal male-dominated conventional society, instead of fighting against the traditional patriarchal set-up. They easily accept the role offered to them, while another group that consists of women like Devi, Suvarnapriya Jaipal (Skinny Jaipal), represents those Indian women who *"refuse to fit into the mould of perfect lady..... instead strive to carve a niche, a respectable and equal place for themselves within the social order"*.(The Fictional Milieu,pn.23)

Veena puri, a friend of Devi, is a minor character of this work who believes in living a life exactly as our mothers and grandmothers had lived, leaving behind this mad chase of being modern. That's what she expects from her daughter Pinky too. When Devi asked her how much she has informed her daughter about sex before marriage, she replied *–"There you go being modern. What do you want her to know? Her in-laws are very conservative. They don't want one of these smart newfangled girls..... You and I did all right. It's rubbish this modern business about knowing everything before you marry.* (43)".Pinky is very much like her mother who is concerned about marriage, her look, figure and trousseau than with making her identity. When a marriage proposal came for her, her parents (Vijay and Veena) arranged a meeting and she gave her consent that represents her surrender to the patriarchal bondage to which a girl is not allowed to choose for herself.

Pinky's friends Tazi and Reba belong to the same creed who believe marital cord to be a bliss, a license to live one's *"Own life, away from prying supervision"*.(169) They consider pinky lucky to *" be elevated to wife status and do as she pleased "*.(169), without knowing much about the reality of marriage in Indian society that comes with the baggage of complex problems such as domination, adjustments etc. Such girls are always preferred as wives, as they never question or go against the perception of their partner, by submitting to the patriarchal notion according to which women are born to be exploited and dominated by men-first by their father, then by her husband and after the death of her husband by her son.

But if a woman tries to go in against this patriarchal notion, we see her fate like that of Madhu, whose existence and individuality is crushed at the hands of male-centered society as well as at the hand of her own family. She was raped in registrar's office and oppressed even by her own family who instead of supporting her at this crucial moment, are in search of a groom who will help them in getting rid of this shame. She is not allowed to shed tears, to live her life again and not even to raise her voice to get justice against her prosecutors. Her case really is a very fine example of women's status in our society who are forced to conform to the social ways what they do, because they know well about the traditional hypocrisies of society that crushes their existence when they protest against it.

Next important character belonging to this group is Nadira, vice Chancellor Usman Ali's wife, who has accepted her fate as a woman by believing that she has certain roles to perform, being born as a woman, like that of a conventional wife who is just a shadow of her husband. When Usman married Nadira, she charmed *"his friends with her romantic looks, studied manners and her sight but promising poetic talent. But soon she had gone into a kind of mourning, Reflection on him "*. (34)She was so much obsessed and devoted to her gender roles that she *"refused to let anything else matter to her"*.(34) She never attempted to become a companion to her husband but just a shadow, as the matter of championship comes with the right to equality that she never expected in her marital life being born as a female. This served as the final irony in the marital cord of Nadira and Usman as he

wanted a body with a soul, the privilege that he enjoyed while being with Devi, on another hand Nadira *"remained so determinedly a body"*.(35)

These are those Indian women who always remained within the ambit of their traditional Indian role of a daughter, wife, mother etc, fulfilling these responsibilities without giving any thought to their own identity and if they ever tried to come out of their repressed gender role, their very existence and individuality is demolished, making them realize their inferior status. The idea of male superiority in accordance to have taken birth as a male with penis(so called symbol of male superiority) is infested in mind of Indian people to such a great extent that revolting against it seems to a sin to these women and they easily adopt the role of a submissive character , who has no identity of her own.

But the same novel presents in front of us characters like Devi and Skinny Jaipal too, who are specimen of liberated modern Indian woman, struggling to create their own independent worth, which really deserves our consideration. Gender essentialism is something that they really don't care something about. They abominate this kind of patriarchal set-up which enslaves women and look down upon it as an instrument of perpetuating male domination. Through these characters Sahgal focuses on giving us evidence about constructionism which beliefs in the acquirement of habits and roles because of a person's interaction in a social environment.

Devi, the education minister, mother of Rishad, sister to Shivraj, wife of Ishwar and friend to Michael Calvert and Usman Ali, plays several different traditional roles beautifully, but still shows in her sign of awakening, breaking the mould of stereotypical Indian women. After death of her husband, she had an affair with Michael Calvert and sex came naturally to her with him, she never cared about her widowed status and lived her life on her own terms. When she was proposed by Michael to marriage, she refused him to be with her brother. She presents herself before us as a woman *"who has not only an imposing personality but also an unyielding authority"*. (The Fictional Millie, P.n.35)

Her relation to Usman Ali is of the soul as well of a body that he failed to make with his wife. Being an educated woman, she never gave any attention to unyielding barriers of class, caste, colour, creed, and struggled to eradicate gender discrimination. As a woman, Sahgal has presented her as the embodiment of 'New Woman' who *"would not end her abundant emotional life at Ishwar's pyre. She should live and more"*. (30)

And here comes the most favourite character of mine-Suvarnapriya Jaipal or we can call her Skinny, a name given by Rishad, prototype of Sahgal's new woman, who doesn't come under the influence of a man like another woman, but on the other hand, she affects a male with her revolutionary thoughts. A girl who looks very much like a skeleton, surprises Rishad with her grace and unyielding will to bring a change in society. A girl who believes that a real change can occur only when an act of necessity is done to yourself first not to someone else. That's why she ripped off clothes of her own dead mother, as she *"knew straight away it was for a purpose. It was a rite"*.(73) She surprisingly came like a gust of fresh air in rebellious isolated life of Rishad that hopefully opposed the stereotypical image of dependent status of a woman on man in aspects of social, political and economic pressures. so with help of this study, we come to the conclusion that social and economic system of society abandons women's acceptance as independent individuals and fails even to recognize them as human beings as *'Mary Wollstonecraft Shelley'* in her introduction to *'A Vindication'* says-

> ***"Dismissing ,then ,those pretty Feminine phrases ,which the men condescendingly use to soften our slavish dependence, and despising that weak elegancy of mind, exquisite sensibility, and sweet docility of manners, supposed to be the sexual characteristics of the weaker vessel, I wish to show that elegance is inferior to virtue, that the first object of laudable ambition is to obtain a character as a human being, regardless of the distinction of sex, and that secondary views should be brought to this simple touchstone ".***(p.n. 82)

We know it well that our Indian society has changed a lot since the Vedic period and it's still changing. In Vedic period, she enjoyed the prestigious position and allowed to be educated. With the arrival of Muslims dependence of women on their male relatives or husbands became the prominent feature of the Hindu society. In British rule, a number of changes were made and progress was achieved in the elimination of inequalities between men and women in education, their social rights etc. When India got independence, Indian constitution was enacted and it gave equal rights and opportunities to both the sex, helping women to come out of their essentialized gender role.

But despite such a fascinating picture of a liberated woman, a question always haunts my mind. Have we got freedom in reality from gender essentialism or not? What is our true status? So the answer is that "Yes" we have changed a lot as women and started strengthening ourselves more and more to change the organizational differences between sexes, but still a lot more has to be done.

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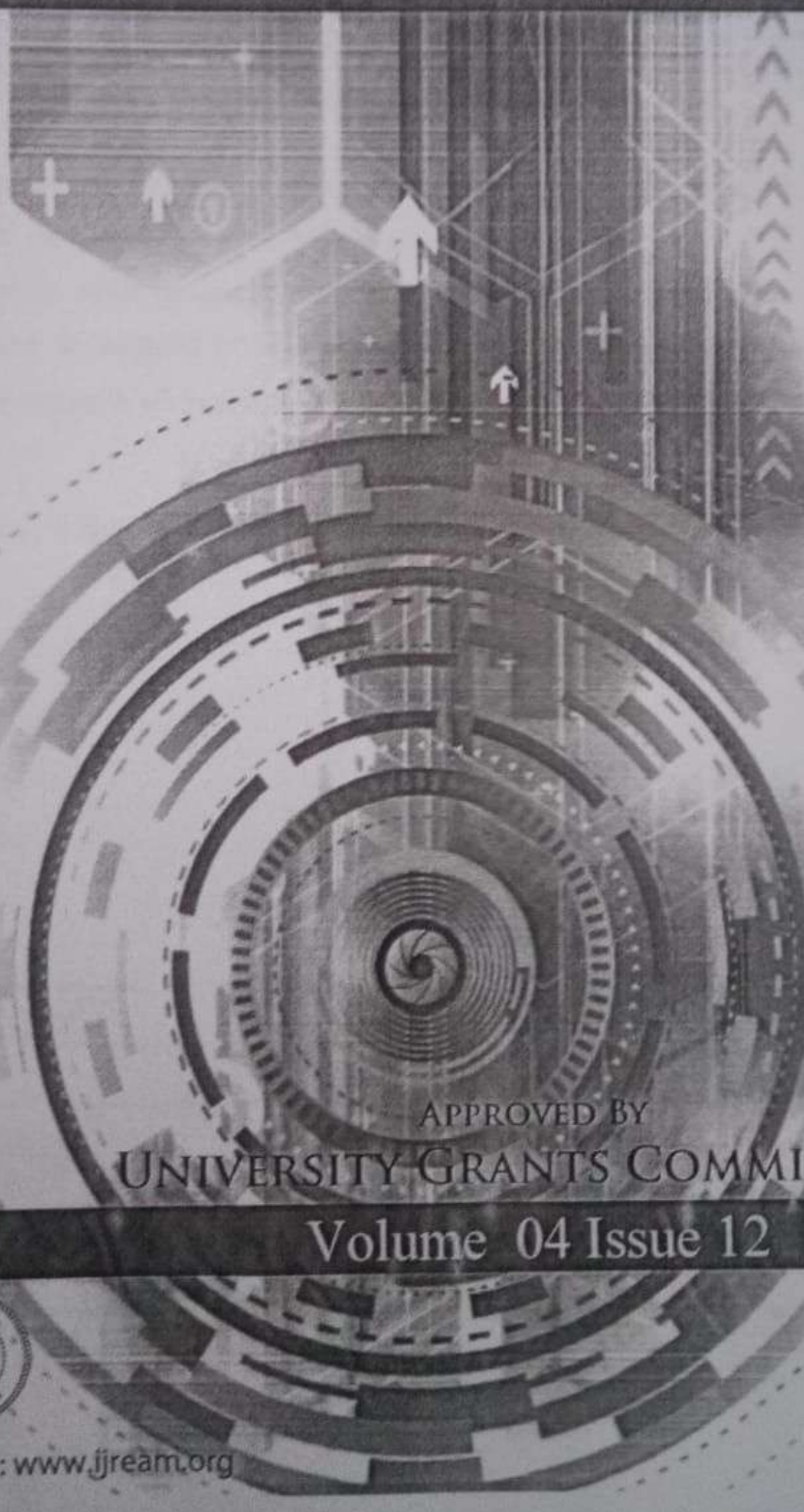

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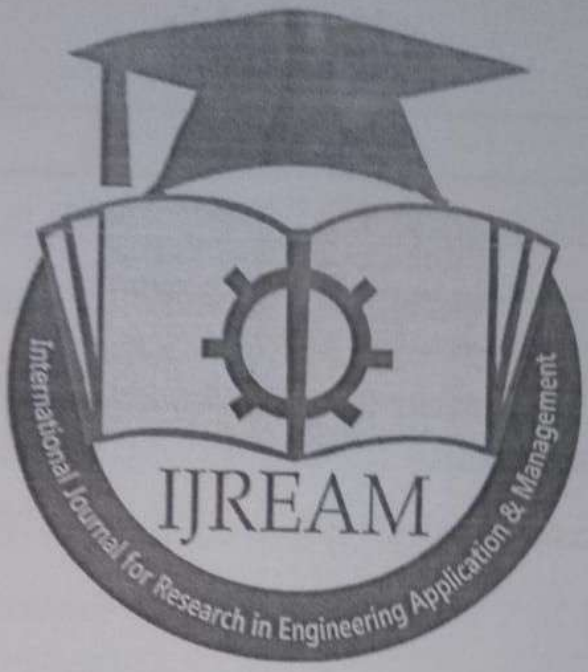

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Causal Relationship between Real Activity and Stock Price in India

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Abstract - Stock market accelerates industrial growth and development through the mobilization and allocation of savings, risk diversification, liquidity creating ability and corporate governance improvement. It is believed that movements of stock prices depend on macroeconomic factors. The most important factor among the macro economic variables which are believed to influencing stock prices, is the real activity measured in terms of growth in Industrial Production. It is believed that stock market is a proactive market as it reflects the true conditions of the economic health. However, doubts are expressed in many quarters whether the recent stock market exuberance has anything to do with economic reality of the country. The study is motivated with two broad objectives in mind: first, it will examine the real activity relevance of stock market fluctuations and second, it will test the 'efficient market hypothesis' that the changes in stock prices cannot be predicted on the basis of past real activity information.. By applying the techniques of ADF Unit-root, Johensen Cointegaration, Vector error correction, Granger Causality /Block Exogeniety Wald test and Variance decomposition the study test the long-run and short-run causality between the BSE Sensex and the Industrial production. The monthly time series data for the period January 1991 – December2016 used for analysis. The Dickey-Fuller unit root test results indicate that both the series are integrated of order one. The Johansen cointegration test results indicate that there is a long run equilibrium relationship between the stock price and industrial production. The results from the VECM suggest that stock price Granger-cause industrial production in long run but not vice versa. The results of Wald test suggest that there is no short-run causality between stock price and industrial production. The variance decomposition of LNSENSEX shows that one unit shock in LNIIP explain arround 0.74% of its total variance after ten days. Remaining 99.26% variability is because of other unknown factors. On the other hand The variance decomposition of LNIIP show that the percentage of the variance that is attributable to the shock in LNSENSEX is 6.25 % of its total variance after 10 days, remaing 93.75% of the variance can be attributed to other unknown factors.

Keywords: Industrial production, BSE Sensex, Cointegration, VECM, Granger causalit

I. INTRODUCTION

Stock market accelerates industrial growth and development through the mobilization and allocation of savings, risk diversification, liquidity creating ability and corporate governance improvement. It is believed that movements of stock prices depend on macroeconomic factors. The most important factor among the macro economic variables which are believed to influencing stock prices, is the real activity measured in terms of growth in Industrial Production. The discounted-cash-flow valuation model states that stock prices reflect investors' expectations about future real economic variables such as corporate earnings, or its aggregate proxy, industrial production. If these expectations are correct on average, lagged stock returns should be correlated with the contemporaneous growth rate of industrial production. That is, real stock returns should provide information about the future evolution of industrial production. Relationship between stock returns and Index of Industrial Production can be viewed in two ways. One view is to see the stock market as the leading indicator of real activity meaning that stock market rationally signals changes in real activity. Another view is that Index of industrial Production influence and predicts stock returns. Stock return predictability by economic variables such as Industrial production is a well recognized phenomenon. It defines the relation of the variability of stock returns with the behaviour of Industrial production. A rational justification of return predictability based on industrial production can be understood in terms of variation in risk aversion and changing investment opportunity. It is believed that there is a direct relation between the macroeconomic indicators and stock return

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Impact of Exchange rates on Indian Stock return

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Abstract - Stock market is an important segment of the financial system of a country as it plays crucial channelizing savings from surplus sector to deficit sector. It is believed that stock market is a proactive mark reflects the true conditions of the economic health. However, doubts are expressed in many quarters whether th stock market exuberance has anything to do with economic reality of the country. As the world's financial s becoming more and more integrated, the exchange rates emerges as an important variable affecting the stock The objectives of the study is to investigate exchange rates relevance for stock market returns in our economy examine the efficiency of Indian stock market in terms of exchange rates information flow that the changes prices cannot be predicted on the basis of past exchange rates information in Indian stock market. By appl techniques of ADF Unit root, pair wise Granger causality test and vector auto regression the study tests the between the BSE Sensex and the Exchange rates. The monthly time series data for the period of January December2018 has been used for analysis. The entire sample is divided into three sub sample viz 1991-1997, 1 and 2009-2018 On the basis of data the pair-wise Granger Causality test and vector auto regression show tha no causality between Sensex returns and Exchange rates considering the lag 1 during sample period 1991 While there exists the unidirectional causality running from exchange rates to Sensex returns considering during sample period 1998 to 2008, however the reverse is not true. During sample period 2009 to 2018 consid lag 6 there is bidirectional or feedback causal relationship between the Sensex returns and Exchange rate entire study period 1991 to 2018 considering the lag 1 there exist unidirectional causality between Sensex ret Exchange rates running from Exchange rates to Sensex return not Vice-versa..

Keywords: Exchange rates, Sensex returns, Granger causality, VAR, Unit root,

I. INTRODUCTION

Stock market is an important segment of the financial system of a country as it plays crucial role in channelizing savings from surplus sector to deficit sector. It is believed that stock market is a proactive market as it reflects the true conditions of the economic health. However, doubts are expressed in many quarters whether the recent stock market exuberance has anything to do with economic reality of the country. As the world's financial system is becoming more and more integrated, the exchange rates emerges as an important variable affecting the stock prices. A strong linkage between stock prices and exchange rates is a popular view in the finance literature. With financial liberalisation and globalisation, funds circulate not only between various nations but also across various markets. Through higher currency supplies and demands to connect stock returns and exchange rates, the relationship between two variables has become important for investors. Changes in the exchange rates can cause reallocation of resources across industries. The real element in the exchange rates can affect the domestic economy and hence domestic stock returns, because stock market price provide a signal of real activity. The impact that the exchange rates has or market depends upon trade-flow elasticities. demand-side and supply-side interpretation can b to illustrate the role of the exchange rates a econom c force. On the demand side, the immedi of domestic currency depreciation relative to the of a country's major trading partners cause pressure on inflation due to increased cost of imp in turn, leads to a reduction in real income an demand. The adverse impact on the real s adversely impact the stock market. In the lon effect will dissipate while exchange rates chase power parity. Nonetheless, the demand-side currency depreciation in forceful enough to emp exchange rates as the relevant economic dete stock returns. Of course, there is also a supply-si the economic importance of deviations from power parity, although it may not be realized in Currency depreciation could improve the positio domestic producer by encouraging exports or e import substitution. This change has a potentia impact on stock prices. That is why the real excl impact depends upon the relative magnitude of

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ANALYTICAL APPROACH TO STAGNATION-POINT FLOW AND HEAT TRANSFER OF A MICROPOLAR FLUID VIA A PERMEABLE SHRINKING SHEET WITH SLIP AND CONVECTIVE BOUNDARY CONDITIONS

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In the current study, effects of chemical reaction on the MHD micropolar fluid stagnation-point flow through a stretching sheet with slip and convective boundary conditions are considered. The pertinent partial differential equations are transformed into a set of nonlinear coupled ordinary differential equations which are then solved numerically by applying the differential transformation method (DTM). The effects of different physical parameters on velocity, microrotation, temperature, and concentration distributions are illustrated graphically and discussed in detail. Numerical results for the skin friction coefficient, couple stress coefficient, and Nusselt number are tabulated for various physical parameters.

KEY WORDS: *convective boundary conditions, DTM, micropolar fluid, shrinking sheet, slip velocity, suction/injection*

1. INTRODUCTION

The micropolar fluid theory has attracted much attention from researchers during the recent decades, because the traditional Newtonian fluids cannot adequately describe the characteristics of a fluid with suspended particles. Physically, micropolar fluids are the fluids with microstructure particles and nonsymmetric stress tensor that can present non-Newtonian fluids consisting of dumb-bell molecules or short rigid cylindrical elements, polymer fluids, fluids suspensions, colloidal solutions, liquid crystals, animal and human blood, lubricating oils, the fluids containing certain additives, etc. The classical Navier–Stokes theory does not describe the flow properties of micropolar fluids. Eringen (1966) described the theory of micropolar fluids that display microrotation effects as well as microinertia. The theory of thermomicropolar fluids was developed by Eringen (1972) by extending his theory of micropolar fluids. The theory of micropolar fluids is generating a lot of interest, and many classical flows are being re-examined to determine the effects of fluid microstructure. It forms a suitable non-Newtonian fluid model that can be used to explain the flow of colloidal fluids, liquid crystals, polymeric suspension, and animal blood. A good list of references for micropolar fluids is available in Łukaszewicz (1999). Subsequently, various researchers like Hassanien and Hamad (2008), Salem and El-Aziz (2008), Muthu et al. (2008), Devakar and Iyengar (2009), Ashraf et al. (2009), Rani and Tomar (2010), Epstein and Cho (1976), and Yacob et al. (2011) studied different aspects of the micropolar fluid flow. Lin and Hsiao (2016) analyzed thin nutrition pie manufactured by using ra-

Self Attested

INFLUENCE OF NON-UNIFORM HEAT ABSORPTION/GENERATION ON MHD FLOW VIA A PERMEABLE STRETCHING CYLINDER IN POROUS MEDIUM DUE TO NANOFLUID

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Abstract: The effect of non-uniform heat absorption/generation on the nanofluid flow via a permeable stretching cylinder is considered in the present study. Nanoparticles contained in the fluid are taken as Cu, TiO_2 and Ag in thermal equilibrium. The equations governing the motion of the nanofluid are transformed into the ordinary differential equations by using the appropriate similarity transformation. The reduced dimensionless equations are then solved by using the Runga-Kutta fourth order method. The velocity and temperature profile of the fluid for different parameters appearing in the current problem are displayed graphically. At last the table is constructed showing the impact of various parameters on the skin friction coefficient and Nusselt number and discussed.

IndexTerms **- Nanofluid, Permeable stretching cylinder, Nusselt number, MHD flow, Skin friction, Heat transfer.**

I. INTRODUCTION

Applications of the boundary layer flow via stretching cylinder take place in piping, cooling of metallic plates, wire drawing, metal spinning, production of paper, flow meter design, casting systems, making of rubber sheets, cylindrical wires coating and polymer fibre coating, etc. In order to control the boundary layer structure, various artificial methods have been developed and carried out, but among all of them, MHD is the most important method for influencing the flow field in the desired route by altering the configuration of the boundary layer. Therefore the engineers and scientists have paid their sound attention towards the MHD flow of heat and mass transfer over the last few decades.

A broad literature is available regarding the flow of the fluid caused by continuously stretching sheets and rods dealing with the heat transfer. The exact analytical solution of the problem dealing with the boundary layer flow through a flat stretching surface was first found by Crane [1] in 1970. His work was extended by Gupta and Gupta [2] and Chen [3] for analyzing the effect of suction or blowing on heat and mass transfer and momentum in the boundary layer over a stretching sheet. Later Datta and Roy [4], Ishak et al. [5] and Elbasheshy [6] studied about the heat transfer in a fluid flow through a stretching surface under the influence of physical circumstances like uniform heat flux, non uniform heat source and radiation. Raju et al. [7] demonstrated the effect of cross diffusion by considering the magnetohydrodynamic (MHD) flow and heat transfer characteristic under the influence of velocity and thermal slip condition for the boundary layer flow through a permeable stretching sheet. So far in the above study fluid flow across the stretching surface were considered for analyzing the heat transfer characteristic under the effect of several physical parameters. But the importance of analysis of flow and heat transfer existence across a stretching cylinder cannot be ignored as it plays an important role in hot rolling, fibre and wire drawing etc. keeping this view in mind Crane [8] explored the study of flow of heat transfer analysis of a viscous fluid due to stretching hollow cylinder. His work was extended by Wang [9] who studied the heat transfer due to the stretching cylinder.

Numerical solution of laminar boundary layer flow, uniform suction or blowing and MHD effects over stretching cylinder were found by Ishak et al. [10], [11], [12]. Elbashbeshy [13] analysed the influence of suction/injection on flow and heat transfer over a stretching horizontal cylinder in magnetic field with heat source/sink. Munawar et al. [14] discussed the flow of a viscous fluid over an oscillatory stretching cylinder by using an implicit finite difference scheme. The work of Grubka and Bobba [15] was extended by Ishak and Nazar [16] by analyzing the flow features over a stretching cylinder and obtained similarity solutions assuming that the stretching velocity is linear with axial direction. Si et al.[17] presented the numerical solution of unsteady flow and heat transfer of viscous fluid due to porous cylinder which is stretching and expanding at the same time.

The effect of non uniform heat source on the flow and heat transfer over the stretching surface or flat plates have been obtained by a number of researchers [18-20]. Pandey and Kumar [21] made numerical study under slip condition of boundary layer flow and heat transfer through a stretching cylinder in Cu-water nanofluid flow. They found that the increasing values of nanoparticle volume fraction parameter lowers the velocity boundary layer and intensify the thermal boundary layer. Krishna et al. [22] numerically analyzed the velocity and temperature distribution for a problem dealing with variable thickness stretched surface. But the examinations regarding the flow and heat transfer over the stretching cylinder under the influence of non uniform heat source/ sink are found to be few in literature. Motivated by the above investigations the author has confined his work to study the impact of non-uniform heat absorption/generation on MHD flow of nanofluid via a permeable stretching cylinder in porous medium. Bhatt et al. [23] studied the Cu-nanofluid flow, heat and mass via a permeable stretching sheet in porous medium in the existence of chemical reaction and magneto-hydrodynamics. Singh et al. [24] analyzed the heat and mass transfer behavior of unsteady flow of squeezing nanofluids between two parallel plates in the sight of uniform magnetic field with slip velocity effect is investigated.

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Khilap

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Search of a model for melting temperature and cohesive energy of nanomaterials

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Three different models *viz.* Nanda model, Jiang model and BK model with different physical origin have been used to study the size dependence of melting temperature and cohesive energy of nanomaterials. A critical analysis demonstrates that the suitability of Jiang model or Nanda model depends on the material considered. Moreover, BK model works well for different nanomaterials considered in the present work. This demonstrates the suitability of the models proposed earlier. We therefore, extend the BK model for the size dependence of cohesive energy and Debye temperature. Nanda model has been found to give the reverse trends for the size dependence of cohesive energy as observed experimentally. However, Jiang model and BK model give similar trends of variation as observed experimentally. A comparison of the computed results with the experimental data demonstrates the superiority of the BK model. We also extend the BK model for the study of size dependence of Debye temperature. A good agreement between theory and experiment demonstrates the validity of the model proposed.

Keywords: Melting temperature, Cohesive energy, Debye temperature, Nanomaterials

1 Introduction

Nanoparticles have attracted increasing attention in the material science[1,2]. Melting is a very common phenomenon but not well defined for nanomaterials. Different theories of melting have been proposed[3], which are still waiting for their extension for nanomaterials. It has been observed that the melting temperature of metallic, organic and semiconductor nanoparticles decreases with the decrease of their particle size[4-7]. Melting point depression and enhancement of nanocrystals have been found to depend on size, dimension and surface conditions of nanocrystals[8]. A phenomenological model without adjustable parameters for size and dimension dependence of melting point depression and enhancement of nanomaterials has been introduced[9]. The predictions of the model have been found to be consistent with the experimental data and other thermodynamic models for metallic nanocrystals. The differences with other theoretical considerations have been discussed. The model has been extended for the size dependence of cohesive energy[9]. Nanda *et al.*[10] derived an expression for the size dependent melting of low dimensional systems on the basis of an analogy with the liquid drop model and empirical relations of bulk solids. A comparison with the other theoretical models as well as available experimental data has been presented. The model has been used to understand the effect of substrate temperature on the size of the deposited cluster and superheating of nanoparticles embedded in a matrix. An empirical relation for the size dependence of cohesive energy has also been proposed.

A simple model has been developed to understand the size and shape dependence of melting and superheating of nanomaterials[11]. The size dependence of melting temperature of free standing nanoparticles as well as embedded nanoparticles has been reported. The formulation has been used to study the effect of shape on melting temperature during the reduction of size. The results have been compared with the available experimental data. A good agreement between model predictions and experimental data has been observed. In the present paper, we extend the model to study the size dependent of cohesive energy and Debye temperature. Thus, there are different models based on different physical origins for the size dependence of melting temperature and cohesive energy. It is therefore, legitimate and may be useful to present a comparative study of all these models in the light of experimental data. This may help the researchers to use a more suitable model for further studies of size dependent properties of nanomaterials.

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Article

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Synthesis and Characterization of ZnO–CeO_2 Nanocomposite with Enhanced UV-Light-Driven Photocatalytic Dye Degradation of Rhodamine-B

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ZnO–CeO_2 nanocomposite was synthesized by co-precipitation and reverse micelle methods, which show rod-shaped morphologies. In co-precipitation method, the nanocomposite has uniform rod-shaped structure, whereas in reverse micelle method rods like structures are made up of spherical shaped nanoparticles. The photocatalytic dye degradation of rhodamine-B (RhB) has been examined using ZnO–CeO_2 nanocomposite at room temperature. The photodegradation rates of catalysts in co-precipitation and reverse micelle methods were observed as 0.026 min^{-1} and 0.042 min^{-1}, respectively.

Keywords: ZnO–CeO_2 Nanocomposite, Band Gap, Rhodamine-B, Photocatalysis.

1. INTRODUCTION

Nowadays, water pollution is a worldwide problem that affects the environment significantly. The textile industries effluents or organic dyes are the most important source of water pollution.[1,2] In recent years, to solve this issue many researchers have been focused for the use of semiconductor nanocomposite or metal oxides for the photocatalytic dye degradation of wastewater and organic pollutants.[3]

ZnO is a semiconductor material which has wide band gap (3.37 eV) and large excitonic binding energy (60 meV).[4] ZnO nanoparticles are chosen as an important nanomaterial due to its great applications in the field of electronics,[5] optics,[6] optoelectronics,[7] and UV laser devices.[8–10] On the other hand, CeO_2 with fluorite type structure is also one of the most significant catalysts that show considerable reduction without phase change. CeO_2 and its metal oxide based nanocomposite display excellent catalytic activity due to its redox properties in various organic reactions e.g., catalytic wet oxidation, oxidative coupling of methane with carbon dioxide, water-gas-shift reaction, and solid oxide fuel cells etc.[11–16] Moreover, CeO_2 based nanocomposite metal oxides have been investigated as good catalysts in catalytic reactions. CeO_2 nanoparticles also form oxide ion vacancy due to reduction of Ce 4*p* which results the appearance of electronic conductivity and mixed conductor.[17,18] ZnO and CeO_2 based nanomaterials are the efficient catalysts for photocatalytic reactions as they have limited photocatalytic activity (~45%) under visible light due to their large band gaps.[19–21]

In the present work, our main aim is to enhance the photocatalytic activity by introducing the CeO_2 nanoparticles with ZnO. ZnO–CeO_2 nanocomposites were synthesized using two different chemical methods and used to investigate the photocatalytic dye degradation RhB at room temperature. This work represents the simple synthetic approach for the formation of nanocomposite material in rod shape morphology which could be an important photocatalyst for waste water treatment and environmental applications.

*Authors to whom correspondence should be addressed.

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RESEARCH ARTICLE

Synthesis and Characterization of Au/γ-Al_2O_3 Nanocatalysts for Vapor-phase Selective Oxidation of Benzyl Alcohol Under Aerobic Condition

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Abstract: ***Background*:** Au-catalyzed selective oxidation of benzyl alcohol to benzaldehyde was investigated over Au/γ-Al_2O_3 nanocatalysts under aerobic conditions. The homogeneous deposition-precipitation method was used to prepare these catalysts. In the present work, varying Au content over γ-Al_2O_3 support has been used as heterogeneous catalysts to investigate the vapor phase oxidation of benzyl alcohol to benzaldehyde. In this study, it was observed that an Au/γ-Al_2O_3 catalyst shows an optimum conversion of benzyl alcohol to benzaldehyde at Au loading of 2 wt%. The catalytic activity of Au/γ-Al_2O_3 was interrelated with Au particle size supported by Au on γ-Al_2O_3 support. The catalytic activity depends on the size of the gold nanoparticles, as well as on the interaction between gold nanoparticles and various support materials. We have optimized various parameters such as Au nanoparticles loading, reaction temperature, and reaction time for efficient conversion as well as product selectivity.

***Methods*:** The Au nanocatalysts supported on γ-Al_2O_3 were prepared with by homogeneous deposition-precipitation (HDP) method by varying the loading of Au nanoparticles and using urea as the precipitating agent.

Results: A varying Au loading has been employed over γ-Al_2O_3 support material after their structural investigation. The vapor phase oxidation of $PhCH_2OH$ to PhCHO was investigated over Au/γ-Al_2O_3 catalysts under air. Only a few percent of benzyl alcohol were found to convert in the absence of as-synthesized catalysts. Moreover, bare support also showed a very poor catalytic activity towards benzyl alcohol conversion. Hence, the synergistic effect of Au nanoparticles over support materials facilitated as an excellent catalyst for efficient conversion of benzyl alcohol to benzaldehyde. The 2 wt% of Au/γ-Al_2O_3 catalysts after 2 h of reaction time showed the maximum conversion of 33%.

Conclusion: Au/γ-Al_2O_3 catalyst prepared by HDP method exhibits a high catalytic activity as well as stability for the vapor phase conversion of benzyl alcohol to benzaldehyde. The optimum condition for efficient conversion of benzyl alcohol is observed to be 2 wt% Au loading, 2 hr reaction time and 320 °C of reaction time for all cases.

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Keywords: Gold nanoparticles, benzyl alcohol, oxidation, benzaldehyde, aerobic condition, HDP.

1. INTRODUCTION

Bulk gold (Au) shows poor catalytic performance due to its stable and inert nature compared to other transition metals. After various studies it has been observed that Au in the form of nanoparticles (NPs) shows significant catalytic performance [1]. Moreover, supported Au NPs shows much higher catalytic activity than Au alone. Hence, supported Au NPs received major attention in catalytic science today. Au shows excellent catalytic characteristics towards the oxidation reactions at lower temperatures [2, 3], which allow excellent control over the selectivity for specific selective oxidation reactions. The alcohol oxidation process produces very valuable by-products which could be utilized as intermediates for the synthesis of other compounds and as end products for chemical industries. Further, benzyl alcohol ($PhCH_2OH$) selective oxidation acts as a fundamental reaction for both laboratory and industry procedures. Au is one of the catalysts, which is very famous for the selective oxidation of benzyl alcohol ($PhCH_2OH$) to benzaldehyde (PhCHO) [4-10]. The selective oxidation of alcohol is usually carried out under base, which acts as a promoter or a co-catalyst [2, 5, 6, 8, 9, 11-14]. During alcohol oxidation, the presence of base increases alcohol deprotonation which

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The Future of Retailing in India

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Abstract

Indian retail industry has emerged as one of the most dynamic and fast-paced industries due to the entry of several new players. It accounts for over 10% of the country's gross domestic product (GDP) and around eight % of the employment. India is the world's fifth-largest global destination in the retail space. Retailers now a days are using a variety of technologies to engage and attract their customers. This research paper focuses on the Future of Retailing in India by taking into account some prominent key areas that are relevant to the retail management such as technology and tools to facilitate decision making, visual display and merchandise offer decisions, consumption and engagement, big data collection and usage and analytics and profitability. Some other important issues that are deserving of additional inquiry are also taken in consideration in the study, & some important areas of emerging applicability are also introduced in the study such as the internet of things, virtual reality, augmented reality, artificial intelligence, robots, drones, and driverless vehicles.

Keywords: Retailing, Retail, Future, Strategies, Innovation

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SWOT Analysis of Uttarakhand Road Transport Corporation

Dr. Ashutosh Kumar*

Abstract

The word SWOT is derived from the four words: Strengths, Weaknesses, Weaknesses, Opportunities and Threats. This paper discusses the application of SWOT analysis as the analytical tool to measure performance and future prospective of the State Road Transport Undertakings (SRTUs) with special reference to Uttarakhand Road Transport Corporation (UTC), being a government undertaking working for providing transport services in the state of Uttarakhand. It was incurring losses from beginning of the study to end of the study period. Hence it is of great importance to know the Strengths, Weaknesses, Opportunities and Threats (SWOT) OF THE Corporation, Which help in improving the performance of the Corporation. The study is divided into two phases: the first phase analyse the performance of the UTC and the second phases discusses the application of SWOT analysis on the working of the UTC.

Keywords: SWOT, Road Transport, Performance, Cost, Analysation, Management, Operational.

INTRODUCTION

Road Transport is one of the most auspicious and dominant means for rapid economic development. Passenger transportation plays an important role in solving the sociological problems of society, i.e. lack of mobility, geographical dissimilarities, rural and urban gap and medical, educational and pleasure needs. Prior to independence, the passenger road transport sector in India was dominated by the private operators, and there was unhealthy competition amongst operators who concentrated on the more remunerative routes. A consensus, however, has emerged that controlled monopoly is the only answer to the evils of unhindered and selfish competition.

The passing of the Road Transport Corporation Act, 1950 provided the necessary legal and financial framework for state participation. With the encouragement given by the planning commission and with suitable amendments to the Motor Vehicles Act in 1956, many state road transport undertakings (SRTUs) were formed in the 1960s and were able to provide better services, covered more areas and gave fair wages to the employees.

OBJECTIVE OF THE STUDY

The prime objective of the is investigate the strengths, weaknesses, opportunities and threats of the UTCs. The following are the other objectives formed to analyse the current situation of the Corporation-

- To evaluate the performance of the Corporation in internal as well as external environment.
- To suggest some effective measures for strengthening the current situation of the Corporation.

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ENGINEERING PHYSICS AND MATHEMATICS

Melting and heat absorption effects in boundary layer stagnation-point flow towards a stretching sheet in a micropolar fluid

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KEYWORDS

Boundary layer;
Heat absorption;
Melting heat transfer;
Micropolar fluid;
Stagnation-point;
Stretching sheet

Abstract The present investigation deals with the study of fluid flow and heat transfer characteristics occurring during the melting process due to a stretching surface in micropolar fluid with heat absorption. The governing equations representing fluid flow have been transformed into nonlinear ordinary differential equations using similarity transformation. The equations thus obtained have been solved numerically using Runge–Kutta–Fehlberg method with shooting technique. The effects of the melting parameter, micropolar parameter heat absorption parameter and stretching parameter on the fluid flow and heat transfer characteristics have been tabulated, illustrated graphically and discussed in detail. Results show that heat transfer rate decreases with melting parameter and heat absorption parameter significantly at the fluid-solid interface.

1. Introduction

The micropolar fluids are those which contain micro-constituents that can undergo rotation, the presence of which can affect the hydrodynamics of the flow. It has many practical applications, for example, analyzing the behavior of exotic lubricants, colloidal suspensions, solidification of liquid crystals, extrusion of polymer fluids, cooling of metallic plate in a bath, animal blood, body fluids and so more. The flow and heat transfer characteristic induced by a stretching surface in a non-Newtonian fluid is of great important because it occurs in many manufacturing processes such as in the polymer industry. Eringen [1–3] has introduced the theory of micropolar fluids that is capable to describe those fluids by taking into account the effect arising from local structure and micromotions of the fluid elements. Das [4] studied the effect of partial slip on steady boundary layer stagnation point flow of an electrically conducting micropolar fluid impinging normally through a shrinking sheet in the presence of a uniform transverse magnetic field. The unsteady MHD boundary layer flow of a micropolar fluid near the stagnation point of a two-dimensional plane surface through a porous medium has been studied by Nadeem et al. [5]. Ishak et al. [6] investigated heat transfer over a stretching surface with variable heat flux in

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Influence Of Chemical Reaction On MHD Boundary Layer Flow Of A Micropolar Fluid Over A Wedge With Hall And Ion-Slip Currents

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Abstract

In the present paper, a numerical model is developed to examine the effects of chemical reaction on heat and mass transfer flow of a magneto-micropolar fluid over a non-conducting wedge with Hall and Ion-slip currents. The governing system of partial differential equations converted into similarity equations in ordinary differential equations by using the similarity transformations. The resulting equations thus obtained have been solved by adaptive Runge-Kutta method along with the shooting method. The effects of different physical parameters on velocity, microrotation, temperature and concentration distributions have been illustrated graphically. Also, the results for the skin-friction coefficient, the heat transfer rate and the mass transfer rate at the surface are tabulated for various values of fluid properties and the flow conditions. Numerical results show that the mass transfer rate increase with the Schmidt number and chemical reaction parameter.

Keywords: *Chemical reaction, Hall current, Heat and mass transfer, Ion slip, Micropolar fluids, Wedge.*

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1. Introduction

The micropolar fluids are those Non-newtonian fluids, which contains particles of micro-size and they belong to a class of fluids with non-symmetric stress tensor that we shall call polar fluids. The presence of microstructure particles and non-symmetric stress can changed the hydrodynamics of the flow. The classical Navier-Stokes theory is not able to describe the flow properties of micropolar fluids e.g. exotic lubricants, biological fluids, colloidal suspensions, polymeric fluids, liquid crystals, animal blood and fluids containing certain additives. Eringen [1, 2 & 3] and Łukaszewicz [4] have provided detail discussion of the micropolar fluid and their application in fluid dynamics. The natural convection boundary layer flow of a thermo-micropolar fluid past a non-isothermal vertical plate has been studied by Jena and Mathur [5]. Beg et al. [6] investigated convective heat and mass transfer of micropolar fluids in a non-Darcy porous regime. Kumar [7] analyzed the problem of MHD mixed convective flow of a micropolar fluid. Pal and Chatterjee [8] have proposed a numerical model to examine the mixed convection magneto-hydrodynamic heat and mass transfer in micropolar fluid saturated Darcian porous medium. Recently, researchers [9-11] have been investigated micropolar fluid flow in various cases.

The study of MHD micropolar fluid flow and heat transfer in presence of hall and ion-slip currents has important application in engineering and science e.g. in power generators, MHD accelerators, refrigeration coils, transmission lines, heating elements and electric transformers. Seth et al. [12] analyzed Hall current, radiation and rotation

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ORIGINAL PAPER

MHD Slips Flow of a Micro-polar Fluid Due to Moving Plate in Porous Medium with Chemical Reaction and Thermal Radiation: A Lie Group Analysis

Khilap Singh[1] · Manoj Kumar[1]

Abstract
An attempt is made to investigation of MHD natural convection flow of a micropolar fluid due to a permeable moving plate in porous medium in the presence of chemical reaction and radiation. The Lie group analysis used to create similarity transformations and by using those transformations, the system of governing highly non-linear partial differential equations is converted into a set of non-linear coupled ordinary differential equations. The ordinary differential equations thus obtained have been solved by utilizing Keller box method. Numerical solutions for the skin-friction coefficient, Nusselt and Sherwood numbers as well as the velocity, micro-rotation, temperature and concentration are presented graphically for different parametric conditions and discussed in detail. The results show that the skin-friction coefficient reduces with greater values of micro-polar or material parameter and the heat transfer rate advances with reduction in micropolar and radiation parameters. The mass transfer rate accelerates with higher values of chemical reaction parameter.

Keywords Chemical reaction · Keller box method · Lie group analysis · MHD · Micropolar fluid · Porous medium · Slip velocity · Suction/injection · Thermal radiation

Mathematics Subject Classification 76A05 · 76S05 · 80A20

List of symbols

a	Velocity slip parameter
B_0	Constant of magnetic field
b	Thermal slip parameter
$C_{f\bar{x}}$	Coefficient of local skin-friction
C_p	Specific heat at constant pressure ($\mathrm{J\,kg^{-1}K^{-1}}$)
D_1	Thermal slip factor

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आर्य के संबंध में भ्रांति : एक विश्लेषण

डॉ. कृष्णकांत मिश्रा

असिस्टेंट प्रोफेसर, राजकीय सनातकोत्तर महाविद्यालय, खटीमा, उद्यमसिंह नगर, उत्तराखण्ड

Where is your proof, guess work, then keep your fancifulguess to yourself. In which Veda, in which Sutra do you find that Aryans have come n to India from a foreign country ? What your European Pandits says about the Aryan's swooping down from some foreign land, snatching away the lands of aborigines and settling in India by exterminating them, is all pure none sense, foolish talk !'

पेरिस सम्मेलन में स्वामी विवेकानंद ने गर्जना की थी कि यह एक मुर्खतापुर्ण प्रलय मात्र है कि भारत में आर्य बाहर से आए हैं। आज तक यह एक अमुक पहेली क्यों बना है ? बड़े – बड़े विद्वान एक मत क्यों नहीं हो पाए ? क्या इतिहासकारों को विज्ञान से सहायता नहीं मिल पा रही है और अगर ऐसा नहीं है तो यह मान लिया जाए कि अभी तक विद्वान इतिहासकार अंग्रेजों और यूरोपियनों इतिहासकारों द्वारा थोपी गई बातों पर चलने को मजबूर हैं। इस संदर्भ में भारतीय इतिहासकार विवेक शुन्य क्यों नहीं हो गए ?

विचारणीय तथ्य यह है कि "आर्यों ने भारत के मूल निवासियों को युद्धों में हराकर दास या दस्यु बनाया" ऐसी भ्रान्तियाँ फैलाने वाला अंग्रेज था अपनी राजनीतिक उददेश्यों की पूर्ति हेतु। सर्वप्रथम यह विचार "कैम्ब्रिज हिस्ट्री ऑफ इंडिया" में प्रतिपादित किया गया था कि आर्य लोगों ने विदेशों से आकर भारत पर आक्रमण करके यहां के मूल निवासी द्रविड़, कोल, भील, संचाल आदि को अपनी शक्ति के बल पर पराजित करके जीता और अपमानित करके उन्हें दास या दस्यु बनाया।

आर्यों द्वारा बाहर से आकर स्थानीय जातियों को जीतने के प्रश्न पर भारत के प्रसिद्ध विधिवेत्ता डा0 अम्बेडकर ने लिखा है कि ऋग्वेद में 'दास' और 'दस्यु' को आर्यों का शत्रु अवश्य बताया गया है और उसमें ऐसे मंत्र भी आए हैं, जिसमें वैदिक ऋषियों ने अपने देवताओं से उनकों मारने और नष्ट करने की प्रार्थनाऐं भी की है किन्तु इससे भारत में आर्यो के आक्रमण के पक्ष में निर्णय नहीं किया जा सकता है उन्होंने ऋग्वेद के आधार पर इस संबंध में तीन तर्क प्रस्तुत किए हैं–

1. ऋग्वेद में आर्यों और दासों या दस्युओं के बीच युद्धों के संदर्भ नहीं मिलते। ऋग्वेद में 33 स्थानों पर 'युद्ध' शब्द आया है, जिनमें से केवल 8 स्थानों में उसका प्रयोग 'दस्यु' के विरोधी अर्थ में हुआ है और वह भी दोनों के मध्य किसी बड़े युद्ध को नहीं, बल्कि छिटपुट लड़ाईयों को ही दर्शाता है, जिनके आधाार पर आर्यों की विजय, कथा को प्रमाणित नहीं किया जा सकता है।
2. दासों और आर्यों के बीच जो भी छिटपुट संषर्घ था वह दोनों की आपसी सहमति शांतिपुर्ण ढंग से तय हो गया था। ऋग्वेद (6.33 3.7. 83.1,8.51.9, 10, 102.3) से

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ऋग्वेद में देवभावना का विकास

डॉ0 कृष्णकान्त मिश्र

असिस्टेंट प्रोफेसर, राजकीय स्नातकोत्तर महाविद्यालय, खटीमा, उद्यमसिंह नगर, उत्तराखण्ड

भारतीय बने रहने के लिए भारतीयों को, विशेषतः वैदिक धर्मावलम्बियों का वेदों से परिचित होना नितांत अनिवार्य है[1], भारतीय व्यक्ति के लिए, जन्म के भी पूव्र से लेकर मृत्युपर्यन्त होने वाले सोलह संस्कारों का अत्यधिक महत्त्व है। और, इन संस्कारों का पंपादन वेदों के मंत्रों के बिना कदापि संभव नहीं है। हमारी दैनिक प्रार्थना, हमारे देवी–देवता, हमारी उपासना, हमारे अनुष्ठान, हमारे पर्व, हमारे यज्ञ, हमारी मान्यताऐं तथा हमारी परंपराऐं– सभी वेदों से प्रभावित हैं।[2]

यद्यपि 'ऋग्वेद' की देव–भावना स्वयं में ही प्राचीन है, तथापि उसमें कुछ ऐसे देवता हें, जिनकी धारणा और भी अधिक प्राचीन है। इस रूप में, ऋग्वेद की देव–भावना के विाकस को हम चार कालों में विभाजित कर सकते हैं–

1. **इण्डो–यूरोपीयन काल** : वस्तुतः देवत्व की सामान्य धारणा इसी काल से संबंध रखती हैं। क्योंकि सर्वप्रथम, इसी काल में द्यौः को पिता के रूप में देखा गया था।[3]
2. **इण्डो–ईरानियन काल की देवभावना** : यह सभी विद्वान् जानते हैं कि ईरान की प्राचीन भाषा–अवेस्तन भाषा और वैदिक भाषा–इन दोनों में बहुत अधिक समानता है। इनके उच्चारण में भिन्नता होने से ही ये भिन्न–भिन्न दृष्टिगोचर होती हैं। भाषा की भांति ही, ईरानी देवों और वैदिक देवों में भी बहुत अधिक समानता है। ईरानी देवता 'मिथ्र' और 'इम', वैदिक देवता 'मित्र' और 'यम' से समानता रखते हैं।[4]
3. **इण्डो–आर्यन काल की देवभावना** : इस काल में भारतीय आर्यों अर्थात् वैदिक आर्यों ने देवताओं को तीन रूपें में देखा है।[5]

   क.द्युलोक में रहने वाले देवता, ख. अंतरिक्ष में रहने वाले देवता

   ग. पृथ्वी पर रहने वाले देवता

   सूर्य द्यूलोक का देवता है।[6] विद्युत वर्षा और वायु अंतरिक्ष के देवता हैं तथा अग्नि पृथ्वी का देवता है।[7]

ऋग्वेद के सूक्तों में देवताओं का विकास क्रमिक रूप से दृष्टिगोचर होता है। एक स्थल पर कहा गया है कि ग्यारह स्वर्ग में, ग्यारह पृथ्वी पर और जल में निवास करते हैं[8] यहां; प्राकृतिक शक्तियां धीरे–धीरे देवताओं का रूप ग्रहण करती हुई दिखलाई पड़ती हैं। वैदिक आर्य जिस प्राकृतिक वातावरण में रहते थे, जिन प्राकृतिक घटनाओं को देखते थे और जिन प्राकृतिक पदार्थों का उपयोग करते थे, उन्हीं सबको वैदिक आर्यों ने अपना देवता स्वीकार किया है। उन्हीं की स्तुति, ऋग्वेद के सूक्तों में स्थान–स्थान पर उन्होंने की हैं यही देखकर डॉ0 विण्टरनिट्ज ने ऋग्वेद के सूक्तों पर अपनी टिप्पणी की है कि एक शब्द में कहें तो इन सूक्तों का महत्व इस बात में है कि इनमें हम अपनी आँखों के सामने पौराणिकता को उभरते हुए देखते हैं।

संक्षेप में, वैदिक देवताओं का विकास इस रूप में हुआ है–

1. **मानवीकृत देवता** : वस्तुतः ही, देवभावना के विकास के इस प्रारंभिक काल वैदिक आर्य, प्रकृतिक के अति निकट सम्पर्क में रहते थे। उनके अधिकांश देवता उनकी जिज्ञासा एवं सरल स्वभाव के ही परिणाम हैं। उनके द्वारा देखे गये प्राकृतिक तत्व–सूर्य, चन्द्रमा, अग्नि, विद्युत, वर्षा आदि ही देवता बन गयें। आगे चलकर, पुराणकाल में प्राकृतिक दृश्यों के मानवीकरण के इस मूल तयि को भुला दिया गया और देवताओं को भी उच्चशक्ति सम्पन्न मानवाकृति के रूप में ही देख जाने लगा। परिणामस्वरूप इन्द्र, अग्नि, मित्र, वरूण, विष्णु, अदिति और रूद्र आदि को मानव के रूप में देवता माना जाने लगा।[9]
2. **विशेषणों के आधार पर बने देवता** : वैदिक देवताओं में कुछ ऐसे भी देवता हैं, जो पहले किसी प्राकृतिक तत्व के विशेषण थे, किन्तु बाद में वे स्वतंत्र रूप में देवता बन गये। यथा, सविता देवता

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प्राचीन काल में जनसंचार

डॉ0 कृष्णकान्त मिश्र

संचार शब्द का अर्थ है सम्बन्ध स्थापित करना और जन से तात्पर्य जनता अर्थात् जनसंचार का अर्थ जनसाधारण से सानिध्य स्थापित करना। संचार का इतिहास उतना ही पुराना है जितना की मानव का अस्तित्व। जनसंचार का उद्देश्य जानकारी या विचारों को समाज के उन तमाम लोगों तक पहुचाना है जो इससे सम्बन्ध हैं या जिन्हें यह जानकारी पहुँचाना उपेक्षित है ताकि सभी लोग इससे अवगत हो जायें या इसका लाभ उठा सकें। योजनाबद्ध कार्यक्रम का आवश्यक तत्व है।

संसार के प्रत्येक चेतन पुरुष को किसी न किसी समय एक ऐसी उलझन भी आती है, जब वह अपने मन की बात दूसरे के पास पहुँचाने की इच्छा करता है। आदिम मानव को भी एक दिन ऐसी उलझन आई होगी, जब वह किसी एकान्त विभिषिकापूर्ण स्थान में स्वयं को आरक्षित पाकर अपने परिचित की स्मृति में विहवल हो उससे मिलने के लिए छटपटाया होगा। दूर निर्जन अटवी में भूला–भटका, इष्टप्राप्ति में संलग्न कोई प्रतीक्षार्थियों को अपने विलम्ब से आने का संदेश पहुँचाने की सोच रहा होगा अथवा किसी को किसी के विस्मृत कर्तव्य का स्मरण कराने की सूझी होगी। आदिम युग में जब गणपति या कविले के मुखिया द्वारा अपने गण समूह को प्रभावित करने के प्रयास किये गये तब जनसंचार विधा का श्री गणेश हुआ। इसके अन्तर्गत गणपति न केवल समूह के अन्य सदस्यों के व्यवहार को वांछित दिशा में प्रभावित तथा प्रेरित करने की चेष्टा करता था वरन् वह यह भी ज्ञात करता था कि समूह के अन्य सदस्य उनसे किस प्रकार के व्यवहार की अपेक्षा रखते है। इस प्रक्रिया को आधुनिक जनसंचार के अणु बीज रूप में देखा जा सकता है।[1]

हमारे देश के प्रसंग में जनमत के महत्व को स्वीकार किये जाने की परम्परा के प्रमाण पुरातन वैदिक कालीन सभ्यता से ही उपलब्ध होने लगते हैं। उस समय जनमत को प्रभावित करने के लिए जनसम्पर्क विधा का प्रयोग परिहार्य था। ऋग्वैदिक ऋषियों का सूचना संदेशों की दृष्टिकोण से विशेष महत्व था। वे सामाजिक, धार्मिक सिद्धान्तों का प्रचार अपने आश्रमों के माध्यम से करते थे। ये आश्रम बस्तियों की कल–कल से बहुत दूर बनें होते थे। यही आश्रम हमारे पूर्वजों की सब विद्या, विज्ञान, दर्शन और वाङ्गमय की जन्मभूमि थे। वैदिक आर्य अपने सामाजिक, धार्मिक विचारों का प्रचार उपदेशों, आख्यानों, कथानकों तथा वार्ताओं, द्वारा करते थे। इन्होंने अनेक सामाजिक, धार्मिक, आर्थिक, राजनीतिक सिद्धान्तों का निर्धारण कर लिया था। वे राजनीतिक जीवन में किसी सिद्धान्त का प्रतिपादन सभा और समिति के माध्यम से करते थे। अपने विचारों को दूरवर्ती प्रदेश में ले जाने के लिए वे एक्कों, घोड़ों, यानों, नावों आदि का प्रयोग करते थे।[3] पक्षियों का पालन तथा उनका संचार के रूप में उपयोग भी उस समय प्रचलित था। जनसंचार के अभ्युदय और विकास का यह प्रारम्भिक काल था। वैदिक ग्रन्थों के पश्चात् सूचना व्यवस्था की जानकारी पौराणिक ग्रन्थों में भी प्राप्त होती है। इन ग्रन्थों में

* **असिस्टेंट प्रोफेसर, राजकीय सनातकोत्तर महाविद्यालय, खटीमा, उद्यमसिंह नगर, उत्तराखण्ड**

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उत्तराखण्ड की गणेश प्रतिमाओं का समाजशास्त्रीय अध्ययन

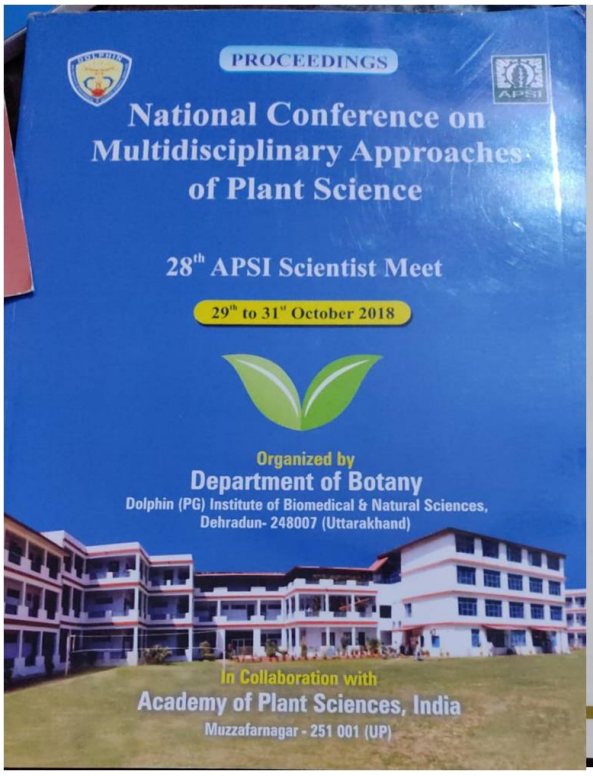
डॉ0 कृष्ण कान्त मिश्र

असिस्टेंट प्रोफेसर, राजकीय स्नातकोत्तर महाविद्यालय, खटीमा, उधमसिंह नगर, उत्तराखण्ड

गणेश शब्द की व्युत्पत्ति गण+ईश से हुई है, 'गण' के ईश्वर या गौण देवी, देवताओं के ईश्वर जो 'शिव' के अनुचर थे[1] को 'गणेश' कहा गया है। गण, गणपति गणतंत्र, ये कुछ ऐसे शब्द हैं जो एक दूसरे से गहरे अन्तर्सबंधित हैं। 'गण' को समझने के लिए हमें सबसे पहले इन जनजातियों के समूह को समझना होगा जिनकी संस्कृति भारतीयता में उसी तरह रची–बसी है जेसे दूध में पानी। वैसे भी 'गण' का अर्थ जनजातीय समूह ही होता हैं उनकी सभ्यता और संस्कृति का आभास हमें सिन्धु घाटी सीयता से मिलता है। यह निश्चित ही जनजातियाँ संगठनों के अवशेषों पर आधारित रहा होगा। मोहनजोदड़ों से मैके द्वारा प्राप्त एक मुहर विशेष उल्लेखनीय है। हड़प्पा से प्राप्त दो मुहरों पर एक में एक देवता को प्रदर्शित किया गया है जो सिर में तीन पंख धारण किये हैं[2] जो जनजातीय देवता का सूचक है। हालांकि इतिहासकारों को अभी इस पर विचार करना शेष है कि आखिर इस प्रक्रिया की शुरूआत कब हुई। यह एक दुरूह कार्य है क्योंकि भारत के पास प्राचीन सामाजिक इतिहास का कोई ठोस आधार नहीं है। ऐसी स्थिति में जैसा कि मार्क्स ने लिखा है। अतीत की वास्तविकता, पौराणिक परिकल्पनाओं से प्रतिबिंबित होती है, हमारे पास भी पौराणिक और धार्मिक आधार है, जिनके सहारे हम सत्य तक पहुंच सकते हैं। यह भी एक सच्चाई है कि धार्मिक विचार भी भौतिक परिस्थितियों से ही बनते हैं, जिनसे भौतिक परिस्थितियाँ भी प्रतिबिंबित होती है। अतः इसे समझने के लिए एक ऐसे देवता का सहारा ले सकते है, जो 'गण' से जुड़ा हुआ हो, और वह है गणपति।

अतएव संपूर्ण भारत में हिन्दू धर्म के सभी अनुष्ठानों का शुभारम्भ गणेशोपासना से होता है। किसी भी शुभकार्य का प्रारंभ भी गणेशाय नमः उच्चारण से ही अभिप्रेत है। घरों एवं मंदिरों के मुख्य द्वार के सिरदल पर गणेश की इन्हीं सी आकृति अवश्य बनी रहती है प्राचीन ग्रन्थों में गणपति–महिमा का अनेकशः गुणगान किया गया है। किनतु यह आश्चर्य की बात है कि इतने पूज्य देवता की उपासना का इतिहास उतना प्राचीन नहीं है जितना अन्य हिन्दू देवताओं का। वैदिक देव सूची में इनकी गणना नहीं है। ऋग्वेद के केवल एक मंत्र में गणेश का उल्लेख हुआ है। किन्तु यह उल्लेख भी सायण के अनुसार ब्राह्मणस्पति के लिये है, अर्थात देवों के गणों का स्वामी। इसी प्रकार ऐतरेय ब्राह्मण, शुक्ल यजुर्वेद तथा वाजसनेयी संहिता[9] में भी गणपति शब्द आया है, किन्तु यह गणेश के अर्थ में नहीं है। याज्ञवल्क्य स्मृति[10] में विनायक का उल्लेख सत्कार्यों में विघ्न उत्पन्न कर तदुपरान्त उन्हें दूर करने वाली समर्थ सत्ता के रूप में हुआ हैं। यहां पहली बार विनायक को अम्बिका–पुत्र भी कहा गया है।[11] ऐसा प्रतीत होता है कि गणेश उपासना का प्रचलन याज्ञवल्क्य स्मृति के पूर्व हो चुका था। यद्यपि साहित्य में गणपति पूजा अति प्राचीन काल से स्पष्ट होती है, तथापित कहा में गणेश का अंकन परवर्ती है।

भण्डारकर के अनुसार गाणपत्य सम्प्रदाय का प्रचलन पांचवी और आठवीं शतियों के बीच हुआ था और याज्ञवल्क्य–स्मृति की रचना निश्चय ही उठी शती ई0 से पहले



Occurrence of aquatic Hyphomycetes in two Altitudinally different streams of Chamoli District, Uttarakhand

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Abstract

Aquatic hyphomycetes, completing their life cycle on submerged decaying substrates in well aerated water bodies are the members of deuteromycotina. For this study two altitudinally different running fresh water streams viz., Veerganga (1400 masl) and Balkhila (1120 masl) of Chamoli district were surveyed and 42 species of aquatic hyphomycetes belonging to 25 genera viz., *Alatospora, Anguillospora, Articulospora, Camposporium, Campylospora, Clavariopsis, Clavatospora, Diplocladiella, Flabellocladia, Flabellospora, Helicomyces, Helicosporium, Heliscus, Lemonniera, Lunulospora, Pestalotiopsis, Pleurophragmium, Setosynnema, Speiropsis, Subuillispora, Tetrachaetum, Tetracladium, Tricladium, Tripospermum* and *Triscelophorus* were isolated from different habitats including water foam and submerged decaying leaf litter samples. Aquatic hyphomycetes are well known for their triradiate, tetraradiate, sigmoid, helicoid and cloved conidial types. In the present study it was noticed that higher altitudinal stream showed the greater species richness of aquatic hyphomycetes.

Key words: Aquatic hyphomycetes, water foam, leaf litter, altitudinal stream

Introduction

The mycoflora of freshwater habitat includes a spectacular array of Aquatic Hyphomycetes characterized by their magnificent spore types. Ingold (1942) was the pioneer, who recognized these fungi as "Aquatic Hyphomycetes" as they complete their life cycle including the vegetative growth, spore production, spore libration and dispersal on submerged substrates in well aerated water. These fungi produce appendiculate conidia on submerged leaf litter or similar substrate in the running fresh water, often collected in accumulated water foam of running water at the barriers.

Now a day's these fungi have also been described as fresh water hyphomycetes (Nilsson 1964), water borne hyphomycetes (Webster and Descals 1979), Ingoldian fungi (Webster and Descals 1981) as well as water borne conidial fungi (Sati *et. al.* 2008). Numerous workers from different parts of the world surveyed the foam and submerged decaying leaf litters for the presence of aquatic hyphomycetes with reference to their taxonomy and ecology (Descals and Webster 1982 a, Gonczol 1975, Gonczol and Toth 1974, Greathead 1961, Haeckel and Marvanova 1979, Hudson and Ingold 1960, Ingold 1975, Webster and Descals 1979 and Fiuza and Gusmao, 2013).

In India diversity of aquatic hyphomycetes has also been explored from various parts yet the Himalayan region is not untouched. Aquatic hyphomycetes from Kumaun Himalaya have also been described by Sati and Tiwari (1997), while earlier a few species were also recognized by Mer and Khulbe (1981). More than 80 Species belonging to different genera of these fungi have been recorded from various habitats by Sati and his coworkers from Kumaun Himalayan regions (Sati *et al.*1989, 1992, 2014, Sati and Tiwari 1990a, b, 1992a, b, 1993 and Belwal & Sati 1999 & 2005 and Belwal *et. al.* 2008).

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Heat and mass transfer flow of MHD nanofluid over permeable stretching sheet in a porous medium with chemical reaction: A Lie group analysis

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Abstract: The present study is devoted to the numerical solution of the MHD heat and mass transfer flow of Cu-water nanofluid via a permeable stretching sheet in porous medium in the presence of chemical reaction. The system of coupled non-linear partial differential equations is transformed into a system of non-linear ordinary differential equations with the help of Lie group analysis and similarity transformations. The equations thus obtained have been solved by the Runge-Kutta-Fehlberg fourth fifth order method with shooting technique. The effects of different physical parameters on velocity, temperature and concentration distributions are illustrated graphically and discussed in detail. Numerical results for the skin-friction coefficient, the Nusselt and Sherwood numbers are tabulated for various physical parameters.

Keywords: Heat and Mass Transfer, Lie group analysis, Permeability, Porous medium, MHD, Nanofluid, Stretching sheet.

Nomenclature

A_1, A_2, A_3	dimensionless constant
B_0	magnetic field strength
C	concentration of the fluid
C_f	skin-friction coefficient
C_p	specific heat at constant pressure $[Jkg^{-1}K^{-1}]$
D_B	mass diffusivity
D_T	brownian diffusion coefficient
F	dimensionless velocity of the fluid
k_s	thermal conductivity of the solid nano-particle $[Wm^{-1}K^{-1}]$
k_f	thermal conductivity of the base fluid $[Wm^{-1}K^{-1}]$
k_{nf}	effective thermal conductivity of the nanofluid
M	magnetic parameter
Nu_x	Nusselt number
Pr	Prandtl number

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कुमाऊँ में ब्रिटिश औपनिवेशिक शासन के अन्तर्गत प्रशासनिक व्यवस्था

डॉ0 प्रशान्त जोशी
असिस्टेंट प्रोफेसर (गैस्ट फैक्लटी), इतिहास, गवर्नमेंट पी0जी0 कॉलेज, चम्पावत (उत्तराखण्ड)

औपनिवेशिक काल में कुमाऊँ में सुव्यवस्थित पुलिस व्यवस्था स्थापित करने पर विशेष बल दिया गया। बी0डी0 पाण्डे के अनुसार कुमाऊँ मे कत्यूरी शासन में पुलिस की आवश्यकता न थी। चंद शासन काल में थोकदार और पधान पुलिस व्यवस्था की देखभाल करते थे। गोरखा शासन काल में सैनिक सामन्त ही पुलिस और सेना का कार्य देखते थे[1]।

औपनिवेशिक शासन के प्रारम्भ में ट्रेल ने 1816ई0 में लिखा कि– **"कुमाऊँ में विशेष पुलिस व्यवस्था की आवश्यकता नही है, कुमाऊँ में अपराध कभी–कभार ही होते है।** फिर भी अपराधों की रोकथाम के लिए कुमाऊँ में 1837 ई0 में अल्मोड़ा तथा 1843ई0 में नैनीताल तथा रानीखेत में पुलिस थाने खोले गये। तीर्थ यात्रा के समय कुछ चौकीदार और दो–तीन पुलिस के सिपाही यात्रियों की देखभाल हेतु ब्रिटिश प्रशासन द्वारा तैनात दिए जाते थे[2]।

ब्रिटिश काल में भी थोकदार व पधान पुलिस व्यवस्था के आधार स्तंभ बने रहे। वे ग्रामीण क्षेत्र में होने वाले अपराध की सूचना पटवारी को देते थे। पटवारी को पुलिस उपानिरीक्षक के अधिकार प्राप्त थे। वहीं अपराधी को बंदी बनाता और उस पर अपराध भी सिद्ध करता था। रैमजे ने कुमाऊँ की पुलिस व्यवस्था पर टिप्पणी करते हुए लिखा कि "I Believe: our police system workes better than in any other part of India and it would be most unwise to interfere with it. It has the great merit of being cheapie, casts the state nothing (except the Bhabar Police) and the absome of annoyene and wory inseparable from a paid police is not its smallest recommendation"[3].

वस्तुतः कुमाऊँ की भोली–भाली जनता में आपराधिक प्रवृत्ति नहीं थी। फलतः कुली बेगार आंदोलन 1921ई0 तक कुमाऊँ मे नियमित पुलिस की आवश्यकता ही नहीं पड़ी। यहाँ पुलिस के 8 सर्किल बनाये गये थे। जिसका क्षेत्र 225 वर्ग मील होता था। मुख्य सर्किल हल्द्वानी, गदरपुर, किच्छा, सितारगंज, खटीमा, काशीपुर, रामनगर आदि थे। सुल्तानपुर पट्टी, केलाखेड़ा, रूद्रपुर, काठगोदाम और कालाढूंगी आदि में भी पुलिस चौकियाँ स्थापित की गई। इन पुलिस स्टेशनों तथा चौकियों की स्थापना से प्रशासन तथा जनता दोनों को सुविधाएँ प्राप्त हुई। डबराल के अनुसार ब्रिटिश राज्य के प्रारम्भिक पाँच वर्षो में कुमाऊँ–गढ़वाल में आपराधिक प्रवृत्ति वाले व्यक्ति नई व्यवस्था के कारण दबे रहे[4]।

ब्रिटिश प्रशासकों ने जेल की भी व्यवस्था सुचारू रूप से चलाई। कत्यूरी शासन में कोई व्यवस्थित जेल व्यवस्था नहीं थी। चंदों के समय जेलखाने तो थे परंतु बंदीगृह में इतनी कठोरता नहीं थी। कैदी राजा के बगीचों तथा खेतों में काम करते थे, उनकों **'बन–वाण'** भी कहा जाता था। उनको अपनी जगह में दूसरा आदमी रखकर अपने घर जाने का भी हुक्म था। अंग्रेजी शासनकाल में यहाँ अपराधियों की संख्या बहुत कम थी। 1816 ई0 में केवल 66 मनुष्य अल्मोड़ा जेल में थे। 1816 ई0 में इस जेल का निर्माण 25,000 रू0 की लागत से किया गया था। कालान्तर में 1855 ई0 में कैदियों की कमाई से 3,964 रू0 2 आना और 2 पाई में एक नयी जेल हीरा–डुंगरी में निर्मित की गयी। 1850 ई0 में अल्मोड़ा में प्रति कैदी 11.5 पैसा प्रतिदिन खर्च किया जाता था तथा वस्त्र व कम्बल पर 3 रू0 7 आना 3/4 पाइ वार्षिक व्यय होता था[5]। अल्मोड़ा जेल चौथे दर्जे की ज़ेल था, यहाँ 141 कैदियों के लिए जगह थी। सजा निर्धारित हो जाने पर कैदियों को बरेली जेल भेज दिया जाता था। रैमजे ने 1857 ई0 के विद्रोह के अवसर पर जेल में पड़े, बंदियों को भाग कर आने वाले अंग्रेजों के परिवारों के भार ढ़ोने का कार्य इस शर्त पर सौंपा कि संतोषजनक कार्य करने पर उन्हें मुक्त कर दिया जाएगा।

चंद शासनकाल में प्रजा व्यवस्थित तथा केन्द्रीय न्याय प्रणाली से अनभिज्ञ थी। विवादों पर ग्राम पंचायत ही अपना निर्णय देती थी, जो कि परम्परागत रीतियों अथवा समसामयिक परिस्थिति पर आधारित होते थे। परंतु गोरखा शासन में न्याय व्यवस्था पंचायत के हाथों में न होकर फौजदारों के हाथों में निहित हो गयी थी। कानून पर ब्रिटिश शासन का सर्वाधिक महत्वपूर्ण प्रभाव पड़ा। 1817 ई0 में रेग्यूलेशन 10 पारित होने पर ब्रिटिश कमिश्नर को निर्णय देने का अधिकार दिया गया। दीवानी के मामले में 1815 ई0 से 1829 ई0 तक एक ही अदालत कमिश्नर की थी, सभी मुकदमें नहीं होते थे, 12 दिन से ज्यादा कोई मुकदमा नहीं चलता था। पहला मुन्सिफ 1829 ई0 में नियुक्त हुआ। बाद में सात कानूनगों को मुन्सिफ अधिकार दिए गए।

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Development of thermodynamic model for size, shape, pressure and temperature dependent properties of nanomaterials

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A simple theoretical model is developed to study the properties of nanomaterials under varying conditions of size, shape, pressure and temperature. The model is also applicable for their bulk counterparts. We have considered MgO and Mg_2SiO_4 minerals as examples. The model has been used to study the equation of state, elastic properties and thermal expansion under different conditions of size, shape, pressure and temperature, in addition to the bulk properties. The results obtained are compared with the available experimental data. A good agreement between model predictions and experimental data supports the validity of the model developed. It is realized that such a simple model which unifies the behaviour of nano and bulk material under different conditions is the first attempt in theory.

Keywords: Nanocrystalline minerals, high pressure, high temperature, size and shape

1 INTRODUCTION

It is well known that the properties of nanosized materials are different from those of coarse-grained (bulk) materials. This is due to the reduced crystallite size and large fraction of surfaces/interfaces, where the atomic arrangement is disordered as compared to the perfect crystal structure [1–3]. Grain size and shape have a great influence on the properties of nanomaterials. In addition to the size and shape, nanomaterials are also very sensitive to the

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Application of bond energy model for different nanomaterials

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A simple theory has been developed using bond energy model of nanomaterials. The formulation has been obtained for the size and shape dependence of specific heat and conductivity. We have computed the size dependence of specific heat of Ag and Au nanoparticles. The results obtained have been compared with the available experimental data as well as with the earlier theoretical relation. It has been found that specific heat increases by decreasing the particle size. There is an appreciable improvement in the results as compared with the earlier relation and a good agreement with the available simulation data. We extend the model to study the effect of shape for the size dependence of specific heat and thermal conductivity of different nanomaterials. The results obtained have been discussed in the light of earlier investigations as well as experimental data. A good agreement between theory and experiment demonstrates the suitability of the formulation has been developed in the present paper.

Keywords: Bond energy model, Specific heat, Thermal conductivity, Size, Shape

1 Introduction

Nanostructure science and nanotechnology have become a multidisciplinary and one of the broadest fields of research in material science. Nanostructured materials include atomic clusters, layered films, thread like structures, and bulk nanocrystalline materials. Physics of nano scale materials is different from its macroscopic material and their properties are often superior due to which nanomaterials are of active research interest. By using different methods of synthesis, it is possible to tune their thermodynamic properties. These thermodynamic properties are influenced with the change of size as well as shape. Therefore, knowledge of these thermodynamic properties is necessary to design or fabricate them[1]. Thermodynamic properties like melting temperature, Debye temperature, specific heat, thermal conductivity etc. behave differently with the reduction of particle size[2-4]. Nanoscopic specific heat is a function of size, shape as well as temperature. Specific heat of Cu and Pd is about 10% and 40% higher as compared to their bulk values[5]. By studying Gibbs free energy of nanoparticles, Luo *et al.*[6] studied the thermodynamic properties of silver nanoparticles viz. melting temperature, molar heat of fusion, molar entropy of fusion and temperature dependence of entropy and specific heat. Studies reveal that these thermodynamic properties can be divided into two parts; bulk quantity and surface quantity, and surface atoms dominate for the size effect on the thermodynamic properties of nanomaterials. The heat capacity of ideal nickel, copper, gold, aluminum and palladium FCC clusters with diameter up to 6 nm has been studied[7] in the temperature range of 150–800 K in terms of the molecular dynamics theory using a tight binding potential. This study shows an enhancement in specific heat at nanoscale.

Manufacturing and processing of a material require the knowledge of its thermal properties. Thermal conductivity of nanomaterial is affected by the temperature, size and shape. The thermal conductivity of single crystal of silicon has been measured[8] from 3 to 1580 K and of single crystal of germanium from 3 to 1190 K. These measurements have been made using a steady state, radial heat flow apparatus for $T > 300$ K and a steady state longitudinal flow apparatus for $T < 300$ K. This radiation flow technique climates thermal radiation losses at high temperatures. At all temperatures, major contribution of thermal conductivity in Si and Ge is produced by phonons. Thermal conductivity has been calculated from a combination of the relaxation times for boundary, isotope and phonon scattering and was found to agree with the experimental measurements. Above 700 K for Ge and 1000 K for Si, an electronic contribution to specific heat occurs, which agrees well with the

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Article

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Synthesis of Mesoporous Cerium Oxide (CeO_2) Nanoparticles and Effect of Cerium Precursors on Transamidation of Acetamide with *N*-Octylamine Under Solvent-Free Conditions

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Mesoporous cerium oxide (CeO_2) nanoparticles act as an effective heterogeneous catalyst for the transamidation reaction of amides with amines. The mesoporous CeO_2 nanoparticles were prepared by hydrothermal method using different cerium precursor such as: cerium(III) chloride heptahydrate [$CeCl_3 \cdot 7H_2O$], cerium nitrate hexahydrate [$Ce(NO_3)_3 \cdot 6H_2O$], ceric ammonium nitrate [$(NH_4)_2Ce(NO_3)_6$], and cerium(III) acetate [$Ce(C_2H_3O_2)_3 \cdot 1.5H_2O$]. It shows highest catalytic activity for transamidation of acetamide with *N*-octylamine under solvent free conditions. This is the first example of a heterogeneous catalyst for transamidation using aliphatic amines as substrates. The X-ray diffraction, BET surface area analysis, and FT-IR characterizations of CeO_2 suggested its excellent catalytic activity for transamidation reaction.

Keywords: Nanostructures, Transamidation Reaction, Hydrothermal Synthesis, Mesoporous CeO_2, One-Pot Synthesis.

1. INTRODUCTION

The amide bond is a fundamental part of biological and synthetic polymers (i.e., proteins and nylons) and also the most important linkages in industrial and medicinal chemistry nowadays. Synthesis of *N*-alkyl amides have been a great interest of study because they are synthetic intermediates of numerous natural products, pesticides, pharmaceuticals, and polymers.[1] The most common way to make an amide bond by using a stoichiometric amount of a coupling reagent with growing focus on green chemistry is still an expensive and wasteful procedure.[2] In the view of green chemistry, there has been high interest in developing catalytic methods of amide bond formation, which avoid using these coupling reagents.[3]

Clearly, there is a lack of an efficient catalytic procedure for selective synthesis of the secondary amide from simple primary amides (acetamide) and amines (*N*-octylamine), as a transamidation reaction. However, most of them suffer from low activity, low selectivity or limited scope. Herein, we report such a procedure utilizing catalytic quantities of lab made mesoporous ceria to activate the primary amide and promote a transamidation reaction. During the course of our on-going effort into developing catalytic synthesis of amide bonds,[4] we envisioned that a catalytic method of primary amide activation would not only be an exceptionally atom efficient and clean reaction but it also need to be highly synthetically useful due to the primary amide group inertness in presence of many other catalysts and common organic reagents.

Transamidation generally requires harsh conditions (>250 °C), long reaction times and stoichiometric reagents to cleave the chemically robust amide bond. CeO_2 has acid–base and redox properties and has been used as an effective catalyst for various organic reactions[5,6]

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Article

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Effect of Different Shapes of TiO_2 Nanoparticles on the Catalytic Photodegradation of Salicylic Acid Under UV Light

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Titania of different nanostructures was synthesized by microwave synthesis and the conventional method. The synthesized nanostructures of titanium dioxide were characterized by different optical and morphological techniques. The microwave assisted TiO_2 nanoparticles [TiO_2 (MW)] depicted higher photocatalytic activity along with degradation properties. Photocatalytic degradation is one of the major applications of TiO_2. Higher surface area of TiO_2 (MW) and TiO_2 (TP) was observed as 123 m^2/g and 46 m^2/g respectively while the specific surface area of TiO_2 P25 is 50 m^2/g. TiO_2 (MW) shows crystallite size of 8.2 nm which holds good as compared with the size reported. The degradation profile of salicylic acid had shown that TiO_2 (MW) proved to be a promising catalyst as compared to conventionally synthesized and commercially available counterparts.

Keywords: Salicylic Acid, Photocatalytic Degradation, Microwave Synthesis, TiO_2 Photocatalytic Activity.

1. INTRODUCTION

Photocatalysis is the type of catalytic reaction wherein the reaction is initiated in the presence of photons of light. Semiconductors have been vastly employed as catalysts in heterogeneous photocatalysis and the semiconductor photocatalysis process occurs when a photon equal to or greater than band gap energy is absorbed. These charge carriers are responsible for photo-oxidation and photo-reduction of organic moieties. There are many examples of semiconductors as metal oxide, metal sulfides which are used as photocatalysts such as ZnO,[1,2] ZnS,[3–5] TiO_2,[6–10] WO_3[11,12] etc. Semiconductor photochemistry had greatly enhanced the development of photocatalysis during 1970 and 1980.[13]

TiO_2 being available in abundance has low toxicity, low cost, good chemical, mechanical stability and high photocatalytic activity so is used as an efficient photocatalyst. The importance of using this photocatalyst was unfolded in the late 1960s. Many applications of TiO_2 have been reported in recent years. Its applications ranging in ointments, pigments, oils, paints, sunscreens, mineralizing organic acids, organic pollutants, dyes, herbicides, etc. The efficiency of the TiO_2 photocatalyst increases as the size and shape of the photocatalyst are tailored accordingly. Photocatalytic property of TiO_2 is highly influenced by its crystal structure[14] and mostly used forms are anatase and rutile.[15] As reported in the literature, many researchers had proved that rutile is a least active form of TiO_2.[16]

Many methods are listed in literature for the synthesis of TiO_2 nanoparticles; these include ultrasonic irradiation,[17] hydrothermal,[18–20] photoreductive decomposition,[21] precipitation,[22] microwave synthesis etc. Out of numerous techniques, microwave synthesis has great significance to synthesize nano-powders. It is a green and eco-friendly method and requires less amount of energy for carrying out any reaction as compared to other methods.[23] Microwave synthesis provides uniform heating for solvents and reagents in the reaction mixture which results into uniform production of nanoparticles.[24,25] As compared to hydrothermal synthesis, time is reduced by 2–3 orders in microwave synthesis. Moreover, it plays a crucial role to control the size of nanoparticles.[26] Hydrothermal microwave synthesis is a recent technique to prepare nanoparticles with low-temperature range and high rate of reaction.[27–29]

Titanium dioxide has been employed in various photocatalytic activities, photodegradation being one of the major applications. By enhancing the light intensity,

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RESEARCH ARTICLE

Preparation and Characterization of SBA-15-Supported Vanadia Catalysts for Ammoxidation Reaction

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A series of V_2O_5/SBA-15 catalysts with varying V_2O_5 loadings ranging from 2.5–20 wt.% were prepared by impregnation method and characterized by N_2 adsorption–desorption method, X-ray diffraction (XRD), FT-IR, UV-DRS analysis, laser Raman spectroscopy (LRS), X-ray photoelectron spectrometry (XPS), scanning electron microscopy (SEM), Electron spin resonance (ESR), temperature programmed reduction (TPR) and temperature programmed desorption (TPD) of NH_3. The catalytic properties were evaluated for the ammoxidation of toluene. The XRD results suggest that the SBA-15 supported vanadia samples present well-defined XRD patterns corresponding to the SBA-15 structure. Laser Raman spectroscopy suggests the formation of the isolated VO_x species on the SBA-15 support below 10 wt.% V_2O_5 loadings. XPS and UV-DRS studies reveal that vanadia is present in fully oxidized state (5+) in all the samples. TPR results indicate that the reducibility of vanadia decreases with vanadia loading on SBA-15. TPD of ammonia results suggests that the total acidity increases with V_2O_5 loading. The ammoxidation of toluene results shows that V_2O_5/SBA-15 shows better catalytic properties and well correlate with dispersion and acidity of the catalysts.

Keywords: SBA-15 Supported Vanadia, Ammoxidation, Toluene, Benzonitrile, etc.

1. INTRODUCTION

Supported vanadium oxides have been widely investigated as they represent an important group of catalysts for number of reactions, such as the oxidation of sulphur dioxide to sulphur trioxide,[1] ammoxidation of alkyl aromatics,[2,3] oxidation of o-xylene to phthalic anhydride[4–6] and selective catalytic reduction of NO_x,[1] oxidation of butane to maleic anhydride[7] and selective oxidation of methanol to formaldehyde[8] or methyl formate.[9,10] Supported vanadia catalysts have also been investigated for the photo-induced oxidation of methane to formaldehyde[11] and oxidative dehydrogenation (ODH) of propane[12,13] and ethane.[14]

The surface structures of vanadia supported on oxides such Al_2O_3, SiO_2, ZrO_2, Nb_2O_5 and TiO_2 are quite different from that of bulk vanadia catalyst. The efficiency of supported vanadium oxide catalysts mainly depends on the dispersion of the active phase.[15,16] Dispersion of active phase can be greatly influenced by the nature of supported oxide,[17] the kind of promoters/additives present and the method of preparation of the catalysts, and the nature of the vanadium active sites. Isolated tetrahedral vanadium oxide species containing the terminal V═O group have been proposed to be the active sites for many reactions.[18,19] In the recent past, many studies have been focused related to structural information of the supported vanadium oxides with their catalytic properties.[20]

Recent approaches in developing catalysts have used the homogeneous dispersion of metal species on the surface of porous high-surface-area supports, such as silica, alumina, titania, and zirconia, as well as the increased stability of active species on a support. Although extensive efforts have been made to control the dispersion on supported catalysts, the development of a simple methodology to prepare highly dispersed vanadium metal oxide with high vanadium loading remains a challenge.[21]

Many reports have addressed the synthesis and characterization of supported vanadium oxide species, and the chemical and structural nature of the vanadia on the supports.[19,22,23] Improved catalytic performance is often attributed to isolated tetrahedral mono vanadate (VO_4) species.[19,22,23] Using the incipient wet impregnation method, the isolated, three-legged $(\equiv SiO)_3V{=}O$ species was found to be the most favourable site at the low coverage on SiO_2, Al_2O_3, TiO_2, ZrO_2, and HfO_2 supports.[19,23] However, the precise control of vanadium-isolated active site dispersion has not been successfully achieved with this supports, resulting in numerous surface species, including polymeric vanadia species and bulk crystalline V_2O_5,

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ORIGINAL PAPER

Effect of Au content on the enhanced photocatalytic efficiency of mesoporous Au/TiO_2 nanocomposites in UV and sunlight

Akansha Mehta[1] · **Manu Sharma**[2] · **Ashish Kumar**[1] · **Soumen Basu**[1]

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Abstract Detoxification of harmful dyes through nonconventional catalytic processes is getting thrust in light of environmental remediation. Current work reveals synthesis of gold–titania (Au/TiO_2) mesoporous nanostructure and its enhanced photocatalytic performance for degradation of alizarin dye. Optically, Au/TiO_2 shows a characteristic surface plasmonic absorption band at 520 nm, whereas X-ray diffraction (XRD) pattern reveals the anatase phase of TiO_2 with fcc unit cell structure and tetragonal geometry. X-ray photon spectroscopy depicts (Au $4f_{7/2}$ at 84.0 and Au $4f_{5/2}$ at 87.7 eV) the elemental state of gold (Au^0). Specific surface area was witnessed to decrease with increase of Au content (169, 141, 130, and 119 m^2/g for 1, 2, 3, and 4 wt%, respectively). The mesoporous Au/TiO_2 nanocomposite showed higher catalytic performance in comparison to commercial nano-TiO_2 (P25), which is credited to better charge delocalization at metal semiconductor interface. The reusability studies of the photocatalyst exhibited more than 98% degradation of the dye even after 10 consecutive cycles.

Keywords Nanocomposites · HDP · Alizarin dye · Photocatalysis

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Introduction

Dye pollutants are among the prime sources of water contamination from textile and printing industries. The treatment of these dye effluents is highly desired for the preservation of clean air, soil, and water. There is an immediate need to take some necessary steps to develop efficient photocatalyst to degrade these toxic pollutants.

Anatase phase of TiO_2 is one of the best photocatalyst for pollutant dye degradation. Selectively, TiO_2 is important due to their very low cost, excellent chemical and mechanical stability, catalytic activity, availability, and nontoxicity [1–3]. The only limitation for TiO_2 as a photocatalyst is that its band gap (3.2 eV for anatase) disables it to be active in visible light region of the solar spectrum. But, the presence of rutile phase shifts its absorption maximum towards visible light. Doping with metal or nonmetallic elements [4, 5] or by deposition of noble metal nanoparticles (NPs) on TiO_2 surface is also an effective way to improve the photocatalytic activity of the catalyst [6–8]. Previously, it has been reported that when TiO_2 is doped with noble metals, its photocatalytic activity is enhanced under UV and visible light irradiation. The improved UV light photocatalytic activity is recognized due to effective charge separation of the electron when they are transferred from conduction band (CB) of TiO_2 to metal NPs [9, 10]. On the other hand, the surface plasmon resonance effect of some metals like Au and Ag also helps TiO_2 to sensitize in visible light [11–13]. In advanced photocatalytic system, sunlight active metals have been given a major thrust and Au is favored due to rich photochemistry both in homogenous and heterogeneous systems. In homogenous systems, the dimeric complexes of Au have been reported as efficient materials for radical reaction under sunlight. Revol et al. reported radical

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विश्वनाथ पाण्डेय, पदम एस. बिष्ट** एवं चित्रा पाण्डे****

स्वामी विवेकानन्द ने कहा था "समाज रूपी गरूड़ के स्त्री और पुरूष दो पंख होते हैं। यदि एक पंख सबल तथा दूसरा दुर्बल हो तो उसमें गगन को छूने की शक्ति कैसे निर्मित होगी।" इसमें कोई संदेह नहीं है कि स्त्री–पुरुष एक ही गाड़ी के दो पहिए हैं। यदि एक भी पहिया कमजोर होगा तो गाड़ी आगे बढ़ेगी कैसें?

महिला सशक्तिकरण के विषय पर जब भी हम विचार करते हैं तो एक बात स्पष्ट रूप से परिलक्षित होती है कि भारतीय समाज में ज्यादातर हिस्सों में लड़कियां असुविधाओं, बोझ और भय के डर तले जीवन बिताती हैं। वे उपेक्षा, भेदभाव का बोझ उठाती हैं, घरेलू कामकाज का बोझ उठाती हैं, भाई–बहनों की देखरेख का बोझ उठाती हैं, घर से बाहर काम करने का बोझ उठाती है। लड़कियॉं भय के साथ जीती हैं– कोख में ही खत्म कर दिए जाने का भय, उपेक्षित होने और काल का ग्रास बनने दिए जाने का भय, ये एक तथ्यात्मक सत्य है इसे हमें स्वीकार करना चाहिए। इसमें कोई संदेह नहीं हैं कि हजारों वर्षो से चली आ रही इस लिंगानुभेद आधारित विविधता को रातोंरात ठीक नहीं किया जा सकता है। ऐसे में आज वर्तमान में जहां हम हैं, इस पर विचार करना जरूरी हो गया है। आज की महिला योग्यता के मापदण्ड पर तो विकास कर रही है परंतु पुरुष प्रधान समाज में अभी भी सामाजिक दृष्टिकोण में बदलाव पर जोर देना होगा। सशक्तिकरण एक समर्थकारी प्रक्रिया हैं जब स्वास्थ्य, शिक्षा, सुरक्षा और वित्तीय सहित अन्य प्रकार की सुरक्षा के मामले में महिलाओं की हालत में सुधार होगा, तभी उन्हें सशक्त माना जाएगा।

स्वास्थ्य के स्तर पर देखें तो भारत की महिलाओं की स्वास्थ्य दशा चिंताजनक स्थिति में है। महिलाओं में पोषण की कमी देश की एक बहुत बड़ी चुनौती है क्योंकि हमारे यहां एक तिहाई (35.6 प्रतिशत) महिलाओं का बॉडी मास इंडेक्स (बीएमआई) बहुत कम है। इसी तरह देश की अधिकतर महिलाओं में कुपोषण का भी बुरा असर होता है। हमारे देश की हर तीसरी महिला कुपोषित है और हर दूसरी महिला में खून की कमी है। भारत में मातृत्व मृत्युदर प्रति एक लाख जीवित जन्मे बच्चे पर करीब 212 है। मातृ मृत्यु दर अनुपात (एम0एम0आर0) को कम करने के लिए सरकार द्वारा कई उपाय किए गए। इनमें संस्थागत प्रसव को बढ़ावा देने के लिए जननी सुरक्षा योजना, सार्वजनिक स्वास्थ्य केंद्रों में सभी गर्भवती महिलाओं के सीजेरियन सहित मुफ्त एवं सस्ते प्रसव के लिए जननी शिशु सुरक्षा कार्यक्रम (जेएसएसके), माताओं और बच्चों से संबंधित जच्चा–बच्चा संरक्षण कार्ड, प्रसव पूर्व, प्रसव एवं प्रसव उपरान्त देखभाल को सुनिश्चित करने के लिए जच्चा बच्चा निगरानी प्रणाली, साथ ही उपयुक्त

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भारतीय किसान की बदलती तस्वीर

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'' अगर भारत का भाग्य बदलता है तो गांव से बदलने वाला है, किसान से बदलने वाला है और कृषि क्रांति से बदलने वाला है। हम लोग सालों से पीढ़ी–दर–पीढ़ी किसानी करते आए हैं। बहुत कम किसान है जो नया प्रयोग करते हैं या कुछ नया करने का साहस करते है। हमारे सामने सबसे बड़ी चुनौती यही है कि यह हमारी किसानी को आधुनिक कैसे बनाएं, टेक्नोलॉजी युक्त कैसे बनाएं, हमारी युवा पीढ़ी जो आधुनिक आविष्कार कर रही है, उन आधुनिक आविष्कारों को खेत तक कैसे पंहुचाएं। किसान के घर तक कैसे पहुंचाए।'' १९ मार्च, २०१६ को कृषि उन्नति मेले में व्यक्त प्रधानमंत्री जी के ये उद्गार हमारे देश में खेती–किसानी के महत्व और उससे जुड़ी चुनौतियों को बयान करने के लिए पर्याप्त है। प्रस्तुत लेख में लेखक ने भारतीय किसान की बदलती स्थिति को उजागर करने का प्रयास किया है साथ वर्तमान सरकार द्वारा किसानों के कल्याण के लिए जिस मनोयोग से कार्य किया जा रहा है उससे किसानों के जीवन में क्या गुणत्मक सुधार आ रहा है, इसका भी अध्ययन करने का प्रयास किया गया है।

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नब्बे के दशक के आरम्भ में हुए आर्थिक सुधारों के बाद भारतीय अर्थव्यवस्था के कुछ क्षेत्रों का कायाकल्प हुआ, जिससे समूची अर्थव्यवस्था की वृद्धि दर बढ़ गयी और १९७१ से १९९१ के बीच ४.२ प्रतिशत रहने वाली दर १९९१ के बाद ७ प्रतिशत के करीब पहुँच गई। इससे १९९१ से ३७ वर्ष पूर्व स्थिर मूल्यों (२००४–०५) पर प्रति व्यक्ति आय का जो आंकड़ा था , वह केवल १७ वर्षों में दो गुना हो गया। किन्तु १९९१ में जो कृषि क्षेत्र भारतीय अर्थव्यवस्था में ४० प्रतिशत से अधिक एवं श्रम बल में ५९ प्रतिशत का योगदान करता था, उसकी वृद्धि दर में स्थायी परिवर्तन नही दिखा। कृषि एवं संबधित क्षेत्रों का सकल घरेलू उत्पादन (जी.डी.पी.) १९९१ से पहले के २३ वर्षों में दो गुना हुआ था और उससे दोबारा दोगुना होने में भी इतना ही समय लग गया। हाल के वर्षो मे भी कृषि की वृद्धि दर २.९ प्रतिशत के पुराने औसत पर अटकी रही है, जबकि गैर– कृषि वृद्धि दर लगभग ८ प्रतिशत है। गैर–कृषि क्षेत्र में वृद्धि दर अधिक होने के साथ ही कुछ किसानों ने गैर–कृषि कार्य भी अपना लिए है परिणामस्वरूप उत्पादकों (किसानों) की आय कम ही रही है। और उसके साथ गैर–कृषि श्रमिकों की आय के बीच अंतर और बढ़ गया है।

कृषि (खेती) भारत की करीब ४८ प्रतिशत आबादी की आजीविका का प्रमुख स्रोत है। यह देश की खाद्य सुरक्षा की जरूरत पूरी करने के साथ ही निर्यात के लिए अतिरिक्त पैदावार भी उपलब्ध कराती है। खेती से इतर क्षेत्र में काम आने वाली अधिकतर उपभोक्ता वस्तुएं कृषि से प्राप्त होती है और उद्योग क्षेत्र के लिए अधिकतर कच्चा माल कृषि सृजित करती है। कृषि अपने अनुषंगी क्षेत्रों के साथ , यहाँ (भारत में)

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हेमवती नंदन बहुगुणा स्नातकोत्तर महाविद्यालय
खटीमा,उत्तराखंड

कुमाँऊनी लोकगीत हमारी कुमाँऊनी संस्कृति, परंपरा का एक अहम हिस्सा है । लोकगीत में मानव जीवन के उल्लास, उंमग, करुणा उसके रुदन अर्थात उसके संपूर्ण सुख- दुख की कहानी चित्रित होती है। साथ ही कल्पना का समावेश भी रहता है। दरअसल लोकगीत संवेदनशील हृदय के उल्लास अथवा व्यथा से अनायास प्रस्फुटित होने वाले आवेग हैं, जिस में शास्त्रीय नियमों का कोई स्थान नहीं है। दरअसल एक लोकगीतकार अपने कंठ से इस प्रकार अभिव्यक्ति देता है, कि सुनने वाला भाव विभोर तथा तल्लीन होकर लोकगीत का आनंद लेता है।उससे तादात्मय स्थापित कर लेता है। कुमाऊँ में लोकगीत की परंपरा गंधर्वों, किन्नरों प्रजातियों के समय से है।जिस समय हमारे पर्वतीय क्षेत्रों में लोग अनेक कष्टों, तकलीफों, अभावों से युक्त जीवन जी रहे थे। यहाँ सुख शांति , मनोरंजन तथा आनंद प्रदान करने वाली कोई वस्तु ना थी। ऐसे समय लोकगीत ही ऐसा साधन बना, जिसने पर्वतीय लोगों को बेहद आनंदित किया, उनको सुकून दिया तथा उनका मनोरंजन किया। लोकगीत का कुछ ऐसा प्रचलन आता है, जिसकी एक परंपरा बनती है तथा उसमें आवश्यकतानुसार जोड- तोड भी होते रहते हैं। ज्यों-ज्यों मनुष्य ने प्रगति की, त्यों-त्यों मनुष्य को आनंदित करने वाले, उसका मनोरंजन करने वाले साधनों में भी परिवर्तन होने लगा। आज मानव को आनंदित करने के लिए सिनेमा है, वीडियो है, इंटरनेट है, कंप्यूटर है, टी.वी. तथा केबल टी.वी.हैं।

इनका इतना प्रभाव है कि ऐसे में वर्षों से चली आ रही हमारी लोकगीत परंपरा कहीं खो सी गयी है। वह विलुप्त होने के कगार पर है। पर्वतीय युवाओं का सिनेमा के गीत-संगीत की ओर विशेष झुकाव है। लोकगीत उनको विशेष आकर्षित नहीं करते हैं।सिनेमा के

गानों की चमक-दमक, चकाचौंध के सामने उनको लोकगीत फीके लगते हैं, लोकगीतों में उनको विशेष आनंद नहीं आता है। एक ओर जहाँ बालीवुड की चमक-दमक, चकाचौंध के सामने हमारे लोकगीतों की कमर चरमरा रही थी, वहीं इन लोकगीतों पर बालीवुड का ऐसा प्रभाव रहा है कि जिसने हमारी विलुप्त हो रही लोकगीतों की परंपरा में मानो नई जान डाल दी है। बालीवुड के प्रभाव से आजकल इंटरनेट, टी.वी. सिनेमा, कंप्यूटर, यू ट्यूब आदि में लोकगायन के विडियो प्रचुर मात्रा में दिखाए जा रहे हैं । लोकगीतों के विडियो में कई बार लोकगायक स्वयं ही गाते हैं, स्वयं ही अभिनय तथा नृत्य भी करते हैं। अनेक बार अभिनय तथा नृत्य अन्य कलाकारों द्वारा किया जाता है। इससे विडियो आकर्षक लगते हैं।इससे हमारी वर्तमान युवा पीढी जो कि पूरी तरह हॉलीवुड तथा बॉलीवुड संगीत के प्रभाव में है। धीरे-धीरे कुमाऊँनी लोकगीतों से परिचित हो रही है।

कुमाऊँनी लोकगीतों के विडियो में पहाडी लोक गीतकार युवतियां घाघरा चोली पहने, सिर पर कपड़ा बाँधे, चूड़ियाँ, बिंदिया, गलबंद-पौंजी, नथ पहने, पिछौड़ा ओढे, पौंजी पहने, धीमा- धीमा नृत्य करते हुए, हाथों को लहरा- लहरा कर चलती है। अधिकतर वीडियो में पहाड़ी पुरुष कुर्ता- पजामा पहने, कमर पर कपड़ा बाँधे, धीमा- धीमा नाचते-गाते दिखाई पड़ते हैं। कोई लोकगीतों में स्त्री- पुरुष एक दूसरे का हाथ, कमर या कंधा पकड़कर सामूहिक नृत्य करते दिखाई पड़ते हैं। इन दिनों लोकगीतों के वीडियो में कलाकार सूट, साड़ी, पैंट- कमीज पहने पश्चिमी नृत्य करते भी दिखाई पड़ रहे हैं। अधिकतर कुमाऊँ लोकगीतों के वीडियो में पर्वतीय वातावरण ही दर्शाया जा रहा है। भौतिक जगत की भागदौड़ एवं शोर से दूर- शांत, सुरम्य, नदी- घाटियाँ, पर्वत, वातावरण में बांसुरी बजाता लोकगायक सचमुच पहाड़ का सजीव वातावरण हमारे मन को भीतर तक छू लेता है। परदेशों में रह रहे पर्वतीय लोगों को यह लोकगीत पहाड़ी भाषा में 'निशास' से भर देते हैं।

कुमाऊँनी लोकगीत भी अलग- अलग प्रकार के हैं। न्योली, हुड़कावोल, जोड़, चांचरी, थइया, देवगाथात्मक, वीरगाथात्मक, मुक्तक इत्यादि। न्यौली विरह के गीत हैं। जो अत्यंत मार्मिक तथा मन को छू लेने वाले हैं। हुड़का बोल किसी समय अत्यधिक

प्रचलित थे। लेकिन वर्तमान समय में हुड़का बोल की परंपरा विलुप्त होती जा रही है। हुड़का बोल कृषि से संबंधित गीत है जो खेती के समय किसानों को श्रम करने, उनमें जोश जगाने के लिए गाए जाते हैं। इसमें हुड़का बजाया जाता है। पिछले कुछ वर्षों में कुछ कुमाऊँनी लोकगीत अत्यंत लोकप्रिय हुए हैं। वैवाहिक कार्यक्रमों में डी.जे. पर कई कुमाऊँनी लोकगीत कान में डबल झुमका, हीरा समधिनी, फुर-फुर की फुरी रटन , टक टका टक कमला, संगीता मैं फोन करूंलो, नैनीताल की माधुली नृत्य के साथ गाए जाते रहे हैं । इसके साथ ही अन्य लोकगीत हाय तेरो रुमाला, सिलगढी का पाला चाला, बेडू पाको बारामासा, तेरी भोली अनवारा, सुवा रिसैगो सदाबहार गीत हैं। यह निरंतर गाए जाते रहे हैं। तथा लोकप्रिय हुए हैं। इसी बीच पिछले दिनों किशन महिपाल का लोकगीत फ्योलडिया, तेरो मेरो साथ छयो पैला जन्म मां सुपर हिट रहा । बालीवुड से प्रभावित इस गाने की विशेषता यह है इसमें रैप का भी प्रयोग हुआ है। कुमाऊँनी लोकगीत में रैप का प्रयोग नई पीढ़ी को अत्यधिक लुभा रहा है। इस गाने पर न जाने कितने नए-नए नृत्य वीडियो भी बन चुके हैं। कुमाऊँनी लोकगीतों में रैप जैसा नवीन प्रयोग श्रोताओं व दर्शकों में नवीन आशा का संचार कर रहा है। आज अनेक नवीन कुमाऊँनी लोकगीतकार हमारे समक्ष उभरकर आ रहे हैं। जिसमें प्रमुख है-- गजेंद्र, कल्पना, बलबीर राणा, आशा देवी, फौजी ललित मोहन जोशी, रमेश बाबू जोशी, नवीन पाठक, हेमंत भट्ट इत्यादि। पिछले दिनों कुमाऊनी प्रथम लोक गायिका कबूतरी देवी को राष्ट्रपति द्वारा सम्मानित किया गया । निश्चय ही यह पूरे लोकगीत कारो का सम्मान है। लोकगीत कारों को सम्मान देना, बढ़ावा व प्रोत्साहन देना, लोकगीतों में नवीन प्रयोग निश्चय ही कुमाऊँनी लोकगीत में नई संभावना को जन्म दे रहा है।

संदर्भ पुस्तकें एवं पत्रिकाएं

1. उत्तराखंड का सांस्कृतिक इतिहास- डी.डी. शर्मा

2. अमर उजाला

3. यूट्यूब

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MIGRATION AND HIGHER EDUCATION IN UTTARAKHAND (SPECIAL REFERENCE TO GOVERNMENT COLLEGES)

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ABSTRACT

Migration is one of biggest problem of the country. The skilled human resources are migrating frequently to metropolitan cities for searching good opportunities. Uttarakhand is most affected state of India. In Uttarakhand, higher educational institutions are also affected by this problem. Quality education is one of the biggest cause of migration of students in government higher education institutions. The primary reason of migration from Uttarakhand is searching better education, which leads for better employment. For the better employment and education, people migrate from underdeveloped and developing areas to developed ones. In this research paper, we have analysed the reasons of migration of students of government higher education institutions of Uttarakhand in search of higher education in other states. Paper is based on secondary data.

***Key Words:** Higher Education, Migration Uttarakhand*

1) INTRODUCTIUON

Migration means movement from one part of a place to another, introduction of this word is dated back to the origin of human life. Migration is not only related to the humans but the animals also migrate for their survival. During early age, people used to move from one place to another place for searching food and shelter. Gradually people started moving towards civilization and started living in group. When the need arose, people moved from one place to other place to find fertile land for agriculture. In modern era migration has become an important feature of social and economic life. Today, there are various issues like poverty, food, insecurity, violent conflicts, political insecurities, persecution and environmental destruction, education, employment etc. which prompt individuals to leave their home in search of safety and better life. Manifestation of underdevelopment is the root causes of national and international migration, it specifically includes push-factors such as income disparities between areas, socio-economic instability, and population pressures. Migration

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can be good for individuals who migrate for their own development but it adversely affects the development of countries of the origin through loss of essential human resources, often referred to as "brain drain", as well as through potential depletion of the national labour force

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Thomas Hardy the great regionalist

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Hardy, eminent novelist and poet of late Victorian era, as added might & majesty, greatness & grandeur and breadth & depth to English novel. Hardy treated the novel seriously as a form of art which should offer not only a representation of human life but also an interpretation of it, using the country side as the background ans simple almost primitive, human beings a characters.

A regional novel is a novel which deals with the life, customs, manners, etc. of some particular region. The distinctive features of the chosen region are stressed. Hardy is a great regional novelist, and Wessex is the region which forms the scene of action for all Hardy's works. Hardy's wessex has been geographically indentified with South-Western England. The scene changes from place to place in his various works. However, casterbridge can be closely indentified with Dorchester, the region to which Hardy belonged the scene and the character of Hardy's work belong to this region. The pastoral and legendry aspects of these regions have been explored in great details by Hardy. According to Entice Andrew the early novels of Hardy can 'be grouped as enclosed landscapes' and established him firmly as a regional novelist.

A regional novel is a novel which deals with the physical features, people, life, customs, habits, manners, traditions, language etc., of a particulars ality but regionalism does not mean the factual reporting or photographic reproduction.

Hardy is one of pioneers of the regional novels. In his novels he has created the background of the Southern England like Scoult'l he has portrayed the life of the people living in the country side. The details of the Wessex country side are partially realistic and partially un-realistic.

Hardy has used Wessex for the South-West countries especially Dorset which form the setting of his novel, the people and the country side of Wessex signify for Hardy the archetypal forms of human existence. R.A. Scott James observes. "During the whole of his novel writing period when he was at his

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Equation of state and lattice parameter of SnO_2 nanomaterial

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Abstract

We developed a simple theoretical model to study the effect of pressure, temperature, shape and size on nanomaterials. We used the model to study the Equation of state (EOS) and pressure dependence of lattice parameter of SnO_2 nanomaterial. We selected SnO_2 as an example because of the fact that the required experimental data are available so that a comparison of the results may be presented. We used the model to study the compression behaviour at room temperature and compared our results with the experimental data as well as with those based on Birch- Murnaghan Equation of state (BMEOS). Our results are found to present a good agreement with the experimental data as well as with those based on BMEOS. Due to the simplicity and applicability of the model, we extended our studies at different temperatures i.e. 300 K, 500 K and 700 K. A shift in the isotherms has been obtained. We also included the effect of shape and size in the EOS model to make it widely applicable for nanosystems. The results of pressure dependence of lattice parameter for SnO_2 are compared with available experimental data. A good agreement between theory and experiment supports the validity of the model developed.

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Keywords: Equation of state; lattice parameter; nanomaterial

1. Introduction

SnO_2 nanoparticles are of quite research interest due to their unique properties at nano-range. They are used in magnetic resonance imaging, gas sensors, catalytic processes and liquid crystal displays [1]. A phase transition series

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Specific heat and thermal conductivity of nanomaterials

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A model is proposed to study the size and shape effects on specific heat and thermal conductivity of nanomaterials. The formulation developed for specific heat is based on the basic concept of cohesive energy and melting temperature. The specific heat of Ag and Au nanoparticles is reported and the effect of size and shape has been studied. We observed that specific heat increases with the reduction of particle size having maximum shape effect for spherical nanoparticle. To provide a more critical test, we extended our model to study the thermal conductivity and used it for the study of Si, diamond, Cu, Ni, Ar, ZrO_2, $BaTiO_3$ and $SrTiO_3$ nanomaterials. A significant reduction is found in the thermal conductivity for nanomaterials by decreasing the size. The model predictions are consistent with the available experimental and simulation results. This demonstrates the suitability of the model proposed in this paper.

Keywords: Specific heat; thermal conductivity; size and shape.

1. Introduction

Nanomaterials have been of great research interest in recent years due to their different unique properties. Their size- and shape-dependent properties can be tuned by using different synthesis techniques. To synthesize or design them, a good knowledge of their thermodynamic properties like melting temperature, specific heat, thermal conductivity etc. is required.[1] Potential applications for thermoelectric devices in different areas and solid state managements have made the engineering of thermoelectric materials an active area of research.[2,3] Advancements in materials and processing techniques have paved the way to produce scalable, cost effective materials

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Effect of size and shape on melting and superheating of free standing and embedded nanoparticles

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ABSTRACT

A simple model is proposed to study the size and shape dependence of melting and superheating of nanomaterials. The size dependence of melting temperature of free standing spherical nanosolids viz. Ag, Au, Al and Zn nanowire as well as embedded nanoparticles Pb and Ag is reported. The formulation is used to study the effect of shape on melting temperature during reduction of size. The different shapes of nanomaterials viz. film, icosahedral, wire, spherical, hexahedral, octahedral and tetrahedral are considered. The size and shape dependence of surface atoms, total number of atoms and their ratio is computed. The results obtained are compared with the available experimental data and discussed in the light of recent investigations. A good agreement between model predictions and experimental data supports the validity of the formulation developed. It is concluded that in addition to the size, the shape of nanomaterials also plays an important role during the behaviour of nanomaterials.

1. Introduction

At present, synthesis of nanoparticles is very common due to their various applications in different fields. Nanoparticles have unique properties which depend on size and shape [1]. Melting is a very common phenomenon but still unclear. Different theories of melting have been proposed, which are still waiting to a test for small systems [2]. Just after the first report on the size dependent melting temperature of small particles by means of transmission electron microscope [3], a lot of attention was paid to this basic phenomenon. It has been observed that the melting temperature of metallic, organic and semiconductor nanoparticles decreases with decreasing their particle size [4–7]. This simply means that their melting temperature is less as compared with the corresponding bulk materials. The size dependence of melting temperature is well known at present [8], which results due to high surface to volume ratio and the surface substantially affects the interior (bulk) properties of nanomaterials. Many models tried to explain the size dependent melting temperature, based on the fact that nanoparticles are ideal spheres. Since the size dependence results from the large surface to volume ratio, the surface areas of nanoparticles will be different in different shapes and area difference is large in small particles. Thus, the nanomaterials are challenging because they exhibit strong size and shape effects. A good understanding of size and shape dependence may help us to make best use of the advantages and bypass the disadvantages of nanomaterials. Many investigations show that the melting temperature of free standing nanoparticles decreases as particle size decreases. However, the melting temperature increases for embedded nanoparticles [9].

Qi [10] developed a simple model and predicted that the melting temperature of free standing nanosolids decreases with decrease in the particle size. The results have been reported for Sn and Pb nanoparticles and In (nanowire and nanofilm). A good agreement between theoretical and experimental results demonstrates the validity of the model proposed. Due to the simplicity and applicability, the model needs its wide applicability in addition to its application for free standing nanosolids in the shape of nanowire and nanofilm [10]. Since nanomaterials exist in many shapes [1,11] and therefore, it is legitimate and may be useful to extend the model for different nanomaterials in different shape, which is the purpose of present paper. We considered free standing nanosolids (Ag, Au, Al and Zn) and embedded nanoparticles (Pb and Ag) in different shapes i.e. film, icosahedral, wire, spherical, hexahedral, octahedral and tetrahedral to study the size effect on melting temperature. The theoretical formulation has been reported in Section 2, results and discussion in Section 3.

2. Theoretical formulation

It is well known that in the field of nanoscience and technology, the hardness of the material plays a very important role. The hardness of the material typically increases with decreasing grain size, a phenomenon known as Hall-Petch Effect (HPE). However, Schiotz et al. [12] presented computational simulations of the deformation of nanocrystalline copper,

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