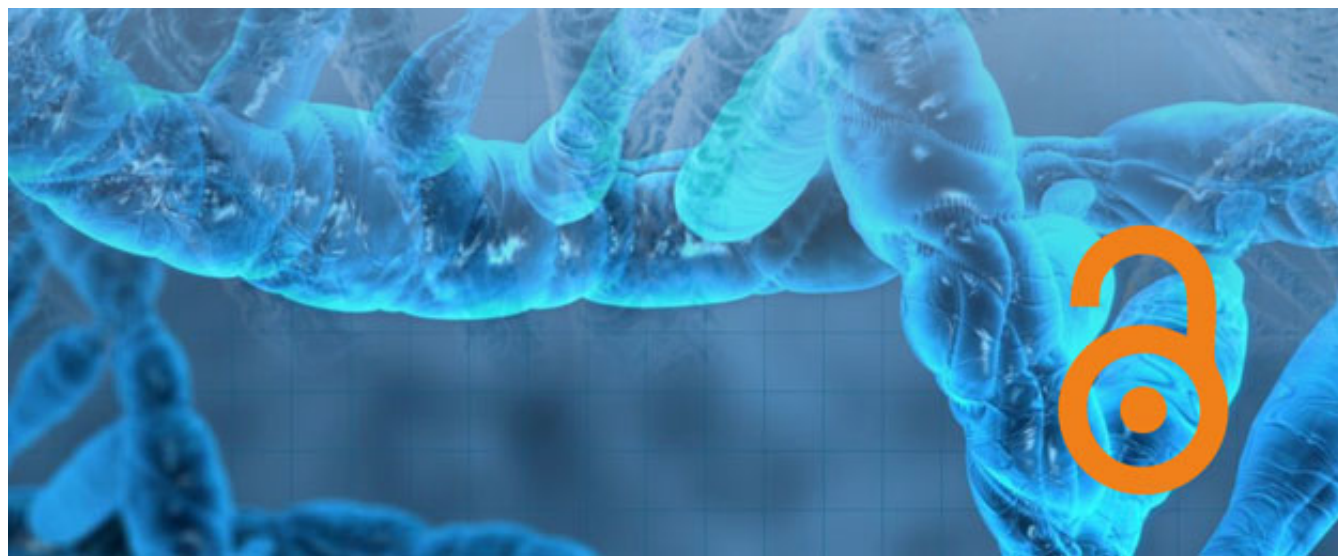


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Volume 1

ISBN: 978-81-935757-1-0

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Author(s): Diwesh Chawla*; Ashok Kumar Tripathi; Meera Sikka

Diabetes mellitus is a group of metabolic disorders leading to defects in insulin secretion and action of insulin or both. Diabetes is caused by a combination of hereditary and environmental factors. In the human body, blood glucose levels are controlled

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Author(s): Arvind Kumar Shakya*

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Microbial Cellulase and Xylanase: Their Sources and Applications

Author(s): Manik Prabhu Narsing Rao; Wen-Jun Li*

Cellulose and xylan, the two major constituent of lignocellulose are the most abundant and renewable resource available on earth. Cellulose and xylan are complex substrates and their complete hydrolysis requires a variety of enzymes.

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Recent advancement to target Breast Cancer and Cancer Stem Cells

Author(s): Prem Prakash Kushwaha and Shashank Kumar*

Breast cancer is the second most prominent reason of cancer death in women after lung cancer, and it accounts for 25.2% of all cancer in women [1]. In the US, approximately about one in eight women (12%) develop invasive breast cancer [2]. In 2015, approximately 40,290 US women were expected to die from breast cancer. There was an estimation of 231,840 new cases of invasive breast cancer among US women in 2015 [3]. The chance of breast cancer causes woman's death is about 3%. Various kinds of therapies such as hormonal, immunotherapeutic agents, surgery and cytotoxic currently are being used to target the breast cancer. The response rate from these treatments comprises 60% to 80% for primary breast cancers and about 50% for metastases [4,5]. However, 20%-70% of patients showed reversion of cancer within five year of time [6]. Recurrence development allied with resistance to therapy and augmented death risk. In patients with primary breast cancer, combining cytotoxic and radiation therapy with anastrozole attained four-year survival rate of 91.6 % [7]. Gene mutations and dysregulation has been identified in breast cancers like the enhanced expression of the heparan sulfate interacting protein, p53 mutations (connecting with high histological grade) and mitochondrial D-loop mutation (allied with lymph node-positive breast carcinoma) [7].

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Anti-advanced glycation end product therapies in diabetic vascular complications

Author(s): Pawan Kumar Kare; Rishila Ghosh; Diwesh Chawla; Ashok Kumar Tripathi*

Advanced glycation end products (AGEs) are formed by non-enzymatic reaction between reducing sugars and proteins, lipids or nucleic acids. Interaction of AGE with its receptor; receptor for advanced glycation end product (RAGE) elicit

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Genetic Understanding of Stroke Treatment: Potential Role for Phosphodiesterase Inhibitors

Phosphodiesterases: CNS Functions and Diseases pp 445-461 | Cite as
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Abstract

Phosphodiesterase (PDE) gene family is a large family having at least 21 genes and multiple versions (isoforms) of the phosphodiesterase enzymes. These enzymes catalyze the inactivation of intracellular mediators of signal transduction such as cAMP and cGMP and therefore, play a pivotal role in various cellular functions. PDE inhibitors (PDEI) are drugs that block one or more of the five subtypes of the PDE family and thereby prevent inactivation of the intracellular cAMP and cGMP by the respective PDE-subtypes. The first clinical use of PDEI was reported almost three decades ago. Studies later found the ability of these compounds to increase the levels of ubiquitous secondary messenger molecules that can cause changes in vascular tone, cardiac function and other cellular events and thus these findings paved the way for their use in various medical emergencies. PDEs are found to be distributed in many tissues including brain. Therefore, new therapeutic agents in the form of PDEI are being explored in neurodegenerative diseases including stroke. Although studies have revealed their use in cerebral infarction prevention, their full-fledged application in times of neurological emergency or stroke in specific has been very limited so far. Nevertheless, recent investigations suggest PDE4 and PDE5 inhibitors to play a vital role in mitigating stroke symptoms by modulating signaling mechanisms in PDE pathway. Further, extensive research in terms of their pharmacological properties like dosing, drug specific activities, use of simultaneous medications, ancillary properties of these compounds and studies on adverse drug reactions needs to be carried out to set them as standard drugs of use in stroke.

Keywords

Phosphodiesterases Phosphodiesterase inhibitors Stroke Rolipram Therapeutic potential

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Notes

Conflict of Interest

The authors declare that they have no conflicts of interest.

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About this chapter

Cite this chapter as:

Munshi A., Das S. (2017) Genetic Understanding of Stroke Treatment: Potential Role for Phosphodiesterase Inhibitors. In: Zhang HT., Xu Y., O'Donnell J. (eds) Phosphodiesterases: CNS Functions and Diseases. Advances in Neurobiology, vol 17. Springer, Cham. https://doi.org/10.1007/978-3-319-58811-7_16

First Online

28 September 2017

DOI

https://doi.org/10.1007/978-3-319-58811-7_16

Publisher Name

Springer, Cham

Print ISBN

978-3-319-58809-4

Online ISBN

978-3-319-58811-7

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Electronic properties of Phosphorene/MoSe₂ vertical hetero-structures

AIP Conference Proceedings 1832, 050049 (2017); <https://doi.org/10.1063/1.4980282>Sumandeep Kaur¹, Ashok Kumar², Sunita Srivastava¹, and K. Tankeshwar³

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ABSTRACT

We report three structurally different and stable phases of MoSe₂ namely h-MoSe₂ (trigonal prismatic phase), t-MoSe₂ (distorted octahedral coordinated phase) and o-MoSe₂ (consisting of repeated octagon pairs) and their hetero-structures with black phosphorene. The MoSe₂-octa phase possesses graphene-like character i.e. Dirac cone feature at the Fermi level. All the considered hetero-structures are energetically equally favorable. The h-MoSe₂/black-P is found to be a semiconductor in nature while on the other hand t-MoSe₂/black-P and o-MoSe₂black-P are metallic. These novel hetero-structures may be useful in the fabrication of nano-electronic devices based on phosphorene hetero-structures.

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Electronic properties of ultrathin 2D and 1D alloyed nanostructures of stanene

AIP Conference Proceedings **1832**, 090049 (2017); <https://doi.org/10.1063/1.4980602>Geeta Sachdeva¹, Chandra Kumar¹, K. Tankeshwar², and Ashok Kumar^{1,*}[View Affiliations](#)[View Contributors](#) PDF

ABSTRACT

Electronic structure of two dimensional (2D) and one dimensional (1D) ultrathin alloyed nanostructures of stanene has been investigated within the framework of state-of-the-art density functional theory (DFT). Ultrathin stanene is Dirac semimetal with linear dispersion of bands at K-point, whereas ~ 0.2 eV energy gap get induced in alloyed stanene, thereby, offers wide variety of application at nanoscale. Furthermore, the mechanical strength of alloyed stanene increases from 1.6 GPa in pristine monolayer to 2.2 GPa in alloyed nanostructure. Various topologies of 1D nanostructures are found to metallic in nature with calculated ballistic conductance in the range $2G_0$ to $4G_0$. Our theoretical predictions may be useful for experimentalist to fabricate devices based on ultrathin nanostructures of alloyed stanene.

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Electronic properties of Phosphorene/MoSe₂ vertical hetero-structures

AIP Conference Proceedings 1832, 050049 (2017); <https://doi.org/10.1063/1.4980282> PDF

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ABSTRACT

We report three structurally different and stable phases of MoSe₂ namely h-MoSe₂ (trigonal prismatic phase), t-MoSe₂ (distorted octahedral coordinated phase) and o-MoSe₂ (consisting of repeated octagon pairs) and their hetero-structures with black phosphorene. The MoSe₂-octa phase possesses graphene-like character i.e. Dirac cone feature at the Fermi level. All the considered hetero-structures are energetically equally favorable. The h-MoSe₂/black-P is found to be a semiconductor in nature while on the other hand t-MoSe₂/black-P and o-MoSe₂black-P are metallic. These novel hetero-structures may be useful in the fabrication of nano-electronic devices based on phosphorene hetero-structures.

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Published Online: 23 May 2017

First principles study of electronic and thermoelectric performance of Li intercalated MoSe₂ nanotubes

AIP Conference Proceedings **1832**, 140036 (2017); <https://doi.org/10.1063/1.4980818>Munish Sharma^{1,*}, Ashok Kumar², Ravindra Pandey³, and P. K. Ahluwalia¹[View Affiliations](#)[View Contributors](#) PDF

ABSTRACT

We present a comparative study of pristine and Li intercalated MoSe₂ nanotube of armchair (6, 6) and zigzag (10, 0) chirality within the framework of density functional theory (DFT). Pristine nanotube is found to have band gap which vanishes upon Li intercalation. Additionally, Li intercalation results in reduction of room temperature ZT_e for armchair MoSe₂ nanotube and enhancement in ZT_e for intercalated zigzag MoSe₂ nanotube as compared to respective pristine nanotubes. Our results suggest that Li intercalation leads to a relatively high Seebeck coefficient which may enhance the thermoelectric performance of zigzag MoSe₂ nanotube.

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Optimization of salt concentration in polymer based ionic conductor

AIP Conference Proceedings 1860, 020020 (2017); <https://doi.org/10.1063/1.4990319>

Deep Kumar Thakur^{1,2,a)} and A. L. Sharma^{3,b)}

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ABSTRACT

Free standing polymeric films (electrolytes) have been prepared by PAN as a polymer host and Li salt (LiPF_6) using the standard solution cast process. Interaction of polymer–salt complex of the host matrix has also been observed in the Fourier transform infrared (FTIR) spectrum results. The cation (Li^+) coordination at nitrile ($-\text{C}\equiv\text{N}$) site of the polymer backbone along with the appearance of a shoulder suggesting strong evidence of polymer–ion interaction. Field Emission Scanning Electron Microscopy (FESEM), was used to study morphological information of grain boundaries and cracks while Complex impedance spectroscopy suggests bulk electrical conduction. Solid electrolytes provide advantages in terms of simplicity of design and operational safety, but typically SPE's have the conductivities that are lower than those of organic liquid electrolytes.

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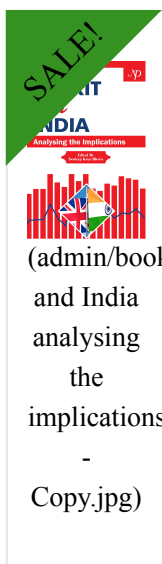
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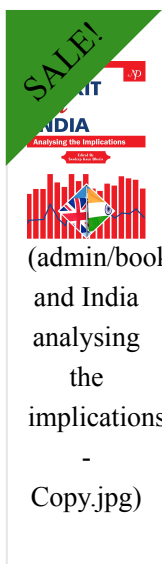
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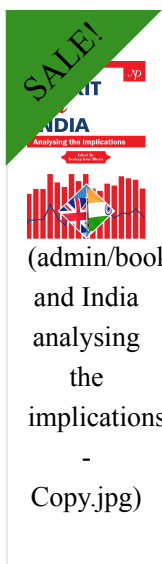
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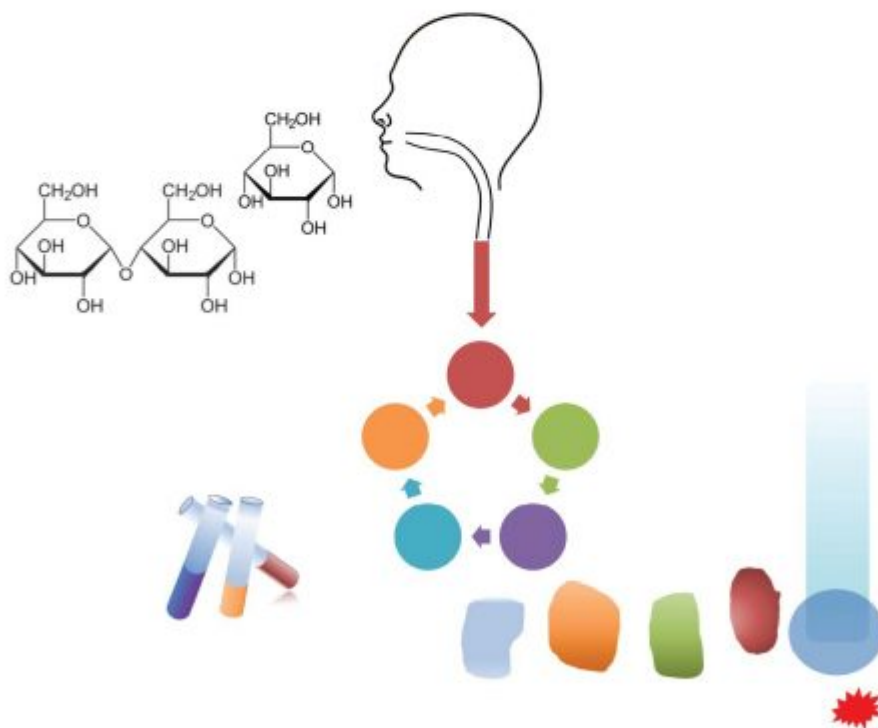
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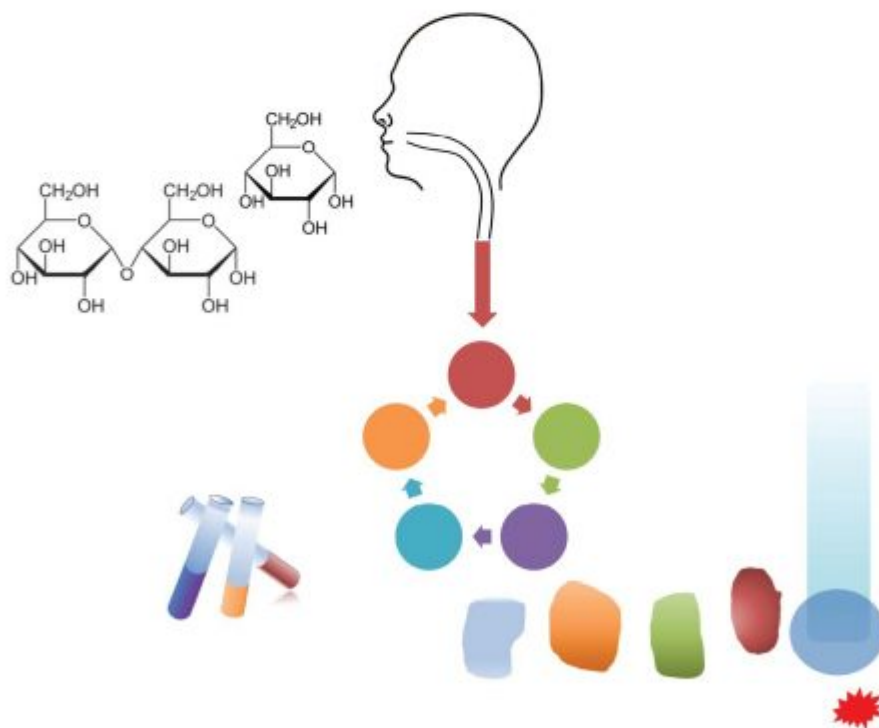
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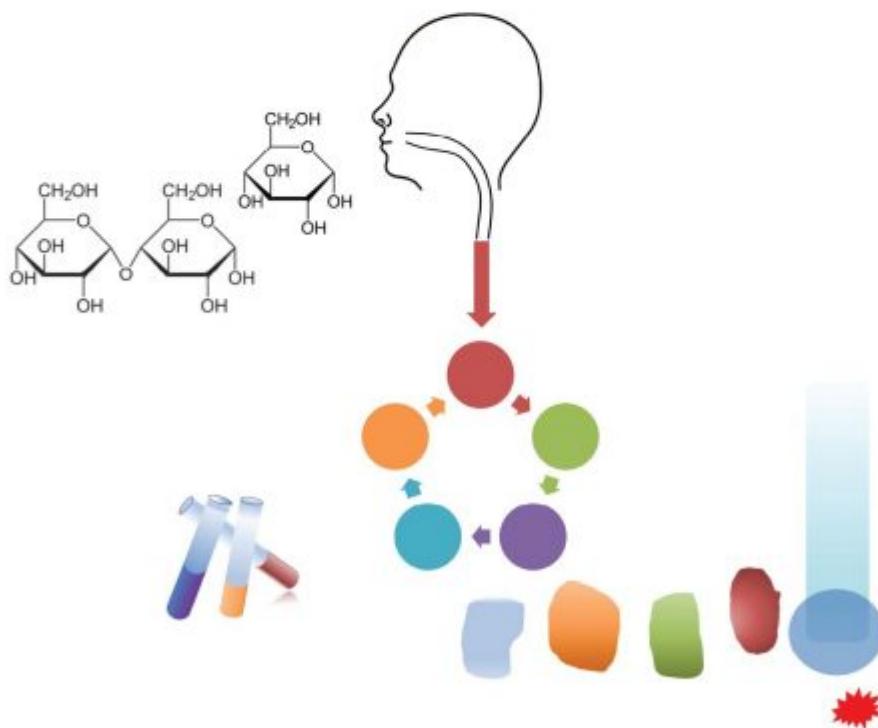
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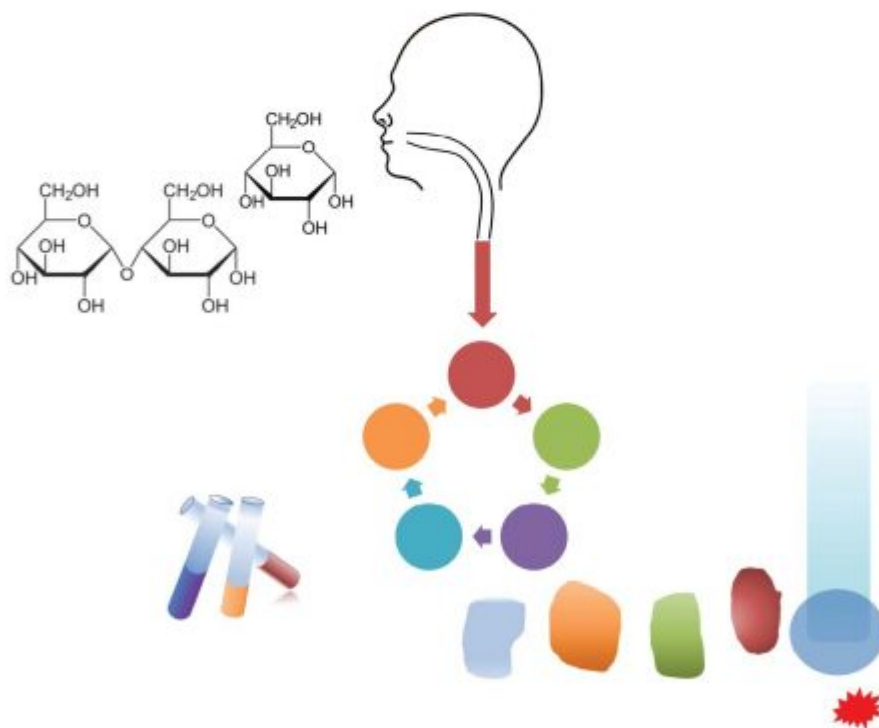
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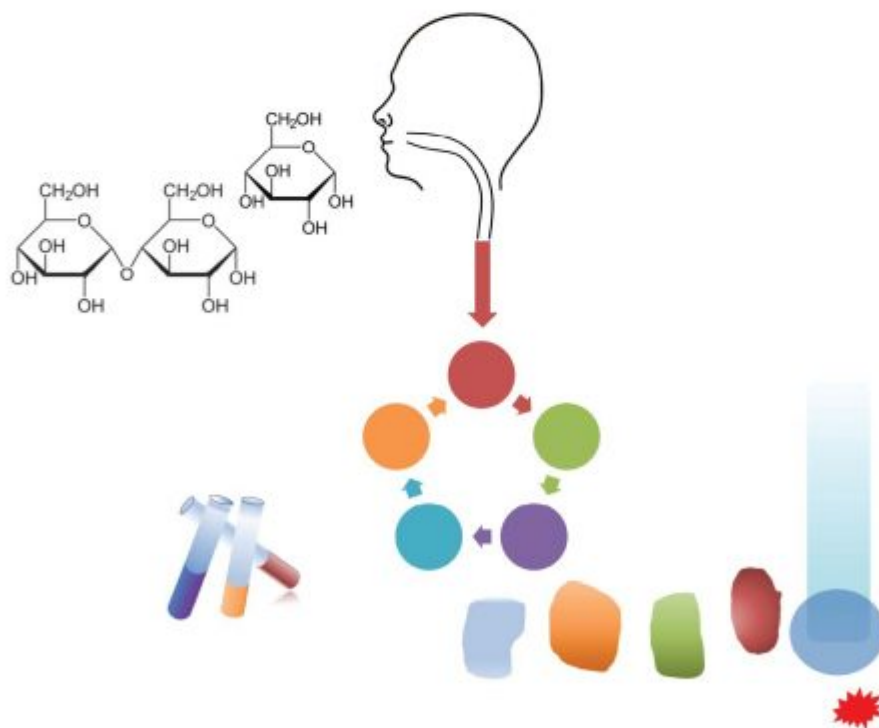
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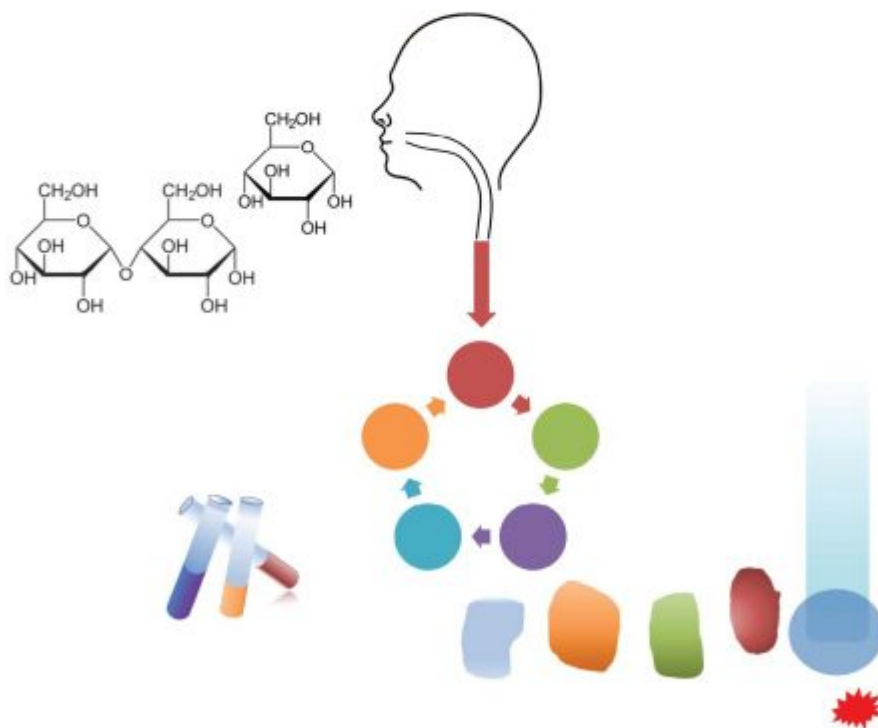
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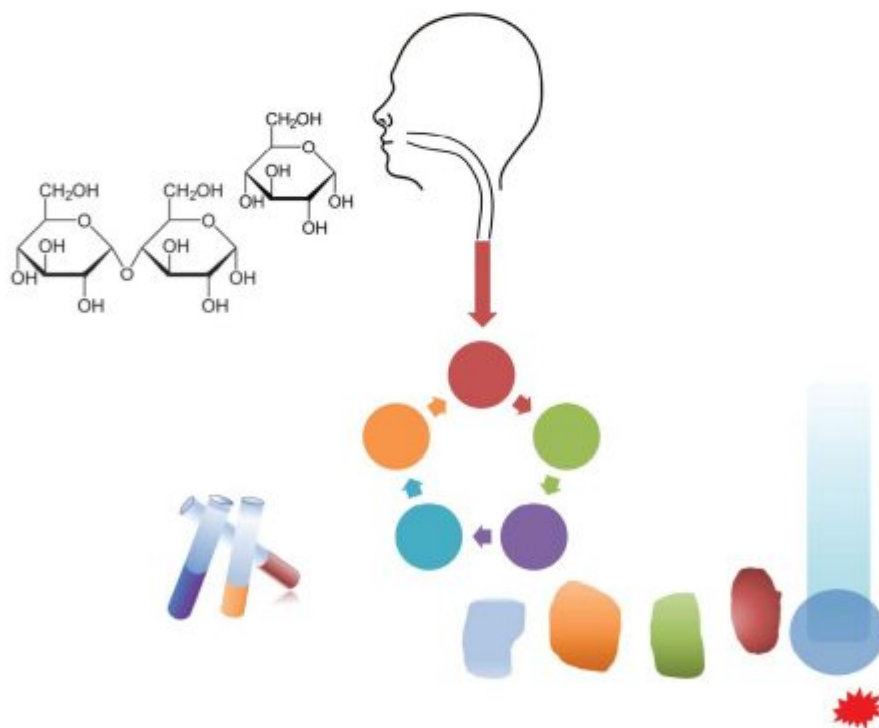
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Systemic Concerns of Teacher Education in 21st Century



Prof. Madhu Gupta

CHAPTER 22

Classroom Clicking: A Catalyst for Educational Transformation

Dr. Shamshir Singh & Dr. Ranjit Kaur

INTRODUCTION

Today we have moved from the age of knowledge creation to the age of knowledge management which can be effectively exploited by providing adequate attention to understand the technology, the process & issues of education and abilities of the students. Bhatia (2011) advocates that Education has become indispensable not only for its own sake for making people literate and knowledgeable, but also as a means of empowering them and for the development of society. Without education, the technological revolution that continues unabated would not have been possible in our lives. E-Learning Technology has transformed each and every field and our lives beyond imagination. During the course of last few years, social media technologies such as Blogs, Micro blogs, Digital videos, wikis, podcasts and social Networking sites (SNS) have seen a dramatic increase in their use, especially among the young generation. These tools are described as social networking technologies underlining their ability to facilitate the establishment of networks. Social Networking sites (SNS) such as 'Facebook' or 'twitter' have proved to be extremely effective in connecting people and in facilitating the exchange of information. In addition SNS also fits well the requirements of a social constructivist approach to Education.

*"For most of us
teaching is not just what
earns our paycheck.
Teaching is what we
were put on earth to do."*

Robert John Meehan



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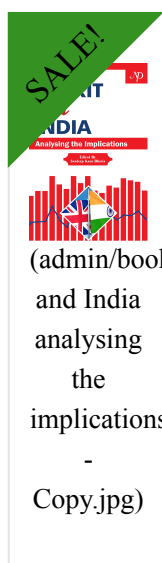
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ISBN NO:9789386453273

PAGES: 221

COVER: P.E. Hardbound

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Since both EU and UK are of paramount importance to Indian economy, Brexit has a significant impact on Indian Economy. In view of this, the present book aims at disclosing the possible impact of Brexit on the Indian economy in particular. This book is an outcome of ICSSR Sponsored seminar 'Brexit and India: Analysing the Implications' held on 17-18th

March 2017 at the Centre for Economic Studies, Central University of Punjab, Bathinda. The book is divided into three parts: India-UK Bilateral Trade, India-UK Bilateral Trade in Services and Political and Economic Relations between India and the UK. Further, the book disseminates knowledge and information on the various themes particularly India-UK bilateral trade (merchandise and services), FDI, migration etc.



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EFFICACY OF FINANCIAL INCLUSION POLICIES AND WAY AHEAD



Editors
Sher Singh Sangwan
Gagan Deep

Chapter 24

Financial Inclusion under MGNREGS in Mansa District of Punjab

Sareena Goel and Naresh Singla

I. Introduction

Poor families in general start their activities by their own savings or borrowing from those who themselves may be poor. Perhaps, this is one of the reasons that they are usually caught in vicious circle of poverty. In order to bring them out of this cycle, they require either external aid or own savings. In this regard, the financial inclusion (FI) has been seen as one of the key policy options, where low income groups and underprivileged section of the society can be provided with financial supports at affordable costs, which help them to bear the sudden fall in income shocks and also help to inculcate the habit of thrift.

The government of India has attempted to make social welfare schemes financially inclusive in terms of providing micro-credit, no frills accounts, Direct Benefit Transfer System (DBTS) etc. The common approach of the social security programmes is to create rural assets, infrastructure and provide employment to rural masses. Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is also one of the social welfare schemes, which is considered as a vehicle for inclusive growth to cover the marginalised sections of society. This scheme was launched in 2005 to provide 100 days of ensured work per household in rural areas in order to uplift the living standard of the poor. MGNREGS in Punjab was first launched on 2nd February, 2006, in Hoshiarpur district and later on three more districts, Jalandhar, Amritsar and Nawanshahar were covered under it in 2007. Subsequently, all districts were covered under the MGNREGS in 2008.

MGNREGS is also aimed at inclusive development of rural poor with provisions of equal wages for men and women for the same task, reserving 33 per cent of works for women, provision for unemployment allowance etc. Further, wage payments under MGNREGS were started to be paid through bank accounts and post offices in order to give protection against embezzlement of wages (Adhikari and Bhatia, 2010). Thus, the schemes like MGNREGS have many such provisions, which aim at making the growth financially inclusive.

In India, there exist several studies which have examined the role of MGNREGS in financial inclusion in India. One such study has revealed that the wage payments into the bank accounts for the work carried out benefitted the workers, provided that banking norms were adhered to and workers were able to manage their accounts (Vanaik and Siddhartha, 2008; Adhikari and Bhatia, 2010).

The payment of wages through saving bank accounts led to greater incidence of self-collection and control over the utilisation of wages (Pankaj and Tanka, 2010). As many as 71 per cent of the female workers in Himachal Pradesh were able to meet their own needs with wages earned from MGNREGS (Pankaj and Tanka, 2010). The participation of women in MGNREGS also resulted in increased consumption choices and reduced economic dependence among women, which helped them in registering their substantial contribution to the household income (Ashok and Rukmini, 2010). This also resulted in substantial increase in wages for women under private sector. Further, MGNREGS also led to the reduction of distress migration and increased investment in human capital (Leelavathi, 2010). But, there also exist several problems in the implementation of the scheme, which hampered its progress. The panchayats adopted discriminatory approach in issuing the job cards and not giving the work to the job card holder (Teja et. al., 2013). Distant location of the bank from the village, delay in wage payments, corruption, etc. restricted the benefits of the scheme (Vanaik and Siddhartha, 2008). Further, many a times, the workers were not provided with unemployment allowance and also denied work for longer periods (Leelavathi, 2010). There were also many instances of delay at bank premises, bankers' poor response, besides incurring the

transportation costs by the workers etc. (Xavier and Mari, 2015). Further, it is also observed that the participation of the marginalised sections of the society has fallen under the MGNREGS (Singla, 2015).

Punjab has remained one of the most progressive states in the country, but in recent years, it has witnessed declining growth rate in agriculture, shrinking income and employment, farmer suicides, indebtedness, financial exclusion of landlessness, high dependence of rural labour force in agriculture entailing the problem of disguised unemployment. (Ghuman and Dua, 2008; Singla and Rani, 2015).

The schemes like MGNREGS may have played an important role not only in absorbing the surplus labour, but at the same time, creating productive assets for rural development. In this context, the study has been carried out in one of the most backward districts i.e. Mansa in the state to examine role of MGNREGS in FI. Mansa has the lowest literacy rate and the highest incidence of poverty compared with other districts of Punjab (Census, 2011 and GOP, 2014). Besides, the district along with a couple of border districts has faced the severest agrarian crises due to the recent crop failure. Thus, the rural workers particularly the agricultural labourers are vulnerable to agrarian crises. Therefore, it becomes imperative to understand whether social welfare schemes like MGNREGS can play any role to provide additional income and employment opportunities to the rural workers in the wake of agrarian crises. In this context, the study throws light on the participation of rural workers in MGNREGS and role played by it in terms of financial inclusion.

The paper is divided into four sections. Introduction is presented in section I, Database & Methodology adopted is presented in section II, Discussion of Results are in section III and Conclusion & Policy Suggestions are given in section IV.

II. Database and Methodology

As already pointed out, the study was carried out in Mansa district of Punjab purposely. The sample selection was made through multi-stage random sampling design. Two blocks namely, Budladha and Mansa, were chosen on the basis of the highest number of job cards issued to rural households in the district in 2014-15. Two villages from each

block, one nearest to the block and another farthest from the block were selected. A sample of 25 MGNREGS workers was selected randomly from each selected village. Thus, the survey was carried out with 100 MGNREGS workers. The data was collected using a pre-tested schedule.

III. Results and Discussion

Table 1 shows that socio-economic status of the MGNREGS workers in Mansa district.

Table-1: Socio-Economic Status of the Sample of MGNREGS Workers

MGNREGS workers Characteristics	Male	Female
Age (Years)		
21-30	3(6)	5(10)
31-40	21(42)	13(26)
41-50	10(20)	11(22)
51-60	5(10)	11(22)
61-70	7(14)	8(16)
>70	4(8)	2(4)
Average age (in years)	45.6	47.96
Marital Status		
Married	49(98)	31(62)
Widow/widower	1 (2)	19(38)
Education Level		
Illiterate	23 (46)	42(84)
Up to 5 th standard	8(16)	6(12)
6 th -8 th standard	7(14)	-
9 th -10 th standard	10(20)	2(4)
11 th -12 th standard	2(4)	-
Religion and Caste		
Sikh	46(92)	44(88)
Hindu	4(8)	6(12)
Scheduled Caste	42(84)	44(88)
Backward Caste	4(8)	5(10)
General	4(8)	1(2)
Type of House		
Semi-pucca	28(56)	32(64)
Pucca	17(34)	12(24)
Kachha	5(10)	6(12)

Note: Figures in brackets are percentage to respective total.

Most of the workers working under MGNREGS were in middle age group. About 34 per cent of the MGNREGS workers were in the age group 31-40 years, while 20-22 per cent of male and female workers each were in the age group of 41-50 years. Only 10 per cent of female MGNREGS workers were relatively young i.e. in the age group of 21-30 years, while male workers in this category were only 6 per cent. Further, 98 per cent of male workers were married and only 2 per cent was a widower. However, only 62 per cent female workers were married and 38 per cent were widows. Thus, participation of the helpless widows may be higher in MGNREGS among the women workers. Male MGNREGS workers were better in education as compared to female workers as 84 per cent of the women were illiterate as compared to 46 per cent male workers. Since large number of respondents were illiterate, a substantial number of people may be unable to perform banking services and susceptible to misguidance by the members of village Panchayats and bank officials.

Further, most of the workers belonged to Sikh community, while Hindus were only 10 per cent. Social category-wise Scheduled Castes were 86 per cent, 9 per cent workers belonged to the Backward Caste and 4 per cent of general caste. All the workers had their own houses but most of them lived in semi-pucca houses. The workers with pucca houses were 34 per cent in case of male and 24 per cent in case of female workers.

Economic Status of the MGNREGA Workers

Most of the MGNREGS workers were landless workers as 14 per cent male and six per cent female possessed land for cultivation. The average size of land owning for male and female workers worked out to be 0.71 acres and 2.17 acres. For about 34 per cent of male and 44 per cent of female workers, the primary occupation was related to farm activities, while 64 per cent male and 28 per cent female workers had primary occupation related to non-farming activities. Thus, male workers mainly worked in the non-farm sector, while female workers worked either in the farm sector or did not do any other work. The distribution of the MGNREGS workers according to their monthly household income revealed that 42 per cent male and 30 per cent of female workers earned a total family income ranging between Rs 4,000

– 6,000 per month. While another 24 per cent male and 18 per cent female workers had a monthly income between Rs 6,000 - 8,000. For 10 per cent male and 14 per cent female workers, per month income was just around Rs 2,000 by all means. Of the remaining, 4 per cent female and 2 per cent male worker had monthly family income between Rs 10,000-14,000. Rest 2 per cent male and 6 per cent female workers had monthly income more than Rs 14,000 (Table 2).

Table-2: Economic Characteristics of the MGNREGS Workers

Particulars	Male	Female
Land Details		
Size of Land (acres)		
< 1	3(6)	1(2)
1-2	3(6)	-
>2	1(2)	2(4)
Average size of land owning of workers	0.71	2.17
Occupation-Wise		
Farm		
Casual	10(20)	22(44)
Self-employed	7(14)	-
Non-farm		
Self-employed	5(10)	3(6)
Casual	19(38)	9(18)
Regular	8(16)	2(4)
No work	1(2)	14(28)
Family Income (Rs. per month)		
< 2,000	5(10)	7(14)
≥ 2,000 < 4,000	8(16)	11(22)
≥ 4,000 < 6,000	21(42)	15(30)
≥ 6,000 < 8,000	12(24)	9(18)
≥ 8,000 < 10,000	2(4)	3(6)
≥ 10,000<12,000	1(2)	2(4)
≥ 14,000	1(2)	3(6)

Employment Days and Wages Earned

Table 3 shows the distribution of the MGNREGS workers according to employment days and average daily wages in 2014-15. There were 37 per cent workers who either did not get work or not turned up to work under MGNREGS, while 17 workers were employed for only 1-10 days.

Another 12 per cent male and 34 per cent female workers got work for 11-20 days. Only 3 per cent got work for 31-40 days. Only 2 per cent workers were employed for 41-50 days. There was only 1 female worker who completed 100 days of work under MGNREGS. Thus, the average working day under MGNREGS was found to be only 10 days each for male and female workers. This points highly miserable performance of MGNREGS in terms of providing employment to the job card holders, which in turn has implications for financial inclusion. Table 3 also depicts the wages received by the male and female workers; 32 per cent male and 40 per cent female workers received wages between Rs 150-200 per day, another 23 per cent workers received wages more than Rs 200 per day. The differences in wages were reported on account of the different tasks carried out under MGNREGS and the wages were paid according to the tasks carried out under MGNREGS. Thus, average wage for workers were found out to be around Rs 177 for male and Rs 181 for female workers.

Table-3: Performance of Financial Inclusion under MGNREGS

No. of Days Working under MGNREGS	Male	Female
0	19(38)	18(36)
1-10	9(18)	8(16)
11-20	6(12)	17(34)
21-30	11(22)	1(2)
31-40	1(2)	2(4)
41-50	1(2)	1(2)
51-60	-	-
61-70	1(2)	1(2)
71-80	1(2)	-
81-90	1(2)	1(2)
91-100	-	1(2)
Average no. of working days under MGNREGS	10.21	10.35
Wage Rate (in Rs./day)		
>100≤150	4(8)	-
>150≤200	16(32)	20(40)
> 200	11(22)	12(24)
Workers without work and wage	19(38)	18(36)
Average wage rate (in Rs.)	177	181

Impact of use of Banking Facilities

Table 4 shows the distribution of the workers using banking facilities before and after the amendment in MGNREGS that the wages payments would be paid through banks or post offices. It was found that only 36 per cent of male and 6 per cent of female workers had bank accounts before MGNREGS. After the amendment in 2008, it was found that all male and female respondents had bank accounts. All these accounts were regular savings accounts and all workers particularly women started availing banking facilities mainly because of working under MGNREGS.

Table-4: Availing Banking Facilities Before and After Amendment In MGNREGS

Use of Banking Facilities	Male	Female
Before	18(36)	3(6)
After	50(100)	50(100)

Addressing financial exclusion at grassroots level requires huge effort and resources, hence it requires a longer time to address these imbalances. Therefore, the social welfare schemes like MGNREGS assume a lot of significance in promoting FI. The various problems reported by the MGNREGS workers are presented in Table 5. About 91 per cent of the workers reported delay in wage payments. The lack of sufficient density of banks/post offices has emerged as a major bottleneck, especially in backward areas, leading to major delays in payment of wages. This is a major hindrance in enhancing the financial inclusiveness in backward areas. Further, the scheme has the main objective to provide 100 days of wage employment days to poor rural households. But, in Mansa district, about 88 per cent of the workers pointed limited employment days under the scheme. About 66 per cent workers also reported that the wage rate under MGNREGS was less than the prevailing wages as they could not meet their daily requirements with low wages. This scheme provides a legal entitlement to work as it promises work on demand. But, in ground reality, about 50 per cent workers reported that they demanded work, but village sarpanch did not provide the work. Further, about 38 per cent workers felt uncomfortable about the banking system, as only a few MGNREGS

workers knew about banking procedures and they had to depend on someone else for withdrawing their wages. About 28 per cent workers expressed absence of childcare facilities and first aid kit at work place. About 22 per cent workers reported wrong payment of wages as payments under their names were made in some other states such as Bihar. Further, 20 per cent workers also revealed that that a person from a particular caste group had a higher chance of getting work if the village head belonged to the party supported by that group. The ruling party and opposing party's dispute also created majors hurdles for the success of financial inclusion under this scheme. About 18 per cent workers reported that they were not aware of how wage calculations were made related to the volume of work done. Another 12 per cent workers suggested that the tasks provided by the Sarpanch were too intensive as compared to the wages paid. All this were major hindrances in the larger participation of the workers under MGNREGS and resulted in low financial inclusiveness under the scheme.

Table-5: Problems Faced by MGNREGS Workers

Problems faced under MGNREA	No. of Workers Faced the Problem	Rank
Delay in wage payments	91	1
Not provided 100 days' work	88	2
Less wage under MGNREGS as compared to wages in other fields wage rate.	66	3
Workers demand work, but not provided by the Sarpanch	50	4
Cumbersome banking procedure	38	5
Absence of childcare and first aid kit facilities	28	6
Wrong payments	22	7
Mode of wage calculation is not known	18	8
Too heavy task as compared to the wages paid	12	9

IV. Conclusions and Policy Suggestions

The Government of India in 2008 declared that wage payments under MGNREGS would be made through bank accounts and post-offices to give substantial protection against embezzlement and fraud. It was also expected that payment of MGNREGS wages through banks would lead to greater FI of the poor and marginalised people. The study has brought out that a large portion of the MGNREGS workers were illiterate and most of them were in middle age group of 31 to 40 years. About 38 per cent of female workers were widow. Most of the workers belonged to SC and dwelled in semi-pucca houses. Thus the scheme has maximum benefit to poor families. The average work days were measured 10 days against 100 days' work under MGNREGS. Lack of work and even touring by some workers was main reason for less work days. Further, the wages given were Rs 177 and Rs 181 per days for male and female workers which were very low compared to the existing market wages. The non-timely payment of the wages emerged as one of the major problems which have badly impacted the performance of the scheme. However the financial inclusion through MGNREGS has experienced good success as all workers have saving accounts which was just 36 per cent for male and 6 per cent for female before MGNREG. Some of the challenges in terms of FI were like delay in wage payments, cumbersome banking procedure and a few wrong payments. Despite illiterate base the bank linkage is 100 percent.

It can be further made sustainable as per the suggestions below:

Increasing Days of Work: The field survey revealed that only 1 per cent of the sample workers were able to complete 100 days of employment. This needs to be increase for substantial bank transactions.

Reducing Delays in Payment of Wages to Workers: If wages are paid in time, unnecessary visit to the nearest bank can be avoided.

Worker Friendly Wage Calculation Method: We observed that workers were paid less than the daily minimum wage because archaic wage rates based on finished tasks turned out to be a great threat to the

MGNREGS's development potential. Thus, there is a need to rationalise and simplify task-wage method.

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 Front. Cell. Infect. Microbiol., 14 July 2017 | <https://doi.org/10.3389/fcimb.2017.00319>
 A (<https://doi.org/10.3389/fcimb.2017.00319>)
 Contributions



Funding

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Statement

Acknowledgments

Book Review: Gastrointestinal Physiology and Diseases Methods and Protocols

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A Book Review on Gastrointestinal Physiology and Diseases Methods and Protocols

Andrei I. Ivanov, (New York, NY; Philadelphia, PA: Springer Science + Business Media LLC), 2016, p. 1–353, ISBN: 978-1-4939-3601-4.

The gastrointestinal tract is one of the largest immunological organs and plays a pivotal role in maintaining normal homeostasis in the body. The statement made by Hippocrates more than 2,000 years ago “all disease begins in the gut” still holds true today. Studies in the past decades have revealed the importance of the gastrointestinal tract to human health. Defects in the digestive tract contribute to hundreds of medical conditions. Building upon the format of the Methods in Molecular Biology series, this book presents 29 protocols (divided into five parts) that mainly focus on the recent development of animal models to study gastrointestinal inflammation and disease progression.

In-vitro organoids have been shown to reflect a normal physiological state and have emerged as an excellent tool to study gastrointestinal physiology, development, and disease progression. The first part of the book provides a protocol for gene editing in mouse organoids using the CRISPR-Cas9 system. The subsequent chapter highlights a co-culture protocol that allows growth of mouse gastric organoids with immortalized stomach mesenchymal cells. This technique allows long-term *in-vitro* culture to study gastric cell physiology and host–pathogen interaction. The next chapter delineates a novel three-dimensional culture system that closely resembles the microenvironment of the intestinal stem cell niche and allows for long-term culture of primary gastrointestinal organoids for various studies. This section also covers tools to study HPLC and NMR-based metabolomics analysis of inflammatory bowel disease progression via the utilization of *in-vitro* cell-based assays and intestinal tissue samples. Additionally, two chapters in this section provide a protocol to measure *in-vivo* intestinal permeability using Ussing chambers and a protocol to quantify

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 The second part of the book covers tools for non-invasive *in-vivo* imaging of the gastrointestinal system. The first protocol describes a method to estimate reactive oxygen species generation and stem cell proliferation using candidate bacteria in the germ-free *Drosophila* intestine. The next protocol describes methods for visualization of *in-vivo*

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inflammatory hypoxia in the mouse gut via the use of hydroxyprobe staining and a non-invasive tool: the IVIS

Spectrum imaging system. Using optical coherence tomography, one protocol in this section gives details about the

non-invasive measurement of Eosinophilic Esophagitis (EoE) in a mouse model. The next protocol describes the use of near-infrared fluorescence endoscopy to visualize abnormal lesions developed during acute colitis. Moreover, it also illustrates a tool to measure *in-vivo* protein kinase activity in neutrophils from the inflamed intestine; transgenic mice expressing the FRET biosensor are utilized. The last protocol in this section discusses *in-vivo* imaging of myeloperoxidase, which is enriched in neutrophils, macrophages, and inflammatory monocytes.

The gut-associated lymphoid tissue (GALT) is filled with lymphocytes, macrophages, and other cells that participate in both innate and adaptive immune responses and are essential to maintain homeostasis in the intestine. Three chapters of the third section of the book are devoted to isolating macrophages, dendritic cells, and eosinophils from the mouse intestine. Emerging reports have proven a critical role for T regulatory cells (Treg) in autoimmune diseases such as inflammatory bowel disease and transplanted organ failure. Thus, one chapter elaborates methods to isolate natural T-regulatory (n-Treg) and induced T-regulatory (i-Treg) cells from the mouse intestine. Finally, one protocol in this section depicts a strategy to isolate Innate Lymphoid Cells (ILCs), which play a protective role in bacterial–host interactions.

Inflammatory bowel disease (IBD) is characterized by uncontrolled inflammation in the human intestine, which disrupts permeability and barrier function and causes ulceration in the gut. Animal models can play a crucial role in the study of basic mechanisms of IBD progression and preclinical testing of novel compounds. Thus, the fourth section of the book covers *in-vivo* tools to study gastrointestinal inflammation and injury. One chapter in this section discusses detailed methods to develop an *in-vivo* mouse model of Crohn's disease using tri-nitrobenzoic acid.

Similarly, another chapter details oxazolone-induced colitis. Recent studies have provided compelling evidence concerning a role of the intestinal microbiota in the induction of colitis and cancer progression. One protocol in this section illustrates *Citrobacter rodentium*-induced infectious colitis in a murine model. Further, it also describes a Mongolian Gerbil model to study *Helicobacter pylori* induced inflammation and gastric cancer. Using zebrafish larvae, the last chapter of this section covers details to test novel compounds that protect against intestinal injury induced by the non-steroidal anti-inflammatory drug glafenine.

In the fifth and final section, two protocols detail induction of inflammatory colorectal cancer and colorectal cancer using Azoxymethane/Dextran Sodium Sulfate (AOM/DSS) and the Apc min/+ mouse model, respectively. Using the Apc min/+ mice, the role of environmental factor such as DSS and Sodium deoxycholate (a bile acid modifier) in the *in-vivo* modeling of colorectal cancer is also covered. The next protocol covers an *in-vivo* model to induce gastric adenocarcinoma via selective and reversible loss of parietal cells through use of an estrogen modifier, tamoxifen. The last chapter of the book covers a method to study oral cancer progression using the hamster buccal pouch (HBP) carcinogenesis model; this model uses 7,12-dimethylbenz[a]anthracene (DMBA) to closely recapitulate progression of human oral squamous cell carcinomas.

To summarize, this book is an excellent resource for researchers and physicians working in the area of gastrointestinal inflammation and cancer biology. These protocols will inspire the next generation of scientists that are interested in molecular biology and inflammation to better understand the complex interplay between the gastrointestinal microbiota and the human host, both of which play essential roles in maintaining gastrointestinal homeostasis.

Author Contributions

The author confirms being the sole contributor of this work and approved it for publication.

Funding

Research in Baranwal laboratory is supported by DBT-Ramalingaswami Fellowship grant (DBT/R/S/1/Re-

entry/56/2013), DST-SERB (ECR/2016/000903) grant, and Research Seed Money Grant (GP-25) from Central

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could be construed as a potential conflict of interest.

Acknowledgments

I worked as a Postdoctoral Research Associate in the laboratory of Prof. Andrei I. Ivanov from July 2010 to January 2013 at the University of Rochester, Rochester, NY USA. This review reflects my previous experience in the areas of the pathophysiology of gastrointestinal tract and biology of colorectal cancer.

Keywords: inflammation, mouse model, colitis, ulcerative, imaging, barrier function

Citation: Baranwal S (2017) Book Review: Gastrointestinal Physiology and Diseases Methods and Protocols. *Front. Cell. Infect. Microbiol.* 7:319. doi: 10.3389/fcimb.2017.00319

Received: 20 May 2017; **Accepted:** 28 June 2017;

Published: 14 July 2017.

Book Review

Edited and reviewed by: D. Scott Merrell (<https://loop.frontiersin.org/people/15592/overview>), Department of Microbiology and Immunology, Uniformed Services University, United States

Author

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Funding

Conflict of Interest

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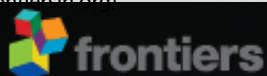


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agriculture has been associated with production of essential food crops. At present, agriculture above farming includes forestry, dairy, fruit cultivation, poultry, bee keeping, mushroom, arbitrary, etc. The livelihood of many people is agriculture. It is hoped that the present edition of this book will be of all concerned of the society, in general and students, lawyers, advocates, academicians, human rights researchers and NGOs working in Agricultural economics field, in particular.

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₹ 995.00

ISBN : 978-93-8357-592-3



Publishers & Distributors

Women Empowerment in Indian Society

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Women Empowerment in Indian Society



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- Cases in which chargesheets were not laid but FR as True Submitted- 25040

Disposal of Crimes Committed Against Women Cases by Courts During 2014

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- No. Of Cases disposed by Plea Bargaining.- 3584
- Cases Compounded or Withdrawn- 15937
- Cases in which Trials were Completed- 124970
- Cases Convicted- 26660
- Cases Acquitted or Discharged- 98310
- Cases pending trial at the end of the year- 982516
- Cases Conviction Rate- 21.3

Conclusion

Therefore there is a need for change in the behaviour of the citizens. The attitudinal changes come through proper education and realisation of the teachings of culture and tradition. As long as there is no turnaround there will be increase in the incidents. The Government needs to take stringent actions against the attackers and offenders. Deterrence to the offenders is a much better choice as the present situation is too deep and widely affected. There is no use of just putting the rights on the paper. Social action on this aspect is also necessary.

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8

Gender Inequality in the Workplace: An overview of Sexual Harassment Act, 2013

Puneet Pathak

"A woman knows very well that, though a wit sends her his poems, praises her judgment, solicits her criticism, and drinks her tea, this by no means signifies that he respects her opinions, admires her understanding, or will refuse, though the rapier is denied him, to run through the body with his pen."

- Virginia Woolf

Introduction

The protection against sexual harassment and the right to work with dignity are universally recognised human rights by international human rights instruments. Universal Declaration of Human Rights and Convention on the Elimination of all forms of Discrimination against Women are ratified by most of the countries of the world which prohibit all forms of discrimination against women. Sexual harassment at workplace results in violation of the fundamental rights of a woman to equality under articles 14 and 15 of the Constitution of India and her right to live dignified life under article 21 of the Constitution and right to practice any profession or to carry on any occupation, trade or business under article 19 which includes a right to a safe environment free from sexual harassment.

The Supreme Court of India in Vishaka case¹ laid down detailed guidelines for protection of women against sexual harassment.² The government of India passed the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 after 15 years of Vishaka Guidelines due to the lack of women's voice in the decision making process. The statute is intended to ensure that women are protected against sexual harassment at all the work places, either in public or private. This will contribute to realisation of their right to gender equality, liberty and dignity in working conditions everywhere. The sense of security at the workplace will improve women's participation in work, resulting in the empowerment of women.

The preamble to the Constitution of India recognises the "equality of status and opportunity" to all its citizens. Further, equality of every person under the law is

guaranteed by Article 14 of the Constitution. A safe workplace is therefore a woman's legal and fundamental right which relate to the dignity of women as guaranteed by Article 21 of the Constitution. Indeed, the Constitutional doctrine of equality and personal liberty is contained in Articles 14, 15 and 21 of the Indian Constitution.³ These articles ensure a person's right to equal protection under the law, to live a life free from discrimination on any ground and to protection of life and personal liberty. This is further reinforced by the UN Convention on the Elimination of all Forms of Discrimination against Women⁴, which was adopted by the United Nations General Assembly in 1979 and which is ratified by the Government of India.⁵ Often referred as an international bill of rights for women, it calls for the equality of women and men in terms of human rights and fundamental freedoms in the political, economic, social, cultural and civil spheres. It emphasises that discrimination and attacks on women's dignity violate the principle of equality of rights. (Desai, 2015)

The issue relating to sexual harassment at workplace as the violation of human rights has been raised at various international forums. The Committee on the Elimination of All Forms of Discrimination against Women recognised that workplace sexual harassment is a form of human rights violation.⁶ It considered sexual harassment as a form of gender-specific violence which includes sexual harassment and impairs the enjoyment by women of several basic human rights and fundamental freedoms.⁷ Declaration on the Elimination of Violence against Women also recognises the right to just and favourable conditions of work.⁸

Beijing Platform of Action, 1995 advocates the elimination of violence against women and advancing women's equality includes the right to be free from workplace sexual harassment⁹ (The Advocates, 2010). UN Division for the Advancement of Women also appealed that the legislation on violence against women should define violence to include sexual harassment. Such legislation should also recognize sexual harassment as a form of discrimination and a violation of women's rights with health and safety consequences.¹⁰ The International Labour Organization (ILO) has also drawn specific attention to domestic workers, who have a right to enjoy effective protection against all forms of abuse, harassment and violence¹¹ (UNHDR, 2013; Handbook MWCD, 2015)

Sexual harassment constitutes a gross violation of women's right to equality and dignity. It has its roots in patriarchy and its attendant perception that men are superior to women and that some forms of violence against women are acceptable. One of these is workplace sexual harassment, which views various forms of such harassment, as harmless and trivial (Shanker, 2012; Kalindri, 2013). Often, it is excused as 'natural' male behaviour or 'harmless flirtation' which women enjoy. Contrary to these perceptions, it causes serious harm and is also a strong manifestation of sex discrimination at the workplace.

Not only is it an infringement of the fundamental rights of a woman, under Article 19 (1) (g) of the Constitution of India "to practice any profession or to carry out any occupation, trade or business"; it erodes equality and puts the dignity and the physical and psychological well-being of workers at risk. This leads to poor productivity and a negative impact on lives and livelihoods (Gupta, 2014). Sexual Harassment at work is an extension of violence in everyday life and is discriminatory, exploitative, thriving in

atmosphere of threat, terror and reprisal. Studies find that sexual harassment is still endemic, often hidden, and present in all kinds of organisations. The issue is of concern for both women and the employers as studies show that sexual harassment touches lives of nearly 40-60% of working women. According to data compiled by the National Commission for Women (NCW), there is a noticeable rise in sexual harassment at the workplace. (Ernst & Young, 2014)

Background of Sexual Harassment Law

Though the issue of sexual harassment at workplace in India has continued to be a serious offence and not something openly discussed about. Before 1997, there was no specific law or guidelines on the issue of sexual harassment at workplace in India and the matter was tackled under Section 354 of Indian Penal Code, 1860. It was only since 1992, when some incidents and cases regarding the sexual harassment at workplace started the debate to tackle the issue by legal means. Devastating consequence in some cases due to lack of legal framework and insensitivity regarding such issue shocked the society in this regard. These cases include Vishaka Case, Rina Mukherjee case¹² and RupanDeol Bajaj case¹³.

The Bhanwari Devi¹⁴ case revealed the ever-present sexual harm to which millions of working women are exposed across the country, everywhere and everyday irrespective of their location. It also shows the extent to which that harm can escalate if nothing is done to check sexually offensive behaviour in the workplace. Based on the facts of Bhanwari Devi's case, a Public Interest Litigation (PIL) was filed by Vishaka and other women groups against the State of Rajasthan and Union of India before the Supreme Court of India. It proposed that sexual harassment be recognized as a violation of women's fundamental right to equality and that all workplaces/establishments/institutions be made accountable and responsible to uphold these rights. (Pereira & Rodrigues, et al., 2014)

In a landmark judgment of Vishaka (1997), the Supreme Court of India created legally binding guidelines basing it on the right to equality and dignity accorded under the Indian Constitution as well as by the UN Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). The Supreme Court defined sexual harassment as any unwelcome, sexually determined physical, verbal, or non-verbal conduct. Examples included sexually suggestive remarks about women, demands for sexual favours, and sexually offensive visuals in the workplace. The definition also covered situations where a woman could be disadvantaged in her workplace as a result of threats relating to employment decisions that could negatively affect her working life. It placed responsibility on employers to ensure that women did not face a hostile environment, and prohibited intimidation or victimization of those cooperating with an inquiry, including the affected complainant as well as witnesses. (Kabta, Kiran, 2015)

It directed for the establishment of redressal mechanism in the form of Complaints Committee, which will look into the matters of sexual harassment of women at workplace. The guidelines extended to all kinds of employment, from paid to voluntary, across the public and private sectors. Vishaka established that international standards/law could serve to expand the scope of India's Constitutional guarantees and fill in the gaps wherever they exist. India's innovative history in tackling workplace sexual harassment

beginning with the Vishaka Guidelines and subsequent legislation has given critical visibility to the issue.

Scope of Sexual Harassment Law

The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013¹⁵ was enacted to ensure safe working spaces for women and to build enabling work environments that respect women's right to equality of status and opportunity. This new legislation makes every effort to be a user friendly constitutional instrument in the hands of the employers and employees, to create safe and healthy working environment at workplace for women.¹⁶ The Act provides provision relating to the prevention of sexual harassment at workplace, protection in case of incident and redressal mechanism for the remedy to victim of sexual harassment.¹⁷ It is applicable not only to organised sector but also unorganised sector. The wide definition of workplace and aggrieved women is also intended to widen the protection of the Act and curb the menace of sexual harassment at workplace¹⁸ (Preetha, et al., 2015).

What is Sexual Harassment at the Workplace?

According to Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 "Sexual Harassment" includes anyone or more of the following unwelcome acts or behaviour (whether directly or by implication), namely:

- Physical contact or advances;
- A demand or request for sexual favours;
- Making sexually coloured remarks;
- Showing pornography;
- Any other unwelcome physical, verbal or non-verbal conduct of a sexual nature¹⁹

In regard to analyse the issue of harassment from the women perspective, the High Court of Delhi in Punita K. Sodhi Case (2010) endorsed the view that sexual harassment is a subjective experience and for that reason held "We therefore prefer to analyze harassment from the [complainant's] perspective. A complete understanding of the [complainant's] view requires...an analysis of the different perspectives of men and women. Conduct that many men consider unobjectionable may offend many women..... Men tend to view some forms of sexual harassment as "harmless social interactions to which only overly-sensitive women would object. The characteristically male view depicts sexual harassment as comparatively harmless amusement. ... Men, who are rarely victims of sexual assault, may view sexual conduct in a vacuum without a full appreciation of the social setting or the underlying threat of violence that a woman may perceive."²⁰

Generally workplace sexual harassment refers to two common forms of inappropriate behaviour. The first form is Quid Pro Quo (literally 'this for that') which includes implied or explicit promise of preferential/detrimental treatment in employment; implied or express threat about her present or future employment status. The second form is Hostile Work Environment which includes creating a hostile, intimidating or an offensive work environment; humiliating treatment likely to affect her health or safety.²¹ Some examples of behaviour that constitute sexual harassment at the workplace are:

- Making sexually suggestive remarks or innuendos.
- Serious or repeated offensive remarks, such as teasing related to a person's

- Offensive comments or jokes.
- Inappropriate questions, suggestions or remarks about a person's sex life.
- Displaying sexist or other offensive pictures, posters, mms, sms, whatsapp, or e-mails.
- Intimidation, threats, blackmail around sexual favours.
- Threats, intimidation or retaliation against an employee who speaks up about unwelcome behaviour with sexual overtones.
- Unwelcome social invitations, with sexual overtones commonly understood as flirting.
- Unwelcome sexual advances which may or may not be accompanied by promises or threats, explicit or implicit.
- Physical contact such as touching or pinching.
- Caressing, kissing or fondling someone against her will (could be considered assault).
- Invasion of personal space (getting too close for no reason, brushing against or cornering someone).
- Persistently asking someone out, despite being turned down.
- Stalking an individual.
- Abuse of authority or power to threaten a person's job or undermine her performance against sexual favours.
- Falsely accusing and undermining a person behind closed doors for sexual favours.
- Controlling a person's reputation by rumour-mongering about her private life.

What is Workplace?

Recognising that sexual harassment of women may not necessarily be limited to the primary place of employment, the Prevention of Workplace Sexual Harassment Act has introduced the concept of an 'extended workplace'. As per the statute, 'workplace' includes any place visited by the employee arising out of or during the course of employment, including transportation provided by the employer for the purpose of commuting to and from the place of employment.

As per this definition, a workplace covers both the organised and un-organised sectors. It also includes all workplaces whether owned by Indian or foreign company having a place of work in India. As per the Act, workplace includes:

- Government organizations, including Government company, corporations and cooperative societies;
- Private sector organisations, venture, society, trust, NGO or service providers etc. providing services which are commercial, vocational, educational, sports, professional, entertainment, industrial, health related or financial activities, including production, supply, sale, distribution or service;
- Hospitals/Nursing Homes;
- Sports Institutes/Facilities;
- Places visited by the employee (including while on travel) including transportation provided by employer;
- A dwelling place or house.²²

The Act defines the Unorganised Sector as:

- Any enterprise owned by an individual or self-employed workers engaged in the production or sale of goods or providing services of any kind;
- Any enterprise which employs less than 10 workers.²³

All women working or visiting workplaces are included in the definition of Workplace. (See, Figure No. 01)

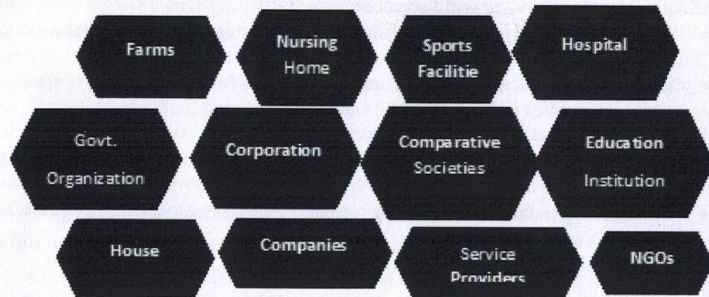


Fig. 1:

Who is Aggrieved Women?

The Act recognizes the right of every woman to a safe and secure workplace environment irrespective of her age or employment/work status.²⁴ Hence, the right of all women working or visiting any workplace whether in the capacity of regular, temporary, ad-hoc, or daily wages basis is protected under the Act. It includes all women whether engaged directly or through an agent including a contractor, with or without the knowledge of the principal employer. They may be working for remuneration, on a voluntary basis or otherwise. Their terms of employment can be express or implied. Further, she could be a co-worker, a contract worker, probationer, trainee, apprentice, or called by any other such name. The Act also covers a woman, who is working in a dwelling place or house²⁵ (See Figure 02).

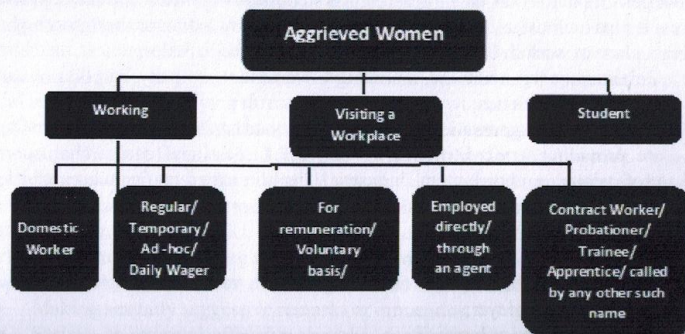


Fig. 1:

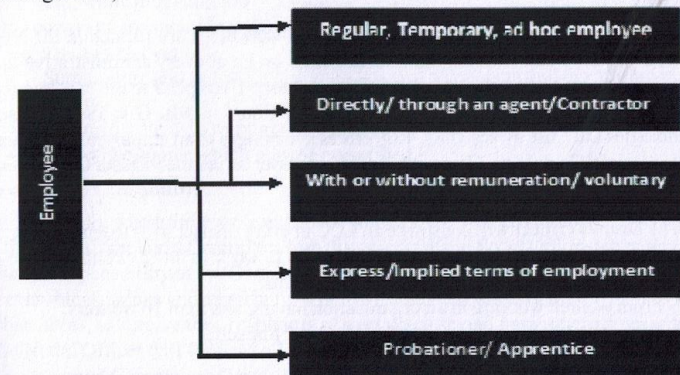
Who is an Employer?

According to the Act an employer refers to:

- The head of the department, organisation, undertaking, establishment, enterprise, institution, office, branch or unit of the Appropriate Government or local authority or such officer specified in this behalf.
- Any person (whether contractual or not) responsible for the management, supervision and control of a designated workplace not covered under clause (i).
- A person or a household who employs or benefits from the employment of domestic worker or women employees.²⁶

Who is Employee?

The definition of an 'employee' under the Prevention of Workplace Sexual Harassment Act is fairly wide and covers regular, temporary, ad hoc employees, individuals engaged on daily wage basis, either directly or through an agent, contract labourers, co-workers, probationers, trainees, and apprentices, with or without the knowledge of the principal employer, whether for remuneration or not, working on a voluntary basis or otherwise, whether the terms of employment are express or implied (See Figure: 03).²⁷



Complaints Committee/sunder the Act:

An important feature of the Prevention of Workplace Sexual Harassment Act is that it envisages the setting up of grievance redressal forums for both organized and unorganized sectors. The Act provides for two kinds of complaints mechanisms: Internal Complaints Committee (ICC)²⁸ and Local Complaints Committee (LCC)²⁹. All Complaints Committees must have 50 per cent representation of women. ICC or LCC members will hold their position not exceeding three years from the date of their nomination or appointment.³⁰

1) Internal Complaints Committee (ICC)

Every employer is obliged to constitute an ICC through a written order. The ICC will be composed of the following members:

No. Member	Eligibility
1. Chairperson	Women working at senior level as employee; if not available then nominated from other office/units/ department/ workplace of the same employer
2. 2 Members (minimum)	From amongst employees committed to the cause of women/ having legal knowledge/experience in social work
3. Member	From amongst NGO/associations committed to the cause of women or a person familiar with the issue of Sexual Harassment

Important Points regarding Internal Complaint Committee:

- Not less than half of the ICC Members shall be women
- The term of the ICC Members shall not exceed 3 years
- A minimum of 3 Members of the ICC including the Presiding Officer are to be present for conducting the inquiry.
- In regard to the external member, it will greatly benefit Complaints Committees in terms of fair and informed handling of complaints to lead to sound outcomes. These external third party members shall be paid for their services on the Complaints Committees as prescribed.³¹

Where the office or administrative units of a workplace are located in different places, division or sub-division, an ICC has to be set up at every administrative unit and office. To establish such committee are mandatory. Even prior to the enactment of the law on sexual harassment, the Madras High Court in *Ms. G v. ISG Novasoft Technologies Ltd* Case awarded Rs. 1.68 crores in damages to an employee for the non-constitution of a Complaints Committee by the employer, as per the Vishaka Guidelines.³²

Local Complaints Committee (LCC)

The District Officer will constitute an LCC in every district so as to enable women in the unorganised sector or small establishments to work in an environment free of sexual harassment.³³ The LCC will receive complaints:

- From women working in an organisation having less than 10 workers;
- When the complaint is against the employer himself;
- From domestic workers.³⁴

The composition of Local Complaints Committee (LCC)³⁵ according to the Sexual Harassment of Women at Workplace Act, 2013 is as follows:

No. Member	Eligibility
1. Chairperson	Nominated from amongst the eminent women in the field of social work and committed to the cause of women
2. Member	Nominated from amongst the women working in the block, taluka or tehsil or ward or municipality in the district
3. 2 Members	Nominated from amongst such NGO/associations/persons committed to the cause of women or familiar with the issues relating to sexual harassment, provided that:• At least one must be a woman• At least one must have a background of law or legal knowledge
4. Ex Officio member	The concerned officer dealing with social welfare or women and child development in the district

Note: One of the nominees shall be a woman belonging to the SC/ST/OBC/Minority community notified by the Central Government.³⁶

Powers of the Committee

The Prevention of Workplace Sexual Harassment Act stipulates that the ICC and LCC shall, while inquiring into a complaint of workplace sexual harassment, have the same powers as are vested in a civil court under the Code of Civil Procedure, 1908 when trying a suit in respect of:

- Summoning and enforcing the attendance of any person and examining him on oath;
- Requiring the discovery and production of documents; and
- Any other matter which may be prescribed.³⁷

Where to Complain?

Generally, where there are less than ten workers, any woman employee can complain to the Local Complaints Committee with the support of the Nodal Officer, when required. It is the responsibility of the District Officer to designate a person as the Nodal Officer in every block, taluka and tehsil in rural or tribal areas and wards or municipalities in the urban areas, to receive the complaints of workplace sexual harassment from women. The Nodal Officer will forward all such complaints within seven days of its receipt to the concerned Complaints Committee for appropriate action.³⁸ In other workplaces, a woman employee can make a complaint to the Internal Complaints Committee. The Act provide the flexibility in regard to filing the complaint and if the aggrieved person is not able to file it, the same can be filed by someone else on her behalf as prescribed by the Act.³⁹

Complaint Process

An aggrieved woman who intends to file a complaint is required to submit six copies of the written complaint, along with supporting documents and names and addresses of the witnesses to the ICC or LCC,⁴⁰ within 3 months from the date of the incident and in case of a series of incidents, within a period of 3 months from the date of the last incident. The ICC/LCC can extend the timeline for filing the complaint, for reasons to be recorded in writing, by a period of 3 months.⁴¹ The law also makes provisions for friends, relatives, co-workers, psychologist, psychiatrists, etc. to file the

complaint in situations where the aggrieved employee is unable to make the complaint on account of physical incapacity, mental incapacity or death.⁴² An aggrieved woman is allowed to request for conciliation in order to settle the matter although monetary settlement should not be made as a basis of conciliation.⁴³

Timelines under the Act:

The Act provides a clear timeline for the speedy justice to the victim of sexual harassment at workplace. Written complaints (six copies) along with supporting documents and names and addresses of witnesses have to be filed within 3 months of the date of the incident and in case of a series of incidents, within a period of three months from the date of last incident. Timeline extendable by another three months for the reasons to be recorded in writing, if it is satisfied that the circumstances were such which prevented the woman from filing a complaint within the said period. Upon receipt of the complaint, one copy of the complaint is to be sent to the respondent within seven days.⁴⁴

Upon receipt of the copy of complaint, the respondent is required to reply to the complaint along with a list of supporting documents, and names and addresses of witnesses within ten working days. The Inquiry has to be completed within a total of 90 days from the receipt of the complaint. The Inquiry report has to be issued within 10 days from the date of completion of inquiry. The employer is required to act on the recommendations of the ICC/LCC within 60 days of receipt of the Inquiry report.⁴⁵ Appeal against the decision of the committee is allowed within 90 days from the date of recommendations⁴⁶. (For the summary of timeline see the table below)

S.No.	Subject	Timeline
1.	Submission of Complaint	Within 03 Months of the last incident
2.	Notice to the Respondent	Within 07 days of receiving copy of the complaint
3.	Completion of Inquiry	Within 90 days
4.	Submission of Report to ICC/LCC to employer or District officer	Within 10 days of completion of the enquiry
5.	Implementation of Recommendation	Within 60 days
6.	Appeal	Within 90 days of the recommendations

Relief to the Victim

The Act provides interim and permanent relief to the victim. At the request of the complainant, the ICC/LCC is empowered to, recommend to the employer to take the following interim measures:

- Transfer of the aggrieved woman or the respondent to any other workplace
- Granting leave to the aggrieved woman up to a period of 3 months in addition to her regular statutory/ contractual leave entitlement⁴⁷
- Restrain the respondent from reporting on the work performance of the aggrieved woman or writing her confidential report, which duties may be transferred to other employees.⁴⁸

Further, the Act prescribes the following punishments that may be imposed by an employer on an employee for indulging in an act of sexual harassment:

- Punishment prescribed under the service rules of the organization;
- If the organization does not have service rules, disciplinary action including written apology, warning, reprimand, censure, withholding of promotion, withholding of pay rise or increments, terminating the respondent from service, undergoing a counselling session, or carrying out community service; and
- The statute also envisages payment of compensation to the aggrieved woman.⁴⁹

The compensation payable to the victim shall be determined based on various grounds such as: the mental trauma, pain, suffering and emotional distress caused to the aggrieved employee; the loss in career opportunity due to the incident of sexual harassment; medical expenses incurred by the victim for physical/ psychiatric treatment; the income and status of the alleged perpetrator; and feasibility of such payment in lump sum or in instalments.⁵⁰ In the event that the respondent fails to pay the aforesaid sum, ICC may forward the order for recovery of the sum as an arrear of land revenue.⁵¹

Confidentiality of the Matter

Recognising the sensitivity attached to matters pertaining to sexual harassment, the Prevention of Workplace Sexual Harassment Act prescribes significant importance to ensure the confidentiality of complaint and connected information. The statute specifically stipulates that information pertaining to workplace sexual harassment shall not be subject to the provisions of the Right to Information Act, 2005. The statute further prohibits dissemination of the following information to the public, press and media in any manner:

- Contents of the complaint;
- Identity and addresses of the complainant, respondent witnesses, any information relating to conciliation and inquiry proceedings;
- Recommendations of the ICC/LCC;
- Action taken by the employer/District Officer.⁵²

Breach of the obligation to maintain confidentiality by a person entrusted with the duty to handle or deal with the complaint or conduct the inquiry, or make recommendations or take actions under the statute, is punishable in accordance with the provisions of the service rules applicable to the said person or where no such service rules exist, in such manner as may be prescribed.⁵³

Malicious Complaints

In order to ensure that the protections envisaged under the statute are not misused, provisions for action against "false or malicious" complainants have been included in the statute. It provides that if the ICC/LCC concludes that the allegation is false or malicious or the complaint has been made knowing it to be untrue or forged or misleading information has been provided during the inquiry, disciplinary action in accordance with the service rules of the organisation can be taken against such complainant.

Where the organisation does not have service rules, the statute provides that disciplinary action such as written apology, warning, reprimand, censure, withholding of promotion, withholding of pay rise or increments, terminating the respondent from service, undergoing a counselling session, or carrying out community service may be taken.⁵⁴ The statute further clarifies that the mere inability to substantiate a complaint or provide adequate proof need not mean that the complaint is false or malicious.⁵⁵

Employer's Duties and Obligations

The Prevention of Workplace Sexual Harassment Act, in addition to requiring an employer to set up an ICC and ensure redressal of grievances of workplace harassment in a time bound manner, imposes certain duties upon the employer which are as follows:

- provide a safe working environment;
- formulate and widely disseminate an internal policy or charter or resolution or declaration for prohibition, prevention and redressal of sexual harassment at the workplace;
- display conspicuously at the workplace, the penal consequences of indulging in acts that may constitute sexual harassment and the composition of the ICC;
- declare the names and contact details of all members of the ICC;
- organize workshops and awareness programmes at regular intervals for sensitizing employees on the issues and implications of workplace sexual harassment and organizing orientation programmes for members of the ICC;
- provide necessary facilities to the ICC for dealing with the complaint and conducting an inquiry;
- cause to initiate action, under the Indian Penal Code, 1860 ("IPC") or any other law in force, against the perpetrator, or if the aggrieved woman so desires, where the perpetrator is not an employee, in the workplace at which the incident of sexual harassment took place;
- provide assistance to the aggrieved woman if she so chooses to file a complaint in relation to the offence under the IPC or any other law for the time being in force;
- treat sexual harassment as a misconduct under the service rules and initiate action for misconduct;
- prepare an annual report with details on the number of cases filed and their disposal and submit the same to the District Officer;
- monitor the timely submission of reports by the ICC.⁵⁶

If an employer fails to constitute an ICC or does not comply with the requirements prescribed under the Prevention of Workplace Sexual Harassment Act, a monetary penalty of up to INR 50,000 may be imposed.⁵⁷ A repetition of the same offence could result in the punishment being doubled and / or de-registration of the entity or revocation of any statutory business licenses.⁵⁸ It is also pertinent to note that all offences under Prevention of Workplace Sexual Harassment Act are non-cognizable.⁵⁹

Conclusion

Despite government's untiring efforts to stop discrimination against women at the workplace, it is still widely practiced in India. Since patriarchy prevails in a developing country like India where being a female is no less than facing a challenge every day. In this regard, there is an indispensable need for proper training programs for the employees as well as the employers. This would ensure a healthy atmosphere for both, males and females. The Internal and the local sexual harassment cells should function actively in ensuring a dignified life for the females.

The victim shall be provided with professional counselling with utmost care and protection. Female employees should be encouraged to raise their voice against any

such harassment as soon as possible. The complainant's safety and protection shall be taken care of. It would ensure active participation of females in public and private sectors and thus would lead towards empowerment in the true sense. An effective implementation of the Act will contribute to the realization of their right to gender equality, life and liberty, equality in working conditions everywhere.

The sense of security at the workplace will improve women's participation in work, resulting in their economic empowerment and inclusive growth. Thus, combating sexual harassment involves developing understanding of what is sexual harassment and change of attitudes in all-be it employees, colleagues, friends, administrators, employers or the law makers.

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3. The Constitution of India recognises gender equality and the rights to live with dignity in its article 14, 15, 21: Article 14: The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth. Article 15: Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth; Article 15 (3) Nothing in this article shall prevent the State from making any special provision for women and children
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- class, influential men, because she had tried to stop the insidious practice of child marriage. Bhanwari Devi was determined to get justice and lodged a case against the offenders. However, the accused was acquitted by a trial court. This appalling injustice, together with the fighting spirit of Bhanwari Devi, inspired several women's groups and NGOs to file a petition in the Supreme Court under the collective platform of Vishakha (Vishakha and others V. State of Rajasthan and others, 1997). They demanded justice for Bhanwari Devi and urged action against sexual harassment at work place.
16. Since 1997 the Supreme Court of India laid down detailed guidelines to deal with the problem of sexual harassment at workplace. It was only in 2007 when a draft Protection of Women against Sexual Harassment at Workplace Bill, 2007 was approved by the Cabinet but introduced in the Lok Sabha in 2010. In 2012 the bill was amended and reintroduced in Lok Sabha. The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 came into effect in December 09, 2013.
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CONTEXTUALISING CHINESE STRATEGIC FORESIGHT IN INTERNATIONAL RELATIONS: Examining 'One Belt One Road' Policy

Dr. Nishtha Kaushiki, Mr. Ghulam Mohiuddin**
Mr. Hilal Ramzan*** and Manpreet Kaur*****

Nishtha

ABSTRACT

The primary objective of this paper is to trace the Chinese strategic manoeuvres in the context of strategic foresight for the development of its One Belt One Road Policy (OBOR). The study has highlighted that ancient Chinese dynasties had the farsightedness to securitize the trade routes for its economic development. Policies with similar objectives were adopted by the subsequent Chinese leadership. Such is a visionary approach adopted by China that the coming decades will herald an era of Chinese economic and security dominance in the South and Central Asian region.

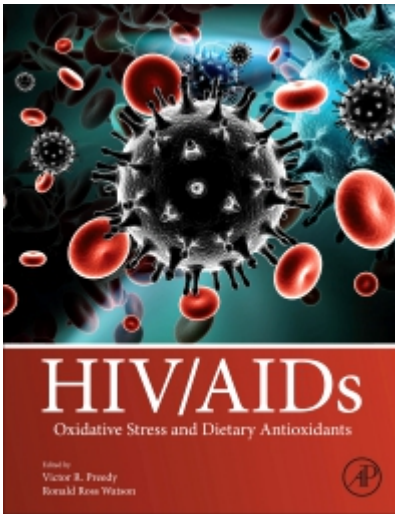
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Binding

Hardcover   Clear

Publication Date: January 2017

Status: Available

229 pages



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ISBN: 978-1-53610-512-4

Categories: **Horizons in Cancer Research (Numbered Series), Medicine and Health, Oncology**Tags: **9781536105124, 9781536105346, oncology**[Table of Contents](#)[Additional information](#)[Help](#)

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Hormones of Hypothalamus in Aging

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Chapter

First Online: 22 August 2017

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Abstract

Hypothalamus being the master regulator of the vertebrate endocrine system undergoes many adjustments/alterations which body makes during the course of aging. Moreover, the endocrinological basis of aging in male and female organisms is very complex, with multiple hormones along the hypothalamic-pituitary (HP) axis interacting with each other via different feedback loops to maintain homeodynamic state. Also the sensitivity of the hypothalamus to the external stimuli decreases with age mainly due to its lack of sensitivity towards the feedback system. The endocrine system is although severely affected by aging but all the organ systems are not affected at the same time or in the same way. During aging cellular protein synthesis machinery as well as immune functions are diminished and gradually physiological functions decline. There is also an increase in fat mass, a loss of muscle mass and strength, and a decrease in bone mineral density profile that contribute to declining health status with increasing age. The hallmarks of aging such as Genomic instability, Telomere attrition, Epigenetic alterations, Loss of proteostasis, Dysregulated Nutrient Sensing, Mitochondrial dysfunction, Altered intracellular communication, Cellular senescence etc. are well reported in literature. In this chapter we have compiled information and discussed various hormonal changes that occur with age in hypothalamus and pituitary gland and how these two master regulators gradually lose their sensitivity with the increasing age.

Keywords

Hypothalamus Regulation Receptors Thyrotropin Oxytocin Vasopressin Somatostatin Reproduction Menopause Neurotransmitters

Gurcharan Kaur and Jyoti Parkash are equally contributing authors.

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About this chapter

Cite this chapter as:

Kaur G., Parkash J. (2017) Hormones of Hypothalamus in Aging. In: Rattan S., Sharma R. (eds) *Hormones in Ageing and Longevity. Healthy Ageing and Longevity*, vol 6. Springer, Cham. https://doi.org/10.1007/978-3-319-63001-4_8

First Online

22 August 2017

DOI

https://doi.org/10.1007/978-3-319-63001-4_8

Publisher Name

Springer, Cham

Print ISBN

978-3-319-63000-7

Online ISBN

978-3-319-63001-4

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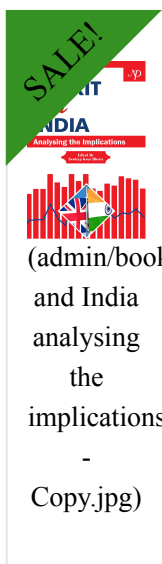
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ISBN NO:9789386453273

PAGES: 221

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Innovations in Agricultural Marketing in India: A Case Study of Supermarket in Punjab

Author: Naresh Singla

Publisher: Springer Singapore

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Abstract

Linking small farmers with modern markets such as supermarkets has been identified as one of the several pathways ways to make their farming viable. In this context, the study explores emerging farm–firm linkages in fresh food supermarkets with a case study of Reliance Fresh in Punjab. Specifically, it analyses the impact on the farmers' income, efficiency and their tendency to diversify to new high-value crops with a sample of 50 farmers each supplying to the supermarket and traditional markets. The supermarket procures vegetables through informal, verbal and non-written contracts from the small and marginal farmers. The supermarkets farmers benefitted on account of higher yield and higher price for the remaining produce sold in the local markets. They were also more efficient in the production of vegetables as compared to their counterparts. The preliminary evidences suggest that these alternative markets can play an active role in agricultural diversification in state like Punjab, which is facing severe agrarian crises. The study suggests that modern markets such as food supermarkets can only be effective if these procure through assured mechanism such as contract farming, besides extending the technical know-how, credit facilities, etc., to the farmers.

REVERSIBLE GEODESICS OF FINSLER SPACES WITH A SPECIAL (α, β) -METRIC

GAUREE SHANKER¹ AND SRUTHY ASHA BABY²

(Received 4 October 2016)

Abstract : A Finsler space is said to have reversible geodesics if for every one of its oriented geodesic paths, the same path traversed in the opposite sense is also a geodesic. In the last decade some work has been done on the Finsler spaces with reversible geodesics in (Crampin, 2005; Masca, Sabu and Shimada, 2010, 2013 and Sabau and Shimada, 2012). In this paper, we consider a Finsler space with a special (α, β) -metric $F = \alpha + \epsilon\beta + k\frac{\beta^2}{\alpha}$ ($\epsilon, k \neq 0$ are constants). The conditions for a Finsler space (M, F) to be with reversible geodesic are obtained. Further, we study some geometrical properties of F with reversible geodesics and prove that the Finsler metric F induces a generalized weighted quasi-distance d_F on M .

1. Introduction. Let (M, F) be an n -dimensional connected Finsler manifold (Shen, 2001) and let $TM = \bigcup_{x \in M} T_x M$ denotes the tangent bundle of M with local coordinates $u = (x, y) = (x^i, y^i) \in TM$, where $i = 1, \dots, n$, $y = y^i \frac{\partial}{\partial x^i}$.

If $\gamma : [0, 1] \rightarrow M$ is a piecewise C^∞ curve on M , then its *Finslerian length* is defined as

$$\mathcal{L}_F(\gamma) = \int_0^1 F(\gamma(t), \dot{\gamma}(t)) dt, \tag{1}$$

and the Finslerian distance function $d_F : M \times M \rightarrow [0, \infty)$ is defined by $d_F(p, q) = \inf_\gamma \mathcal{L}$, where the infimum is taken over all piecewise C^∞ curves γ on M joining the points $p, q \in M$. In general, this is not symmetric.

A curve $\gamma : [0, 1] \rightarrow M$ is called a geodesic of (M, F) if it minimizes the Finslerian length for all piecewise C^∞ curves that keep their endpoints fixed. We denote the reverse Finsler metric of F as $\bar{F} : TM \rightarrow (0, \infty)$, given by $\bar{F}(x, y) = F(x, -y)$. One can easily show that \bar{F} is also a Finsler metric.

DEFINITION 1.1 *A Finsler metric is with a reversible geodesic if and only if for any geodesic $\gamma(t)$ of F , the reverse curve $\bar{\gamma}(t) = \gamma(1-t)$ is also a geodesic of F .*

LEMMA 1.1 *Let (M, F) be a connected, complete Finsler manifold with associated distance function $d_F : M \times M \rightarrow [0, \infty)$. Then d_F is a symmetric distance function on $M \times M$ if and only if F is a reversible Finsler metric, i. e., $F(x, y) = F(x, -y)$.*

DEFINITION 1.2 *A smooth curve $\gamma : [0, 1] \rightarrow M$ is a constant Finslerian speed geodesic of (M, F) if and only if it satisfies $\ddot{\gamma} + 2G^i(\gamma(t), \dot{\gamma}(t)) = 0$, $i = 1, \dots, n$, where the functions*

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Natural Polymers: Derivatives, Blends and Composites. Volume II

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Saiqa Ikram and Shakeel Ahmed, Ph.D. (Editors)

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The book Natural Polymers: Derivatives, Blends and Composites Volume II is an edited volume comprised of fifteen chapters from different experts working in the area of natural polymers. Natural polymers are finding applications in fields of packaging, medicine, pharmaceuticals, biomedicine, textiles and many others. This book gives detailed insight into all aspects of natural polymers to the latest trends in the development of new products. This book will hopefully be supportive to scientists, researchers, academicians and students in different disciplines.

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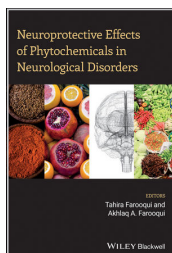
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Neuroprotective Effects of Phytochemicals in Neurological Disorders

Tahira Farooqui (Editor)(/en-us/search?pq=%7Crelevance%7Cauthor%3ATahira+Farooqui), Akhlaq A. Farooqui (Editor)(/en-us/search?pq=%7Crelevance%7Cauthor%3AAkhlaq+A.+Farooqui)

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Phytochemicals are naturally occurring bioactive compounds found in edible fruits, plants, vegetables, and herbs. Unlike vitamins and minerals, phytochemicals are not needed for the maintenance of cell viability, but they play a vital role in protecting neural cells from inflammation and oxidative stress associated with normal aging and acute and chronic age-related brain diseases. *Neuroprotective Effects of Phytochemicals in Neurological Disorders* explores the advances in our understanding of the potential neuroprotective benefits that these naturally occurring chemicals contain.

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Oxidative Stress: Diagnostic Methods and Applications in Medical Science

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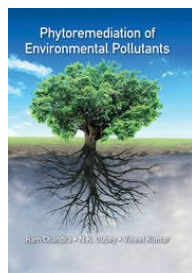


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Edition	1st Edition
First Published	2017
Imprint	CRC Press
Pages	26
eBook ISBN	9781315161549

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ABSTRACT



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Genetic Engineering of Poplar: Current Achievements and Future Goals

Plant Biotechnology: Recent Advancements and Developments pp 361-390 | Cite as

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Abstract

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Plant Tolerance to Individual and Concurrent Stresses pp 83-90 | Cite as

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Chapter

First Online: 01 February 2017

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Abstract

The demand for food is predicted to increase by 70% in 2050 due to increasing world population. Efforts are being made to increase food production. However, abiotic and biotic stresses, which tend to reduce crop yield and grain quality, are hindering these efforts. Significant improvement in crop productivity can be accomplished by developing plants tolerant to multiple abiotic and biotic stresses. Plants adapt and tolerate multiple stresses using sophisticated biochemical and molecular mechanisms. These are mediated by reactive oxygen species (ROS) and phytohormones such as abscisic acid, ethylene, jasmonic acid and salicylic acid which in turn regulate ion channels and kinase cascades. Several transcription factors (TFs) including WRKY, ERF, NAC, and MYB TFs are involved in this process. Understanding these known and novel mechanisms is an important step toward developing tolerance to multiple stresses. Future directions in this field for enhancing crop productivity are discussed.

Keywords

Biotic stress Abiotic stress Phytohormones Multiple stresses Cross-tolerance

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Drought and Heat Tolerance in Chickpea: Transcriptome and Morphophysiological Changes Under Individual and Combined Stress

Plant Tolerance to Individual and Concurrent Stresses pp 91-109 | Cite as

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Chapter

First Online: 01 February 2017



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Abstract

Increase in global temperature due to climate change is the major concern and known to have detrimental effect on many agricultural crops. Chickpea (*Cicer arietinum* L.) is an important legume grown in the arid and semiarid region of the world. Chickpea being a heat sensitive crop is greatly affected by heat stress during both vegetative and reproductive stages. Stress resistance mechanism of chickpea involves signal perception, transduction, and subsequent activation of stress-responsive genes encoding reactive oxygen species (ROS) scavenging and osmolyte, chaperones, and aquaporins. There are different stress perception and signaling pathways, both in drought and high-temperature stress, but some common pathways also exist between the two mechanisms. The present chapter summarizes the cross talk between the drought and heat stress and the molecular mechanism underlying individual stress. Field plants are exposed to multiple stresses, and the combined effect might be antagonistic or synergistic. Hence, improving stress tolerance of plants requires a reevaluation, taking into account the effect of multiple stresses on plant metabolism and stress resistance.

Keywords

Chickpea Drought stress Heat stress Molecular mechanism Stress resistance Transcription factors

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its general sense is a form of learning in which the knowledge, skills, and habits of a group of people. Primary Education is a goal stated in many national development plans and pursued with vigour by most of most developing countries. It is hoped that the present edition of this book will be beneficial to all of the society, in general and students, lawyers, advocates, academicians, human rights institutions, and NGOs working in education field, in particular.

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ISBN : 978-93-6183-984-3



Development of Education in India

Mallik • Chaudhury
• Sarkar

**Rajib Mallik
Suman Kalyan Chaudhury
Sukanta Sarkar**

Development of Education in India



- Individual growth plans, developed jointly by the student, parents and teacher can encourage the development of intrapersonal intelligence. Technology supports such plans with electronic records, videotaped interviews, and multimedia portfolios of student work.

Limitations

- Primary Education is not a mandatory subject.
- Traditional conservative syllabus.
- Continuous mushrooming growth of various institutes running without basic infrastructure.

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14 Problems and Prospects of Legal Education in India

Puneet Pathak

"To educate a man in mind and not in morals is to educate a menace to society."
— Theodore Roosevelt

Introduction

Unlike other forms of professional education, legal education is both professional as well value-oriented educations. As there is a famous maxim that ignorance of law is no excuse. The knowledge in the field of law is useful in every walk of life. There is a big gap between the content and standard of academic programmes in legal education and the demand of changing society. With the advancement of technology, there are new and emerging legal fields which pose numerous challenges to law professionals. But at the same time, owing to this rapid development there are multiple opportunities for law aspirants and to make it a hot career option for its aspirants. The paper intends to discuss various challenges in the field of legal education in India and also suggest measures based on the reports of various committee and commissions for reform of legal education in order to meet global challenges.

With the technological progression, the world is changing rapidly. Global financial services market, e-commerce, manufacturing, telecommunications and investments are all areas where globalization has entrenched and continues to grow at a rapid proportion. Globalization has resulted into migration of people for construction and manufacturing jobs, positions of software development and other employment opportunities all over the world. Major Banks, insurers operate on a global basis and national boundaries have become meaningless. Such displacement or migration leads to the problem of diaspora. The emergence of global governance under United Nations and the rise of cooperation at regional level i.e. emergence of European Union which radically expand the structure of global economy by introduction of common currency and common standard in area of economic, social and political sphere. The rise of new emerging powers of the world such as China, India, Brazil, and South Africa projected as major players is coming future.

Generally legal education is considered as the education gained by individuals to become legal professionals or practitioners.¹ Legal education and its importance to establish a rule of law has been recognised since the time of Indian freedom struggle. Numerous law universities and departments under various traditional universities and law colleges were successful in producing many of the brightest lawyers and some of the best academics in the country. Various law schools and universities in India offer several academic programs in the field of law at post graduate and graduate level.² Traditional law departments have little scope for innovation in the design of courses, development of appropriate teaching modules, quality research projects in the field of law and promotion of advocacy in lawyering. The existence of this world-wide market and globalization cannot be overlooked by legal institutions in India. Legal academicians and legal practitioners will have to work in the context of this rapidly changing environment of political economy, trade, and investment. These are critical challenges for the future of the legal profession as a global strength for providing structure and process for the complex future world.³

Legal Profession in India

Law was developed as a matter of religious prescriptions and philosophical discourse emanating from the Vedas, the Upanishads and other religious texts in India. India has a documented legal history starting from the Vedic ages and some sort of civil law system since Indus Valley civilization. It was nurtured by different Hindu philosophical schools and further enriched by Jain and Buddhist philosophy. Secular law in India varied widely from region to region and from ruler to ruler. Court systems for civil and criminal matters were indispensable features of many ruling dynasties of early India. Secular court systems existed under the Mauryas (321-185 BCE) and the Mughals (16th – 19th centuries) was well-established which latter given way to the current legal system.⁴

India's legal system has developed from religious prescription to the existing constitutional and legal system pass through secular legal systems and the common law. Common law in India was implanted during British period. The common law system founded on documented judicial precedents came to India with the British East India Company. "Mayor's Courts" in Madras, Bombay and Calcutta were established by the charter granted by King George I in 1726. The judicial functions of the East India Company expanded substantially after Battle of Plassey and since 1772 company's courts expanded out from the three major cities which were intended to replace the existing Mughal legal system in those parts.

The control of company territories in India passed to the British Crown just after the first War of Independence in 1857 resulting a big shift in the Indian legal system. Mayoral courts were replaced by the establishment of Supreme Courts which were converted to the first High Courts through letters of patents authorized by the Indian High Courts Act, 1862. Superintendence of lower courts and enrolment of law practitioners were deputed to the respective high courts.⁵

During the British regime, the Privy Council acted as the highest court of appeal. These cases were adjudicated by law lords of the House of Lords in England. During the shift from Mughal legal system, the advocates known as *avakils*, continued their

earlier role as client representatives. During the British regime, newly created Supreme Courts were barred to Indian practitioners as right of audience was limited to members of English, Irish and Scottish professional bodies.⁶ Further, succeeding statutes resulting in the Legal Practitioners Act of 1846 which opened up the profession irrespective of nationality or religion. Codification of law also initiated with the formation of the first Law Commission. Under the stewardship of its chairman, Thomas Babington Macaulay, various statutes including the Indian Penal Code, 1860 was drafted in India. The Commission prepared the Code of Criminal Procedure and other codes like Evidence Act (1872) and Contracts Act (1872).⁷

In pre-Independence period, attorneys began to seek legal training in England; it meant that the legal profession became dominated by those with English law degrees. This affinity for lawyers trained overseas had a detrimental effect on the quality of legal education in India, as rich families sent their children off to England to become barristers or attorneys, who, on their return home, were regarded as superior to those who earned their law degree in India.⁸ At the beginning of independence, most of political leaders and freedom fighter were having the legal background which helped in formulation of the fundamental law of nation. The Indian Bar had a great role in the Independence movement.

The first prime minister of India Jawaharlal Nehru and a paternal figure Mohandas Karamchand Gandhi, both are exemplary lawyers. Perhaps it is the consequent understanding of law and its relation to society that prompted the founding fathers to devote the energy required to form a Constitution of unprecedented magnitude in both scope and length.

The Constitution of India, fundamental law of the land is the guiding light in all matters executive, legislative and judicial. The Constitution of India was the result of the aspirations of the people of India. It aims to provide economic, social and political justice, freedom of speech and expression, belief and religion. It is intended to establish an egalitarian society where all can enjoy their basic or fundamental rights equally. The Constitution explicitly and through judicial interpretation seeks to empower the weakest sections of the society. The constitution also guarantees the right to profess any profession under article 19 which is the part of fundamental rights chapter.

Problems with Legal Education

All India Bar Exam is conducted by Bar Council of India twice in a year. This examination of 3 hours & 30 minutes, decides whether the law graduate shall be eligible for the certificate of practice in court of law. This All India Bar Exam reflects the distrust BCI has on the law colleges and universities recognised by BCI. This particular fact itself shows that there is something wrong in legal education in India.⁹

Though the Bar Council of India itself ensures the standard of legal education in universities and colleges by way of recognition and supervision, than what is the need of such examination which entitled them only to register them as a lawyer. The law graduate which has completed three or five year law graduate courses after undergo all examinations during the course than making Bar Council of India examinations as precondition for registering as lawyers itself make the law graduate degree as questionable. To be eligible to apply for bar examination, enrolment to state bar council

is a pre requisite for the candidates. The fee for registration to the state bar councils at the time of enrolment is also very high. Total fee to be paid for registration vary from state to state bar councils ranging from Rs. 8950 to Rs. 17665.¹⁰

From this it is clear that even before entering into the profession, the students are facing exploitation from these institutions which are supposed to support and facilitate them in their early stage of career. There is an urgent need to support the new entrants to the profession with assured stipend in the early days of their career. The state bar councils and bar council of India has to frame strategies to uniform registration fee and some stipends for the initial two or three years of practice of every new lawyer.

There are two distinct bodies which regulate the legal education in India one is BCI in the field of graduate degree and other is UGC in master courses and research in the field of law. The quality of master courses and research in the field of law is inseparable to ensure the quality of graduate law degree because the law faculty is required to be doctorate or NET after master in law. Regulation of legal education by two different bodies somehow compromises the quality. BCI rules on standards of legal education fail to effectively provide for the qualifications, conditions of service, selection, pay scale and promotion of law faculty and principles of law colleges in India.

According to BCI rules judges and advocates without LL.M. are permitted to be the part time faculty members and the full time faculty members are governed by UGC norms and guidelines because BCI rules are silent about it. NET/SET is an essential qualification for the appointment as faculty as per UGC Regulation, 2009. Unfortunately such national and state level examination is not able to guarantee communication skills and a passion for academics. Sometime good scholars cannot be appointed because they have not cleared NET/SET examination. Most of law colleges do not have enough number of full time faculty members.¹¹

In regard to the workload of assistant professor, it requires 16 hours per week. With such huge workload they have little time to devote for research and other academic activities to complete his/her API score for next promotion. Sometime faculty members are not able to concentrate on their teaching and adversely affect the interest of the students. The issue has been raised recently by HRD minister. The process of changing the present criteria of Academic Performance Indicators (API) scores, which relied heavily on co-curricular activities and research in the evaluation of teachers, has been initiated.

In 1999, The All India Teachers Congress was held at the Faculty of Law, University of Delhi, which was attended by law teachers representing over 460 law colleges in the country. The Congress passed various resolutions. It referred to the 'Revised Curriculum' prepared by the Bar Council of India (for 3 year and 5 year law courses). The main grievance of the entire Faculty drawn from all over the country was that the Bar Council of India was not complying with the requirement of 'consultation' with the Universities under sec. 7(1) (h) of the Advocates Act, 1961.

Further, it was pointed out that under sec. 7(1) (h), one of the functions of the Bar Council was to promote legal education and to lay down standards of such education in consultation with the Universities in India imparting such education and the State Bar Councils. The view was unanimously expressed that the Bar Council of India could not have revised and fixed the "curriculum" for law students without consulting the

Universities. It was even observed that the action of the Bar Council of India was ultra-vires of the provisions of the Act.¹²

There is less involvement of academicians in policy making relating to legal education in India. Academicians should get involve in the inspection team visited for the recognition of law colleges/law universities with the members of BCI. Renowned law professors should get significant roles in judiciary and law related statutory bodies. Since the constitution of India came into force in 1950, the provision regarding the appointment of a distinguished jurist as judge of Supreme Court of India was never exercised. This provision is applicable for the appointment of a distinguished jurist as Supreme Court judge and not high court judge. This shows a gap between the legal academia and the judiciary. Faculty members, students and research scholars of law departments under central and state universities and law universities should consider active participation in policy making by organising discussion on bills and amendments and forwarding their recommendation to concerned government or department.

Lack of senior faculty members in the university level is a common problem in the country. Such problem is being faced by most of the central and state universities as well as the law universities as there is only one or two professor are running the universities having masters and Ph. D. Courses. It adversely affects the quality of research in the field of legal education. Due to more workload there is less time for research and other activities on the part of faculty members. Scoring the API (Academic Performance Indicator) results in compromising the teaching efficiency as the faculty members are engaged in collecting API Score rather than focusing on teaching. Taking care of teacher by ensuring appropriate working environment and service conditions is inevitable in the path of improving legal education in India.¹³

In regard to curriculum of law graduate course, BCI listed 30 compulsory papers with 85 optional subjects for law graduate course. It is left to the universities to decide the syllabus. It accounts in various different syllabuses for the same course throughout India. In regard to master course in law there are two type of LL.M. degree: one year LL.M. course and two years LL.M. course. Both having different core papers and optional papers are somehow similar. The criteria in regard to LL.M. one year course are the strength of faculty members. Most of law universities and private universities are running both courses without meeting the required standard. No other degree in India having different duration. There is no academic audit regarding curriculum, co-curriculum and practical training in the field of legal education.

Language is another critical issue in legal education. English is necessary for practicing in Supreme Court and different high court. In some states vernacular language is being practiced at the level of lower courts. Bar Council of India is silent about the use of vernacular language in legal education. Many universities accept vernacular language as a medium of examination. Even National Knowledge Commission which made various recommendations to reform legal education in India did not express anything in this regard. Difficulties in providing lectures in vernacular language, framing of moot court problems, assessment of students are issues which need serious consideration. The real problem lies in the fact that references and authorities are not available in vernacular language.¹⁴

Legal Education in Era of Globalization

According to Michael S. Greco, the study in law does not end with graduation from law school, but continues throughout the lawyer's career. In India, generally it is perceived that there is a critical gap between what is being taught in law schools and the skills they required at the workplace. In order to ensure an advanced justice system, it is essential that a programme of continuing legal education is in place which is a recognized need worldwide. Due to the deep impact of globalisation on our lives and the legal profession, there is a greater necessity for continuing legal education for active practitioners, legal professionals and jurists. While the idea of continuing legal education and training programs shall address the basic issues of improved lawyer proficiency, it will, update professionals with the developments in the national as well as international legal field. The professionals from legal field shall get an advance understanding of the global challenges taking place in contemporary society.¹⁵

The school of thought that contends that the transformations at global, regional and national level that have been taking place are of minimal concern because lawyers are primarily concerned with domestic issues limited within the nation is clearly unsustainable. The rapid increase in the volume and diversification of international commercial transactions and international trade, technology transfer, international development of investment funds, online transactions and rapidly expansion of Multinational Corporation worldwide make it imperative that law students acquire an international outlook and understanding of law in a global context.

The practice to focus on domestic legal experts is not sustainable and may be irrelevant in coming future because of the emergence of new problems at global, regional and domestic level such as human rights, environmental degradation, environmental crime, illegal human trafficking beyond the border, terrorism, cybercrime international adoptions and war crimes etc. Such new and emerging problem does not respect the domestic boundaries and need global response. Legal areas with a strong domestic attention such as family law, estate planning and criminal law are gradually the subject of international issues and complications. With new scientific development, activities like child pornography on the internet or the regulation of biotechnology developments including human cloning call for a collaborative response transcending anyone legal system in order to achieve an effective outcome.¹⁶

As the society is becoming more and more complex and technological advancement has posed massive challenges to the earlier system of law and justice. Trade and commerce has become vast and technology oriented. A lawyer has to understand the new social and economic changes in the world.¹⁷ The age old practices and tactics prevailing currently in the Indian legal system are no more relevant now. The role of legal profession in the society is different now because it has a wider set of economic, political and social roles. Society has changed significantly, and changes in the legal profession reflect those changes.¹⁸

The role of lawyers, judges and faculty will become critical for addressing future challenges of governance. Achieving the next level of paradigm for legal education shall not be possible without the presence of excellent faculty which is updated and sensitive to the changing times. Hiring of good faculty has been a challenge in universities and law schools in India. Generally, the financial incentives offered by the

private sector both in India and abroad are far more attractive than those available in the public sector, including law schools, for good lawyers to make a commitment to academia.¹⁹

In order to improve the legal education there is a lot of scope to attract good lawyers to academia by indorsing a range of educational reforms and institutional initiatives, including better financial incentives to the faculty members. Globalisation has indeed provided new opportunities to address some of the challenges in this regard including cybercrime, business and investment by MNC, human rights, environmental issues etc. Issues relating to the Indian legal system are not only taught and researched in India but also in many other parts of the world which need to share and exchange.²⁰

There is an undeniable need to provide the right kind of intellectual environment and infrastructure to update standards of legal education. The law schools ought to offer academic space for engaging in teaching and cutting edge research on various issues of global significance. The institutions involve in imparting legal education ought to constantly reinvent themselves for facing the challenges of globalisation through exchange and collaboration programmes in collaboration with foreign universities.

It is worthwhile to learn from the experiences in foreign countries where the shortage of faculty has been addressed by video-conferencing of lectures by foreign faculty and ready-made course modules. Growing numbers of techno savvy Indian lawyers and scholars are involved in this effort. This has diverse implications for faculty, students, and for the development of teaching and research programmes in the area of legal education and legal profession in India.

With the background of global development and the rise of India as an important partner in the global economic field, it has to take up a greater responsibility as a key player by introducing a regime of progressive higher education particularly in legal field. Keeping this model in mind, there is a growing need to review legal education so that it meets the needs of the society. Future lawyers will have to be acquainted with new tools and skills of legal education. A well administered and timely relevant legal education can, therefore, be said to be the only choice for the future. According to well-known legal scholar, Nani A. Palkivala, the two marks of a truly educated man are the capacity to think clearly and intellectual curiosity which enables him to continue and intensify the process of learning even after he has finished the law course.²¹

Global curriculum, global degrees, global faculty and global interaction are some of the important aspects of legal education which deserve attention of academicians and policy makers in the field of legal education in India. Law students should acquire international understanding, experience and knowledge of foreign laws and legal systems. Advanced degree programs, exchange and summer abroad programs, moot court competitions and participation on international and comparative law reviews all provide valuable insights and experience.

Conclusion

The legal education system should be updated and become an instrument for solving contemporary legal problems because the future shall witness a radical change

has posed multiple challenges to the future of legal education in India but at the same time it also opens the door of new opportunities.²² In this regard the training that is imparted to future lawyers and judges in our law schools need to be through re-examined to suit the social and economic transformation that is underway in India. Following are some of the suggestions helpful for Indian legal education system to meet new challenges:

- **Implement the recommendation of National Knowledge Commission:** NKC has recommended the establishment of a new regulatory body comprising eminent lawyers, BCI members, judges, academicians, representatives from trade, commerce and industry, economists, social workers, students and others; for the purpose of revamping legal education to meet the needs and challenges of all sections of society. NKC has envisaged that this new regulatory mechanism would function under the auspices of the Independent Regulatory Authority for Higher Education (IRAHE), and would be vested with powers to deal with all aspects of legal education.²³
- **Constitution of National Legal Knowledge Council:** For the purpose of formulating the policy vis-à-vis legal education in India at a national level, a National Legal Knowledge Council be established comprising legal luminaries as well as experts from various socially relevant fields. The functions of the National Legal Knowledge Council would include continuing reform of legal education in the country, including of matters pertaining to inspection and recognition of law colleges as well as appointment of suitable faculty to various institutions imparting legal education across the country.²⁴
- **Establishment of Legal Aid Clinics/Centres:** In reference to the principle enshrined under Article 39-A of the Constitution of India, the Bar Council of India, vide Resolution dated 24 October 2009, resolved that all law schools/colleges should establish a legal aid clinic/centre for the purpose of providing inexpensive and efficient justice to the needy sections of our society. It was also resolved that a lecturer shall be the faculty in charge of a legal aid clinic/centre, and that final year students would be trained at such legal aid clinics/centres in imparting professional legal advice and client interaction. This Committee unreservedly endorses the resolution passed by the Bar Council of India and recommends that establishment of such legal aid clinics/centres be made a precondition to the recognition of law colleges by the Bar Council.²⁵
- Orientation programme should be organised for first year law students to sensitize them about the future need of legal profession.
- Law Schools could make some international and comparative law courses compulsory. Law schools could ensure that law courses primarily focused on national law should also include international component.

Despite the several challenges posed by globalization in the field of legal education, some of the suggested reformative measures can be taken to bring uniformity in the legal education in India. The Bar Council of India should conduct national level test in order to avoid state level discrepancies. It should further ensure standard and quality education in the field of law regarding faculty, infrastructure, IT and library facilities in all the law colleges and universities including private institutions. At the same time

UGC which regulates the master and research courses also ensure strict compliance of its rules and regulation to maintain the standard of higher education in the field of legal education in India.

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Status of the Muslim in Higher Education in Tripura: A Case Study under Durgapur Village

Mijanur Rahaman

"The philosophy of the school room in one generation will be the philosophy of government in the next."

- Abraham Lincoln

Introduction

A country cannot be developed without the proper participation of all the section of the society. All the people including the smallest group has equal share in the development of the nation. Muslims are the largest minority of India as well as in Tripura. They constitute 8.96% of the total population of Tripura. They are backward in all aspects of the society. These are evident in the report of Sachar Committee, Ranganath Misra Committee and Gopal Singh Committee. It is also true in case of the Muslim of Tripura.

Although they are the largest minority of this state, they do not get equal share in educational, social, economic and political fields. As education plays a vital role in the development of an individual, society and a state, it is very much essential for the development of the Muslim society of Tripura. Education has always played a very important role in every society. It makes an individual to internalize the value and norm of the society and simultaneously offers the specific skilled persons to serve different functions in society.

It is said that education polishes the human capabilities so that it could be utilized for human uplift. Owing to lack of education, the Indian Muslims lagged far behind in every walk of life. Education plays a vital role in the development of individual and state. The Muslims of Tripura are found educationally backward. Due to the lack of high qualifications, Muslims do not get jobs in many fields in comparisons with others. Muslims are found little in the professional, vocational and scientific courses.

Aims and objectives of this study: (a) To know the educational status of Muslim of Tripura at higher level; (b) To find out the causes for their educational backwardness;

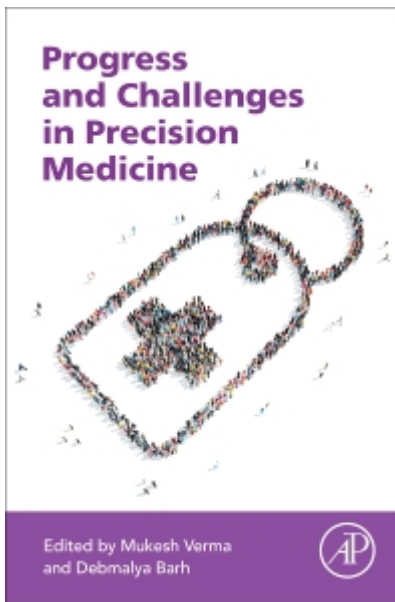


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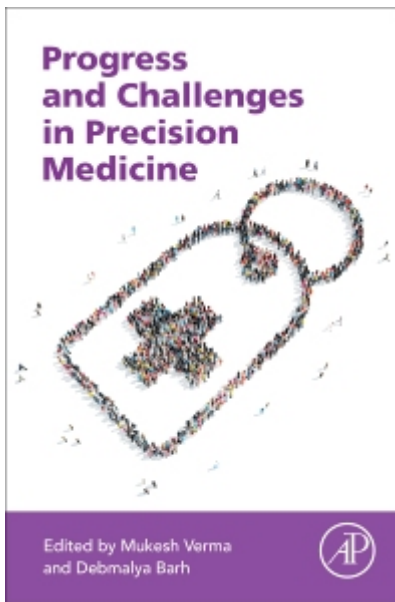


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Introduction

There is a growing concern of assuring quality at all levels of education in the present educational scenario. The social, economic, cultural and scientific advancement of a country depends largely upon the quality of the people. In this way the growth and development of the society and ultimately the nation is obviously dependent upon the education both formal and informal. Higher education in India suffers from several drawbacks. As a result it continues to produce graduates and post graduates that are unemployable despite shortage of skilled man power in ever increasing sector of numbers. The standard of academic research is declining day by day. Some of the main problems of higher education in India such as unaffiliated colleges, inflexible academic structure, defective examination system, poor teaching learning strategies and lack of uniformity among the syllabi and mushrooming of private academic institutions are well known.

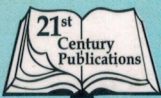
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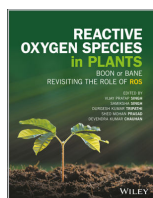
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Describes the basics of ROS metabolism in plants and examines the broad range of ROS signaling mechanisms

New discoveries about the effects of reactive oxygen species (ROS) on plants have turned ROS from being considered a bane into a boon, because their roles have been discovered in many plant developmental processes as signaling molecules. This comprehensive book teaches about the role of ROS metabolism in plants and how they affect various developmental processes. It also discusses in detail the advancements made in understanding the ROS signaling.

Reactive Oxygen Species in Plants: Boon Or Bane - Revisiting the Role of ROS begins by presenting the basic introduction to ROS and deciphers the detailed knowledge in ROS research. It then examines the broad range of ROS signaling mechanisms as well as how they may be beneficial for plants and human beings. This book also describes both the bane and boon aspects of ROS with their impact on plants, and how the recent revelations have compelled us to rethink ROS turning from stressors to plant regulators.

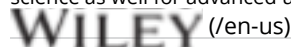
- Compiles, for the first time, the wholesome knowledge in ROS research and their cellular signaling
- Includes new discoveries and in-depth discussions about the advancements made in the field
- Discusses reactive oxygen species which are involved in a broad range of biological processes

Reactive Oxygen Species in Plants: Boon Or Bane - Revisiting the Role of ROS will help scientists to utilize the functions of ROS signaling for plants and also enable readers to gain a deeper knowledge of ROS research and signaling. It is highly recommended for researchers, scientists, and academicians in plant

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Optical Properties of $(\text{Fe}_2\text{O}_3)_{1-x}/(\text{Cr}_2\text{O}_3)_x$ (Where $x = 0.0, 0.1, 0.2, 0.3, 0.4$ and 0.5) Nanocomposites

Recent Trends in Materials and Devices pp 145-155 | Cite as

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Conference paper

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Abstract

In this paper we report the preparation of $(\text{Fe}_2\text{O}_3)_{1-x}/(\text{Cr}_2\text{O}_3)_x$ (where $x = 0.0, 0.1, 0.2, 0.3, 0.4$ and 0.5) nanocomposites. The FESEM image of pure Fe_2O_3 sample shows that the uniform particle size distribution is observed. The average particle size of the Fe_2O_3 nanoparticles is 19 nm. The crystallite size increases from 20 to 28 nm with increasing the weight percentage of the Cr_2O_3 in the $\text{Fe}_2\text{O}_3/\text{Cr}_2\text{O}_3$ nanocomposite up to $x = 0.5$. The Fourier transform infrared spectroscopy (FTIR) spectra shows that the absorption peaks appear at 588 and 616 cm^{-1} which represent the Fe–O and Cr–O bond respectively. The values of band gap are found 2.1, 1.9, 1.8, 1.6, 1.4 and 1.2 eV for the $x = 0.0, 0.1, 0.2, 0.3, 0.4$ and 0.5 respectively by UV-Visible spectroscopy. Thus, the decrease in band gap and increase in refractive index with increasing concentration of Cr_2O_3 have been observed. These high refractive index materials can be used for making optical devices.

Keywords

Refractive Index Iron Oxide Ferric Oxide Chromium Oxide Magnetic Device

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Acknowledgments

Author (PT) is thankful to UGC, New Delhi for providing fellowship during M.Phil. One of the authors (KY) is grateful UGC, New Delhi for providing the Start-up-Grant.

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Cite this paper as:

Thakur P., Thakur A., Yadav K. (2017) Optical Properties of $(\text{Fe}_2\text{O}_3)_{1-x}/(\text{Cr}_2\text{O}_3)_x$ (Where $x = 0.0, 0.1, 0.2, 0.3, 0.4$ and 0.5) Nanocomposites. In: Jain V., Rattan S., Verma A. (eds) Recent Trends in Materials and Devices. Springer Proceedings in Physics, vol 178. Springer, Cham. https://doi.org/10.1007/978-3-319-29096-6_19

First Online

21 October 2016

DOI

https://doi.org/10.1007/978-3-319-29096-6_19

Publisher Name

Springer, Cham

Print ISBN

978-3-319-29095-9

Online ISBN

978-3-319-29096-6

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MANET is an infrastructure less network. It has various applications in fields like military, commercial sector, local level, etc. MANET is easy to setup, configure and build. Due to infrastructure less network, MANET relies on the cooperation of nodes for communication. In MANET, communication between the nodes is possible with the help of protocols which are categorized into three types like reactive, proactive and hybrid. In the reactive category of protocol, a path is established at the real time. In the proactive category, protocols have predefined routing tables for each node. The hybrid category is the combination

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transmission. In the case of a disappointment of definite route, the data packets are transferred through secondary routes which were established with the help of routing tables that stores the multiple route paths to the destination. In the real world, nodes in MANET are allowed to transfer in any direction. Thus movement models like Random Way Point (RWP), Random Walk (RW), Random Direction (RD) and Gauss-Markov (GM) are taken as they have different mobility patterns. Therefore, M-AODV is implemented over different mobility models to compute parameters like End to End Delay (E2E Delay), Average Hop Count (AHC), and Throughput.

Published in: 2017 2nd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT)

Date of Conference: 19-20 May 2017 **INSPEC Accession Number:** 17504508

Date Added to IEEE Xplore: 15 January 2018

DOI: 10.1109/RTEICT.2017.8256912

► **ISBN Information:**

Publisher: IEEE

Conference Location: Bangalore, India

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Contents

I. Introduction

MANET is a self-arranging system that is designed spontaneously by a group of moveable nodes without any static organization [4]. An individual node in the system functions both as a host and as well as a router. Because of these qualities, MANET is utilized as a part of numerous applications, for example, disaster relief, emergency operations, vehicular computing, military battlefield, mobile offices, etc. The network topology in MANET is dynamic since the connectivity between the nodes might differ through time due to node movement, node departure, and new node appearances. Therefore there is a significant need for effective routing protocols to let the nodes to connect with each other [5]. The various characteristics of MANET have been discussed below: A.

Distributed operation: In MANET the switch of the system is circulated between the nodes. The nodes in MANET must collaborate and connect through each other to device definite tasks such as routing and security [1].

B.

Multi-hop routing: Once a node wants to interconnect with the other node which is out of its communication range, then the nodes can communicate [1]. with each other through single or intermediate

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D.
Self-creation, self-organization, and self-administration: The system can be formed at all period by the nodes themselves and is planned and administrated by the nodes simply [1].

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'Big Data' is the term that describes a large amount of datasets. Datasets like web logs, call records, medical records, military surveillance, photography archives, etc. are often so large and complex, and as the data is stored in Big Data in the form of both structured and unstructured therefore, big data cannot be processed using database queries like SQL queries. In big data, malicious URLs have become a station for internet criminal activities such as drive-by-download, information warfare, spamming and phishing. Malicious URLs detection techniques can be classified into Non-Machine Learning (e.g.

IV. Ripper Algorithm for Malicious URLs Detection

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and complex datasets and the processing of these datasets can be done either by using tool like Hadoop or data mining algorithms. Data mining techniques can generate classification models which is used to manage data, modelling of data that helps to make prediction about whether it is malicious or legitimate. In this paper analysis of RIPPER i.e. JRip data mining algorithm has been done using WEKA tool. A training dataset of 6000 URLs has been made to train the JRip algorithm which is an implementation of RIPPER algorithm in WEKA. Training dataset will generate a model which is used to predict the testing dataset of 1050 URLs. Accuracy are calculated after testing process. Result shows JRip has an accuracy of 82%.

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I. Introduction

Big data is the term that describes a large amount of datasets. Datasets like web logs, call records, medical records, military surveillance, photo graphyarchives, etc. are often so large and complex, and as the data is stored in Big Data in the form of both structured and unstructured therefore, big data cannot be processed using database queries like SQL queries[1]. The amount of data generated every day in the world is massive. The increasing volume of digital and social media andthe internet of thingsis fueling it even further. The rate of data growth is surprising and this growth rate is really very fast, with variety(not necessarily structured) and contains a wealth of information that can be a key togain the valuable knowledge in businesses. "Big data" is the term for a collection of data sets so large and complex that it becomes difficult to process it using traditional database management tools such as Relational Database Management System(RDBMS) [2]. RDBMS can't handle, huge, unstructured and complex data. The processing of large amount of dataset in RDBMS takes time as it is generally designed for

fixed amount of data. So a different tools and techniques is

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Abstract:

Phishing sites are fake sites that are made by deceptive persons which are copy of genuine sites. These websites look like an official website of any company such as bank, institute, etc. The main aim of phishing is that to steal sensitive information of user such as password, username, pin number, etc. Victims of phishing attacks may uncover their money related delicate data to the attackers who may utilize this data for budgetary and criminal exercises. Different technical and non-technical approaches have been proposed to identify phishing sites. Non-Technical approach has no solution against the fast

III. Literature Survey

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V. Work Flow

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techniques can generate classification models which can make prediction on phishing websites in real-time. In this paper analysis of C4.5 (J48) data mining algorithm has been done using WEKA tool. C4.5 is a benchmark data mining technique which can accurately identify phishing websites. A training dataset of 750 URLs has been made to train the algorithm J48, which is an implementation of C4.5 algorithm in WEKA. Testing dataset of 300 URLs is used to make prediction using the classifier generated after the training of J48. True positive rate, True negative rate, False positive rate, False negative rate, Success rate, Error rate and Accuracy are calculated after testing process. Result shows C4.5 has an accuracy of 82.6%.

Published in: 2017 2nd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT)

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I. Introduction

Year 1991 is known for the revolutionary change in internet usage[1]. In 1991, when internet was made available for commercial usage, many businesses were shifted to websites. Ecommerce grew with this huge change in business trends. This change provided the opportunity of Electronic data interchange and Electronic fund transfer. But with the trend of ecommerce, a new trend also came into the picture know as Cybercrimes. Cybercrime is any illegal behavior, directed by means of electronic operations, that targets the security of computer systems and the data processed by them[2].

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Abstract: Phishing is a kind of attack in which phishers use spoofed emails and malicious websites to steal personal information of people. Nowadays various tools are freely available to detect phishing and other web-based scams, many of which are browser extensions that generate a warning whenever user browses a suspected phishing site. In this research paper, comparison of eight phishing detection tools has been done to find the best one by testing each tool on the dataset, and further an awareness survey was carried out about these tools. Dataset contains two thousand verified phishing websites reported from August

IV. Overview of Phishing Detection Tools

V. Methodology

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Askfm.in, etc.) to test the effectiveness of eight popular anti-phishing tools. After testing all the tools on the dataset, it is found that AntiPhishing Toolbar did a very good job at identifying 94.32 percent of phishing as well as legitimate websites from the dataset. An awareness survey has been conducted among fifty M.tech Computer Science & Technology, and Cyber Security pursuing students at Central University of Punjab. The survey revealed that approximately 61 percent respondents are completely unaware about phishing detection tools.

Published in: 2017 2nd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT)

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I. Introduction

Phishing is a type of social engineering attack. Social engineering is a non-technical method of breaking into a system or network. Phishing is a kind of game or throwing dust into someone eyes and pretending as a trustworthy entity in an electronic communication to steal sensitive information such as passwords, usernames, money, and credit card details indirectly or directly. Phishing attacks are mostly found by researchers as just one of several threats in email spam [2]. The main targets of phisher are naive and inexperienced (new to internet world) users.

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Vehicular Ad hoc network (VANET) is an escalating field of research and laid basis for many newer technologies like Intelligent Transport Systems (ITS). Routing in VANETs plays crucial role in performance of networks. VANET protocols are classified as topology based and position based protocols. Research showed that position based protocols are more suited to VANETs as compared to topology based protocols because geographic routing does not involve an overhead and delay of maintaining routing tables instead geographic position of nodes is used for routing which can be obtained by Global

IV. Anchor Based Street and Traffic Aware Routing (A-STAR)

V. Simulation

Positioning System (GPS) device on vehicles. In this paper, two geographic routing protocols Anchor Based Street and Traffic Aware Routing (A-STAR) and

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city map. Simulation of VANETs on real map scenarios provide accurate results and also useful to design and deploy VANETs in real world. Real world mobility model is important because it reflects real-world performance of protocols considered. Analysis of performance is carried in terms of throughput, packet delivery ratio, packet loss and average delay. Simulation of protocols is carried by varying density of nodes. A-STAR showed better performance on real city map over GPSR because A-STAR adopted Street awareness method of routing whereas GPSR works on Greedy forwarding and Routing around the perimeter methods.

Published in: 2017 2nd IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT)

Date of Conference: 19-20 May 2017 **INSPEC Accession Number:** 17504299
Date Added to IEEE Xplore: 15 January 2018 **DOI:** 10.1109/RTEICT.2017.8256727
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I. Introduction

VANETs are sub-category of Ad hoc networks where nodes are moving vehicles. Intelligent Transport Systems (ITS) is one of the emerging applications of vehicle communication. Vehicle communication is aimed to provide road safety by avoiding collisions on road, distribution of road information, inter-personal communication, map information and entertainment of passengers. Vehicle communication in these ad-hoc networks is of two types-vehicle to vehicle (V2V) communication and Vehicle to Infrastructure (V2I) communication. V2V involves communication among the moving vehicles i.e. vehicles act as source, destination and router in communication process. Intermediate nodes (vehicles) constitute bridges between source and destination nodes. However, V2V communication suffers through link breakdown due to high mobility of vehicular nodes. On the other hand, in V2I communication, a vehicle act as source and destination and communicates with fixed infrastructural units called Road Side Units (RSUs). For vehicle-to-vehicle communication, Dedicated Short Range Communication (DSRC) is required [1]. Wireless Access in Vehicular Environments (WAVE), IEEE standard for vehicular communications, comprises of multiple-channels which can be used for both safety related as well as for infotainment messages [2].

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Keywords

Field Emission Scanning Electron Microscopy TiO₂ Nanoparticles Natural Rubber Polymer Blend Thermal Gravimetric Analysis

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Acknowledgments

Author (AT) is thankful to UGC for providing fellowship during M.Phil. One of the author (KY) is grateful to the Central University of Punjab for providing the Research Seed Money grant.

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About this paper

Cite this paper as:

Thakur A., Thakur P., Yadav K. (2017) Morphological, Optical and Thermal Properties of (TiO₂)_x Embedded (PVC/PE)_{1-x} (Where x = 0.0, 0.1, 0.2, 0.3, 0.4 and 0.5) Blend Nanocomposites. In: Jain V., Rattan S., Verma A. (eds) Recent Trends in Materials and Devices. Springer Proceedings in Physics, vol 178. Springer, Cham.
https://doi.org/10.1007/978-3-319-29096-6_11

First Online

21 October 2016

DOI

https://doi.org/10.1007/978-3-319-29096-6_11

Publisher Name

Springer, Cham

Print ISBN

978-3-319-29095-9

Online ISBN

978-3-319-29096-6

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Optical Properties of $(\text{Fe}_2\text{O}_3)_{1-x}/(\text{Cr}_2\text{O}_3)_x$ (Where $x = 0.0, 0.1, 0.2, 0.3, 0.4$ and 0.5) Nanocomposites

Recent Trends in Materials and Devices pp 145-155 | Cite as

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Conference paper

First Online: 21 October 2016



Citations



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Abstract

In this paper we report the preparation of $(\text{Fe}_2\text{O}_3)_{1-x}/(\text{Cr}_2\text{O}_3)_x$ (where $x = 0.0, 0.1, 0.2, 0.3, 0.4$ and 0.5) nanocomposites. The FESEM image of pure Fe_2O_3 sample shows that the uniform particle size distribution is observed. The average particle size of the Fe_2O_3 nanoparticles is 19 nm. The crystallite size increases from 20 to 28 nm with increasing the weight percentage of the Cr_2O_3 in the $\text{Fe}_2\text{O}_3/\text{Cr}_2\text{O}_3$ nanocomposite up to $x = 0.5$. The Fourier transform infrared spectroscopy (FTIR) spectra shows that the absorption peaks appear at 588 and 616 cm^{-1} which represent the Fe–O and Cr–O bond respectively. The values of band gap are found 2.1, 1.9, 1.8, 1.6, 1.4 and 1.2 eV for the $x = 0.0, 0.1, 0.2, 0.3, 0.4$ and 0.5 respectively by UV-Visible spectroscopy. Thus, the decrease in band gap and increase in refractive index with increasing concentration of Cr_2O_3 have been observed. These high refractive index materials can be used for making optical devices.

Keywords

Refractive Index Iron Oxide Ferric Oxide Chromium Oxide Magnetic Device

These keywords were added by machine and not by the authors. This process is experimental and the keywords may be updated as the learning algorithm improves.

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Notes

Acknowledgments

Author (PT) is thankful to UGC, New Delhi for providing fellowship during M.Phil. One of the authors (KY) is grateful UGC, New Delhi for providing the Start-up-Grant.

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About this paper

Cite this paper as:

Thakur P., Thakur A., Yadav K. (2017) Optical Properties of $(\text{Fe}_2\text{O}_3)_{1-x}/(\text{Cr}_2\text{O}_3)_x$ (Where $x = 0.0, 0.1, 0.2, 0.3, 0.4$ and 0.5) Nanocomposites. In: Jain V., Rattan S., Verma A. (eds) Recent Trends in Materials and Devices. Springer Proceedings in Physics, vol 178. Springer, Cham. https://doi.org/10.1007/978-3-319-29096-6_19

First Online

21 October 2016

DOI

https://doi.org/10.1007/978-3-319-29096-6_19

Publisher Name

Springer, Cham

Print ISBN

978-3-319-29095-9

Online ISBN

978-3-319-29096-6

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Dielectric Study of Polymer Nanocomposite Films for Energy Storage Applications

Recent Trends in Materials and Devices pp 389-396 | Cite as

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Conference paper

First Online: 21 October 2016

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Abstract

In the present study we have a novel report on the types of dielectric studies of the two blend polymer consisting of polyacrylonitrile (PAN) as the host polymer-polyethylene oxide (PEO) as a copolymer, LiPF_6 as lithium salts and clay containing different weight percent of DMMT as modified montmorillonite. The polymer nanocomposite (PNC) films were prepared by using solution cast technique. However the pure PAN-PEO+ LiPF_6 film was prepared as a reference. Keeping in view of characterization of PNCs films were study by impedance spectroscopy technique. The high frequency range of dielectric measurement is 1 Hz–1 MHz. This technique is shown to be a viable and straight forward means of obtaining dielectric data on polymer electrolytes. Permittivity (ϵ'), dielectric loss (ϵ'') and a.c. conductivity variation with frequency was studied to estimate the relaxation times for PAN-PEO polymer electrolyte.

Keywords

Polymer nanocomposite films Dielectric relaxation Impedance spectroscopy Dielectric loss A.C. conductivity

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Notes

Acknowledgments

Authors would like to appreciate the support of research facility of Central University of Punjab and partial financial support from UGC Start up Grant (GP 41).

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About this paper

Cite this paper as:

Sadiq M., Arya A., Sharma A.L. (2017) Dielectric Study of Polymer Nanocomposite Films for Energy Storage Applications. In: Jain V., Rattan S., Verma A. (eds) Recent Trends in Materials and Devices. Springer Proceedings in Physics, vol 178. Springer, Cham. https://doi.org/10.1007/978-3-319-29096-6_51

First Online

21 October 2016

DOI

https://doi.org/10.1007/978-3-319-29096-6_51

Publisher Name

Springer, Cham

Print ISBN

978-3-319-29095-9

Online ISBN

978-3-319-29096-6

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Development of Novel Cathode Materials Based on MWCNT for Energy Storage/Conversion Devices

Recent Trends in Materials and Devices pp 347-355 | Cite as

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Conference paper

First Online: 21 October 2016

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Abstract

In Chap. 1 (https://doi.org/10.1007/978-3-319-29096-6_1), already available technology for energy storage solutions like capacitors, lead acid batteries, compressed air energy storage, flywheels has been discussed in order to compare their energy and power densities. Emphasis has been laid on Rechargeable Lithium ion Battery (Li-ion). Various materials which are already explored and used as cathode of battery has also been discussed with their merits and demerits. Further introduction of prepared orthosilicate material with used conductive additive Multiwalled carbon nano tube (MWCNT) has also given. In Chap. 2 (https://doi.org/10.1007/978-3-319-29096-6_2), methodology used to prepare respective $\text{Li}_2\text{MnFeSiO}_4$ material and its composite with MWCNT has been discussed in detail. Further, in order to validate its electrochemical application, different steps of cell assembly of Lithium half cell fabrication has also been discussed. Chapter 3 (https://doi.org/10.1007/978-3-319-29096-6_3) comprises of results obtained using standard Field emission scanning electron microscope (FESEM). Effect of used MWCNT on its morphology has been discussed in this chapter. A.C Impedance spectroscopy has been used to study variation in conductivity with respect to bared material. Possible reasons for increased conductivity with morphology has also been discussed in discussion. Chapter 4 (https://doi.org/10.1007/978-3-319-29096-6_4) includes conclusions drawn from mentioned results. This chapter summarizes measured conductivity values with different concentrations of MWCNT. Improved conductivity with respect to bared orthosilicate material has been pointed in this chapter.

Keywords

Field Emission Scanning Electron Microscopy Cathode Material Negative Electrode
High Electronic Conductivity Lithium Silicate

These keywords were added by machine and not by the authors. This process is experimental and the keywords may be updated as the learning algorithm improves.

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About this paper

Cite this paper as:

Agnihotri S., Rattan S., Sharma A.L. (2017) Development of Novel Cathode Materials Based on MWCNT for Energy Storage/Conversion Devices. In: Jain V., Rattan S., Verma A. (eds) Recent Trends in Materials and Devices. Springer Proceedings in Physics, vol 178. Springer, Cham. https://doi.org/10.1007/978-3-319-29096-6_47

First Online

21 October 2016

DOI

https://doi.org/10.1007/978-3-319-29096-6_47

Publisher Name

Springer, Cham

Print ISBN

978-3-319-29095-9

Online ISBN

978-3-319-29096-6

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Structural and Electrical Properties of Polymer Nanocomposite Films

Recent Trends in Materials and Devices pp 373-387 | Cite as

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Conference paper

First Online: 21 October 2016

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Abstract

A free standing transparent film of solid state polymer electrolyte based on PEMA/PVC+NaPF₆ with different compositions of nano sized TiO₂ in weight percent ($x = 0, 1, 2, 7, 10, 15, 20$) is synthesized by using standard solution cast technique. The homogeneous surface of above polymer composition is examined by FESEM. The microscopic interaction among polymer, salt and nano-ceramic filler has been analyzed by Fourier Transformed Infra-Red (FTIR) spectroscopy. The reduction of ion pair formation in polymeric separator is clearly observed on addition of nano-filler in the polymer salt complex film. Electrical conductivity has been recorded of the prepared polymeric separator which is of the order of $\sim 1.5 \times 10^{-5} \text{Scm}^{-1}$ after addition of nano-filler (15 % wt/wt) which support the FTIR results. Electrochemical potential window has been observed of the order of ~ 6 V by the cyclic voltammetry results. The observed data of the prepared separator are at par with the desirable value for device application.

Keywords

Polymer Electrolyte Solid Electrolyte Constant Phase Element Propylene Carbonate High Ionic Conductivity

These keywords were added by machine and not by the authors. This process is experimental and the keywords may be updated as the learning algorithm improves.

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Acknowledgments

One of authors is thankful to Central University of Punjab for providing fellowship during M. Phil. Course and partial support received from the UGC Start-up-Grant (GP-41).

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About this paper

Cite this paper as:

Bhatt C., Swaroop R., Sharma A.L. (2017) Structural and Electrical Properties of Polymer Nanocomposite Films. In: Jain V., Rattan S., Verma A. (eds) Recent Trends in Materials and Devices. Springer Proceedings in Physics, vol 178. Springer, Cham. https://doi.org/10.1007/978-3-319-29096-6_50

First Online

21 October 2016

DOI

https://doi.org/10.1007/978-3-319-29096-6_50

Publisher Name

Springer, Cham

Print ISBN

978-3-319-29095-9

Online ISBN

978-3-319-29096-6

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Correlation of Microscopic Interaction with Electrical Conductivity in Polymer Separator of Energy Storage Devices

Recent Trends in Materials and Devices pp 397-406 | Cite as

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Conference paper

First Online: 21 October 2016

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Abstract

In the present report solid polymer nanocomposite (PNCs) comprising of $(\text{PEO})_{14} + \text{NaClO}_4 + \text{wt\% BaTiO}_3$ has been prepared by solution casting method. Important characterization like: FTIR (Fourier Transform Infrared Spectroscopy), and conductivity have been performed for the applicability of the prepared materials in device application. The highest conductivity of the prepared polymer nanocomposite materials has been estimated $1 \times 10^{-4} \text{ Scm}^{-1}$ for 15 wt% of BaTiO_3 . A very fine correlation has been built among polymer-ion, ion-ion and polymer ion interaction with obtained conductivity results.

Keywords

Polymer Electrolyte High Ionic Conductivity Solid Polymer Electrolyte Free Charge Carrier Lithium Salt

These keywords were added by machine and not by the authors. This process is experimental and the keywords may be updated as the learning algorithm improves.

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Notes

Acknowledgments

Author (P.K. Sharma) is thankful to UGC, New Delhi for providing fellowship during M.Phil. One of the authors (A.L. Sharma) is grateful UGC, New Delhi for providing the Start-up-Grant (GP-41).

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Cite this paper as:

Sharma P.K., Sharma A.K., Sadiq M., Sharma A.L. (2017) Correlation of Microscopic Interaction with Electrical Conductivity in Polymer Separator of Energy Storage Devices. In: Jain V., Rattan S., Verma A. (eds) Recent Trends in Materials and Devices. Springer Proceedings in Physics, vol 178. Springer, Cham.
https://doi.org/10.1007/978-3-319-29096-6_52

First Online

21 October 2016

DOI

https://doi.org/10.1007/978-3-319-29096-6_52

Publisher Name

Springer, Cham

Print ISBN

978-3-319-29095-9

Online ISBN

978-3-319-29096-6

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Proximate Technical and Economic Aspects and Life Cycle Analysis of Biodiesel Production in India: An Overview

Sustainable Biofuels Development in India pp 435-458 | Cite as

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Chapter

First Online: 15 March 2017

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Abstract

One of the key challenges confronting the developing world is how to meet its growing energy demands and sustain economic growth without contributing to climate change and pollution. The Government of India has undertaken several policy measures to augment production and use of biodiesel during the past one decade at the national level. The government expects biodiesel will be eco-friendlier than petro-based diesel by reducing negative effects and can lead to sustainable development. Increased use of biodiesel is a significant part of the global strategy for climate change mitigation and air quality improvement. Since biodiesel is prepared entirely from biomass, it does not contain any sulfur, and having oxygen content in it improves the combustion efficiency of ignition engines and lowers the emissions. The new alternative feedstock and improved process technologies may provide a solution for the existing challenges of biodiesel production with sustainable impact in next decade in Indian perspective. The life cycle studies have also shown positive energy balance and GHG emissions for biodiesel compared to fossil diesel. The development of a domestic biodiesel, marketing, and its use is also expected to improve lives of the common people by generating more rural employment opportunities and reduce the reliance on petroleum fuels for transportation in a developing country like India.

Keywords

Biodiesel Policies Pollution Climate change Mitigation India

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About this chapter

Cite this chapter as:

Prasad S., Sheetal K.R., Chandel A.K., Dhanya M.S. (2017) Proximate Technical and Economic Aspects and Life Cycle Analysis of Biodiesel Production in India: An Overview. In: Chandel A., Sukumaran R. (eds) Sustainable Biofuels Development in India. Springer, Cham. https://doi.org/10.1007/978-3-319-50219-9_18

First Online

15 March 2017

DOI

https://doi.org/10.1007/978-3-319-50219-9_18

Publisher Name

Springer, Cham

Print ISBN

978-3-319-50217-5

Online ISBN

978-3-319-50219-9

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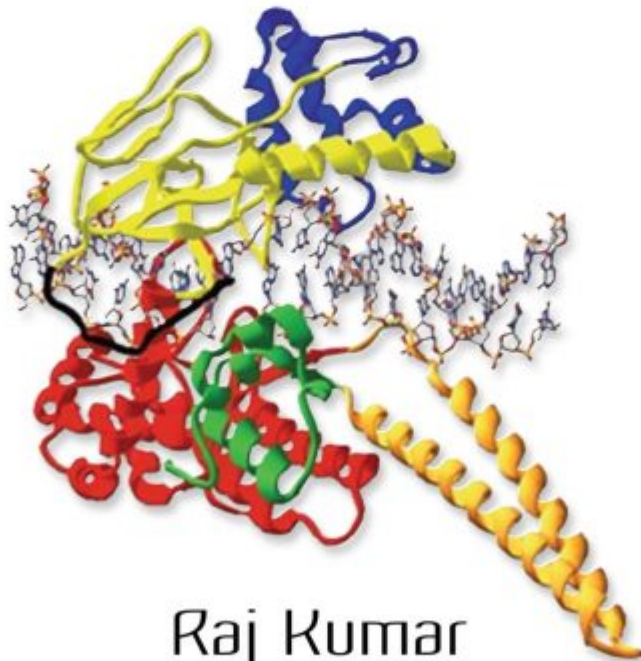
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Series: **Cancer Etiology, Diagnosis and Treatments**

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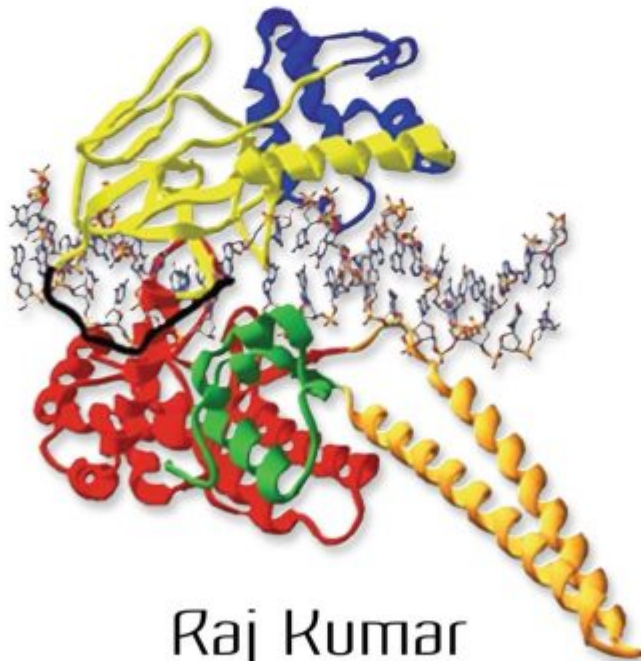
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Natural Compounds Are Smart Players in Context to Anticancer Potential of Receptor Tyrosine Kinases: An In Silico and In Vitro Advancement

Translational Bioinformatics and Its Application pp 177-202 | Cite as

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Chapter

First Online: 01 April 2017



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Abstract

Cancer is the ruling cause of mortality worldwide. Chemotherapeutic toxicity and drug resistance have provided impulsion for the formulation of new anticancer agents. Receptor tyrosine kinases (RTKs) are the most activated cell surface receptors for copious polypeptide growth factors, cytokines, and hormones that play a considerable role in cancer initiation, promotion, and progression. Natural products are a prime source of new anticancer drugs and their leads. The objective of computer-aided drug design (CADD) is to enhance the set of compounds with prudent active drug-like properties and eliminate inactive, toxic, poor absorption, distribution, metabolism, and excretion toxicity (ADME/T) compounds. In the present chapter, in silico advancement of anticancer natural compounds and molecular mechanisms of action of flavonoids, viz., genistein, myricetin, quercetin, luteolin, morin, kaempferol, catechin, and epigallocatechin gallate (EGCG), on RTK and PI3K signaling pathway attributing to their potential anticancer activity have been discussed.

Keywords

Receptor tyrosine kinases Cancer Natural compounds Computer-aided drug design

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Notes

Acknowledgments

We would like to thank Vice Chancellor, Central University of Punjab, Bathinda, Punjab, (India) for supporting this study with infrastructural requirements. We also thank Professor P. Ramarao (Dean, Academic Affairs), Central University of Punjab, Bathinda, Punjab, India, for his suggestions during the course that tremendously helped to improve this article. This study was also supported by Senior Research Fellowship Grant-in-Aid from Indian Council of Medical Research (ICMR) awarded to PS.

Conflict of Interest

The authors declare that there is no conflict of interests regarding the publication of this article.

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About this chapter

Cite this chapter as:

Singh P, Kumar S., Bast F. (2017) Natural Compounds Are Smart Players in Context to Anticancer Potential of Receptor Tyrosine Kinases: An In Silico and In Vitro Advancement. In: Wei DQ., Ma Y., Cho W., Xu Q., Zhou F. (eds) *Translational Bioinformatics and Its Application*. Translational Medicine Research. Springer, Dordrecht. https://doi.org/10.1007/978-94-024-1045-7_8

First Online

01 April 2017

DOI

https://doi.org/10.1007/978-94-024-1045-7_8

Publisher Name

Springer, Dordrecht

Print ISBN

978-94-024-1043-3

Online ISBN

978-94-024-1045-7

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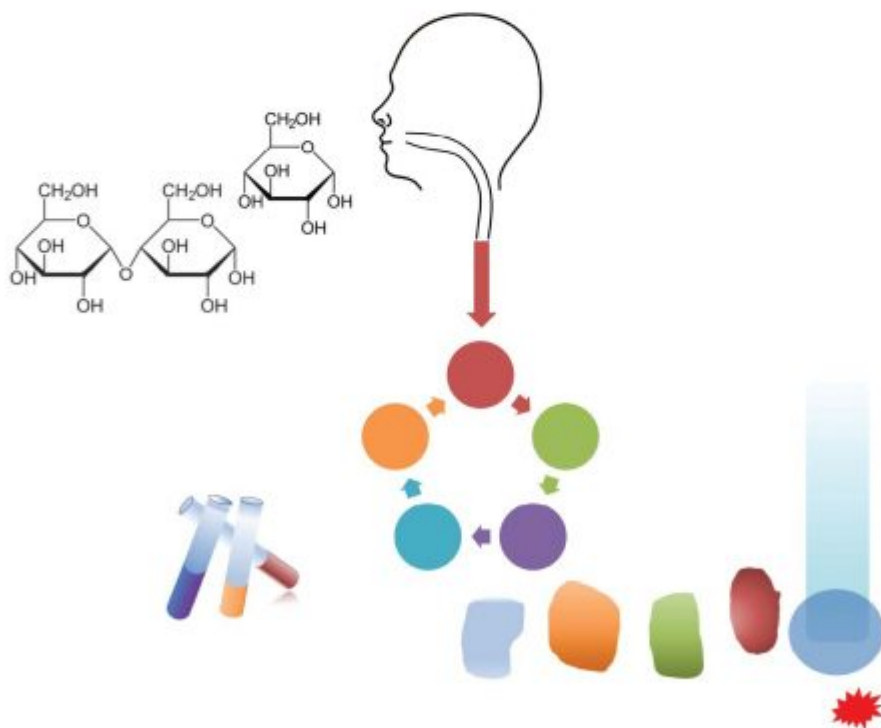
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Price ₹ : 895

ISBN 978-93-86048-62-2

