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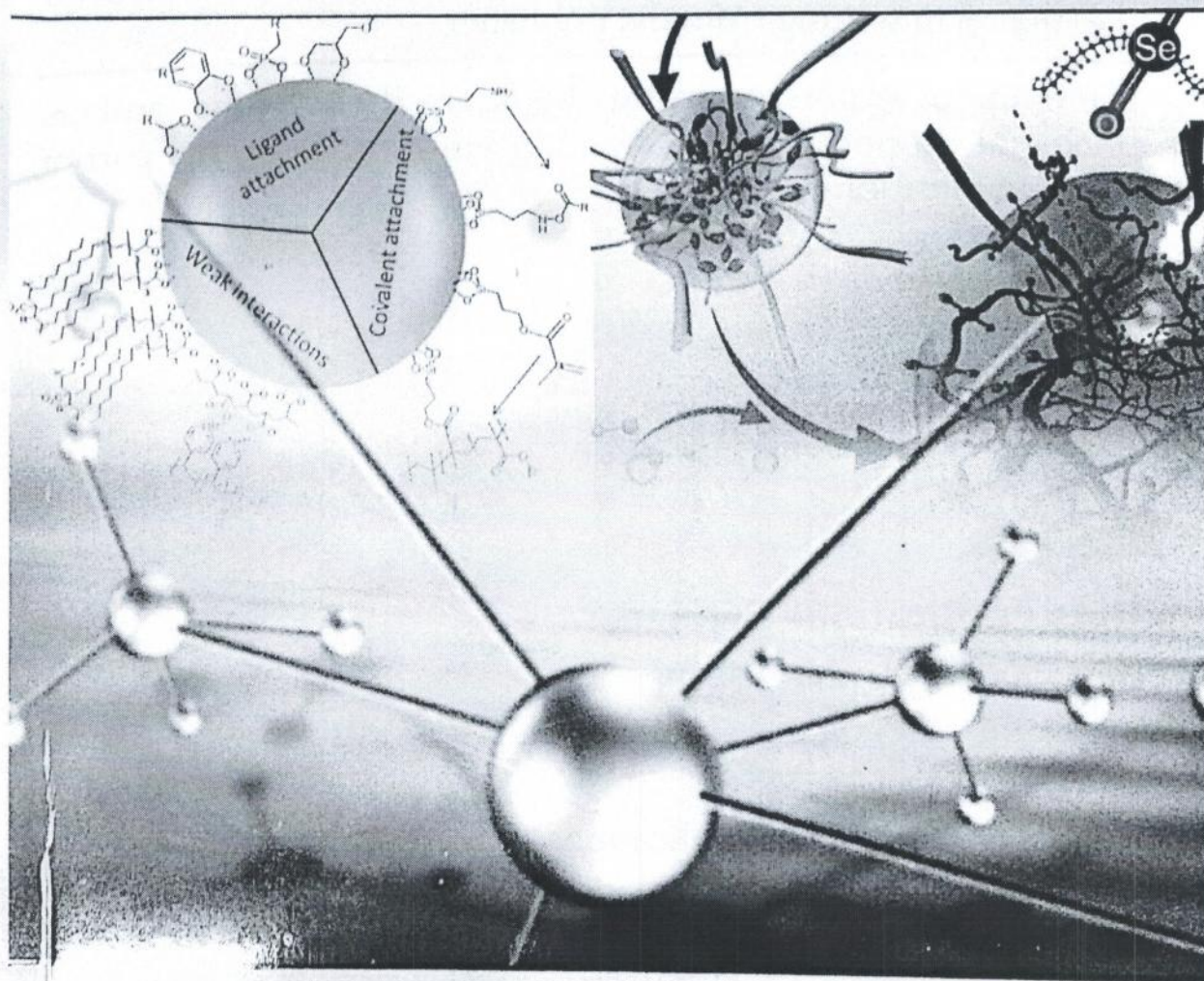
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**Prashant D. Ashtaputrey**  
**Santosh D. Ashtaputrey**

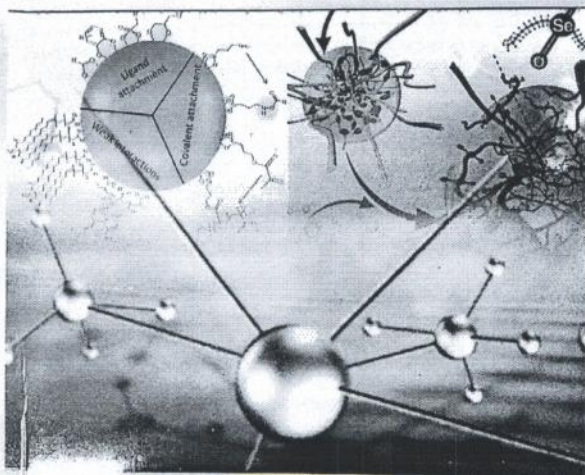


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## Synthesis and Characterization Techniques



**Prashant D. Ashtaputrey**  
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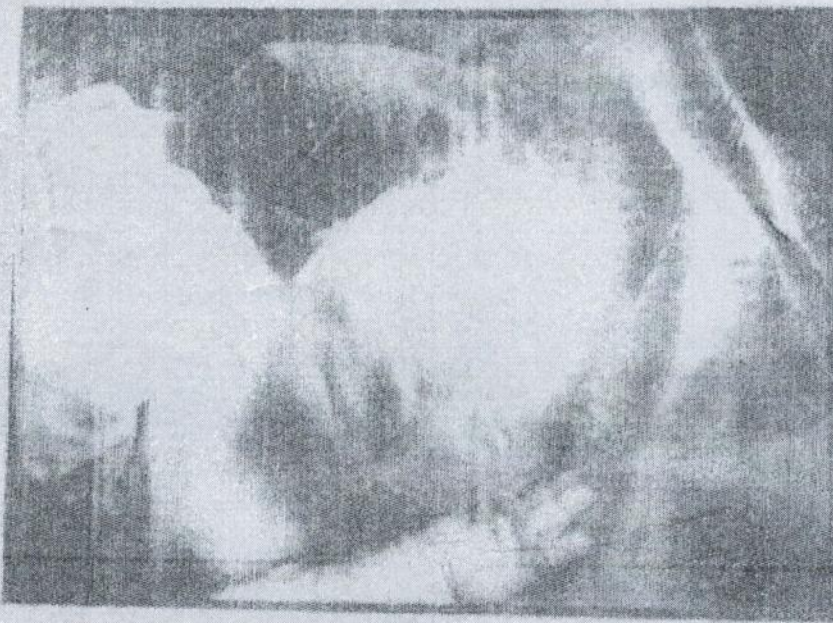
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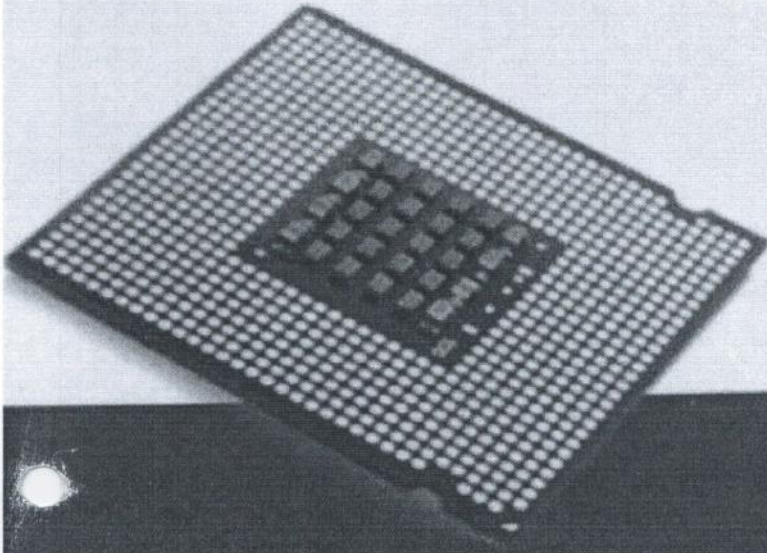
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## Biomechanical Analysis of 2015 - All England Open Women (Singles) Final Match Decider Game Played Between Saina Nehwal and Carolina Marin

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Department of Physics, Institute of Science, Nagpur

### *Abstract:*

2015- All England Open women (singles) Final match was played between Saina Nehwal of India and Carolina Marin of Spain. Carolina won the match by 2-1. Saina won the first game and was leading in the second game by 6-2 but she was locked at 13 for long time and then lost the game. So it was the third game that decided the winner of the title. We have analysed the third game that is the decider game biomechanically. The duration of the match was 59 minutes with the final score of the match 21-16, 14-21 and 7-21. After levelling the play 1-1, the decider was completely dominated by Carolina by displaying her best shots and placement of shuttle by applying principles of biomechanics more accurately. Unfortunately, most of the actions to be performed in sports are a combination of several movements and skills that are therefore quite difficult to analyse. Attempt is made here to analyse movements performed in all the 28 points won by both the players in the decider game.

**Key-Words:** Biomechanical, Forehand, Long Service, Short Service, Shuttle Velocity

### **Introduction:**

The Badminton is one of the fastest racquet sports in accordance with shuttle velocity (Kollath, 1996; Tsai & Chang, 1998). The ability to respond quickly and effectively to a constant changing environment is a key factor of successful performance. The badminton involves various skills like long service, short service, drop shot, overhead smash, forehand smash, backhand smash, flick, clear etc. To start the game, most commonly used skills are long serve and short serve that determines the control of the game. Some studies have been done on smash (Poole, 1970; Tang 1995; Tsai 1998), drop shot (Tsai 2001) and power stroke (Gowitzke 1986, 1991 and 1991). Along with these studies, there were few descriptive studies focused on arm movement during forehand smash (Elliott, 1995; 1996; Springing, 1994; Tang, 1995).

Badminton involves sharp eyesight, quick analysis of opponent's shot, preparing your stance, adjusting your hand, changing the face of your racquet to the incoming shuttle and generating force as well when you plan to smash the shuttle. All of these processes involve application basic biomechanical principles like centres of gravity, line of gravity, base of support, mass of the individual and frictional forces. These are the factors that control the balance and stability of the player.

## Immunomodulation by Phenyl-naphthalene

1-Phenyl-naphthalene and Pericarbonyl lactone lignans are synthesized by green chemistry and the lignans having similar 1-Phenyl-naphthalene skeleton are extracted from two plants-Ruta graveolens Linn. and Jatropha gossypifolia Linn using Soxhlet assembly. These natural and synthetic lignans were then tested for their immunomodulatory potential. Starting with  $\beta$ -benzoyl propionic acid and aryl aldehydes,  $\alpha$ -arylidine- $\gamma$ -phenyl- $\Delta$ , $\beta$ , $\gamma$ -butenolides were synthesized. The lactone ring of butenolides is opened to get the keto acid i.e.  $\alpha$ -arylidine- $\beta$ -benzoyl propionic acid. Cyclization of above keto acid as well as its derivatives with sulphamic acid catalyst under microwave radiation ultimately lead to 1-Phenyl-naphthalene systems. The immunomodulatory activity of the 1-Phenyl-naphthalene systems is studied by the two methods-“Spleen cell proliferation” and “Effect on serum immunoglobulins”. It is found to be quite significant in both synthetic compounds as well as plant extracts. The findings suggest that 1-Phenyl-naphthalene lignans can positively modulate the immunity of the host.



Tanishq Chaudhari

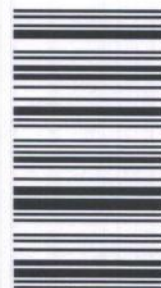
Dr. Mrs. T. Chaudhari is Ass. Professor of Chemistry in Priyadarshini Polytechnic and an active member of Indian Science Association. Dr. Mrs. S. Deo and Dr. Mrs. F. Inam are the Professors, Institute of Science, Nagpur and guided more than 15 research students. The author and co authors have published several papers in national and international journals.

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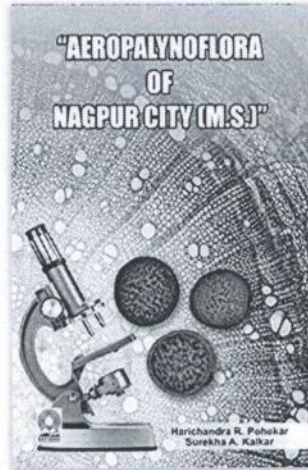
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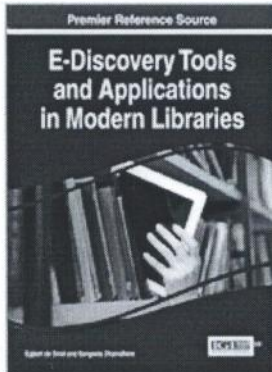


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#### Abstract

A library portal is single-user interface for accessing a wide variety of electronic resources, both within and outside the library. A few federated search engines like EBSCO Discovery service, Summon (web scale discovery service), Knimbus, Mendeley, FedGate, ABCD open source software, Google CSE etc. are being used by libraries to give access to all subscribed or free online e-resources as well as library catalogues, archives' and other reading materials in the library to save the time of readers and give easy access to multiple databases and resources through federated search tool. In distance learning and online education environment libraries need to provide the right information on a single platform to its users from all resources or databases available in the library in a minimum of time. In this chapter the author discusses about the selected commercial as well as open source discovery tools used in Indian Libraries.

#### Chapter Preview

#### Introduction

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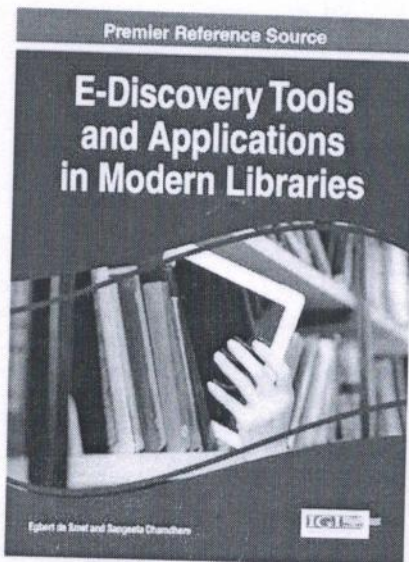
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The urinary system of all mammals is involved in filtration of toxic substances, removal of excess materials, conservation of water and maintenance of electrolyte balance (osmoregulation) and hence provides an optimal state conducive for metabolism throughout the body tissues as well as within inter-cellular spaces, thus maintaining homeostasis. The book embodies detailed observations on the structure, anatomy, histology, physiology and some aspects of histo-chemical investigations of kidney of Indian bats- which includes a frugivorous belongs to family Pteropodidae of Suborder Megachiroptera as well as some animalivorous (viz, insectivorous, carnivorous, piscivorous, omnivorous and sanguivorous) species of Suborder Microchiroptera respectively. The species inhabit different ecological habitats, have different dietary habits and possess variable body mass.

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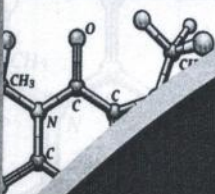
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### Abstract

The paper reports synthesis of nanoparticles of  $\text{Sr}_{0.5}\text{Ba}_{0.5}\text{Nb}_2\text{O}_6$  (SBN) and  $\text{Co}_{1.2-x}\text{Mn}_x\text{Fe}_{1.8}\text{O}_4$  (CMFO) via ceramic and hydroxide co-precipitation routes, respectively. The nanopowders of SBN and CMFO0.3 (MSBN0.3) are compacted together to form the desired magnetodielectric (MD) composites. The paper reports synthesis, structural and MD studies on the MSBN composites. The results on the magnetocapacitance (MC) are observed interesting and could be correctly understood in terms of the stress induced variation in the dielectric constant. The MC is observed to remain fairly constant between 10 and 500 kHz and possess a useful magnitude of nearly 4 %.

**Keywords:** (SrBa)Nb<sub>2</sub>O<sub>6</sub>, (CoMn)<sub>1.2</sub>Fe<sub>1.8</sub>O<sub>4</sub> and Magnetocapacitance.

**Introduction:** The composites of ferroelectric and magnetostrictive compounds are known to exhibit a useful magnitude of magnetoelectric coupling (1, 2). These composites need the presence of ferroelectric/relaxor composition possessing a useful value of maximum polarization ( $P_{\text{max}}$ ), remanent polarization ( $P_r$ ) and piezoelectric coefficient ( $d$ ), while the magnetostrictive phase is required to possess a large value of resistivity ( $\rho$ ), magnetostriction ( $k$ ) and low value of coercive field

$H_c$ . As shall be seen in the next paragraph, the (SBN) and Mn-substituted cobalt ferrite form a correct choice for the formation of such compositions. This phenomenon was also attributed to the stress-induced change in polarization and therefore the dielectric constant. At present, the ME effect in such composites is better known but the magnetodielectric (MD) effect has rarely been investigated (3-5).

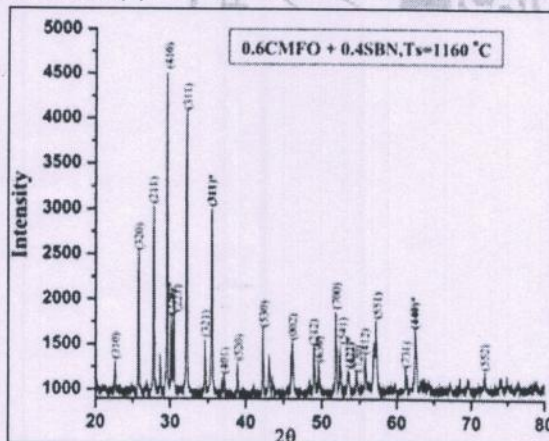


Fig. 1. XRD of  $\gamma$  MSBN0.3 composite,  $T_s=1160^\circ\text{C}$ .

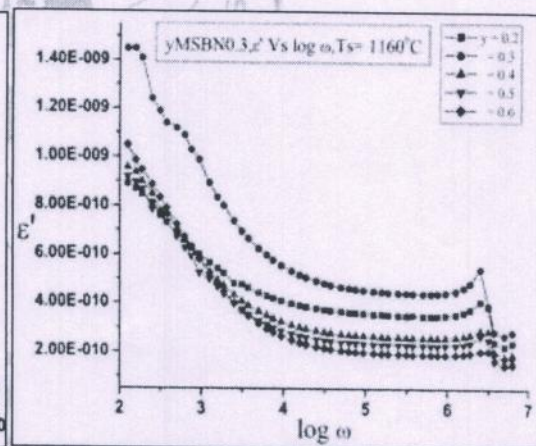


Fig.2 : Variation of  $\epsilon'$  vs  $\log \omega$  for composites,  $T_s=1160^\circ\text{C}$

Here, substitution of Mn at A or B site is observed to reduce the anisotropy energy and improve the magnetomechanical coupling of the  $\text{CoFe}_2\text{O}_4$ . Therefore, considering virtues of Co and Mn ions in the ferrite system, CMFO has been selected as a piezomagnetic phase to form the MD composites (6,7). As the physical properties of ferrites are dependent on the process of synthesis. For the present studies one ferrite compositions is selected, for  $x = 0.3$  where  $k$  is comparatively low but  $q$  is high.

Further, the relaxors ferroelectrics are known to have very large electrostrictive response in addition to the piezoelectric coupling; however, most relaxors contain Pb and their lack of remanent polarization makes them unsuitable for piezoelectric applications. An exception is the (Sr, Ba) Nb<sub>2</sub>O<sub>6</sub> family which can sustain remanent polarization after polling (8). Therefore, investigations on MD composites with  $\text{Sr}_{0.5}\text{Ba}_{0.5}\text{Nb}_2\text{O}_6$  (SBN) as a piezoelectric phase are observed to be interesting.

Owing to the discussion above, the present paper reports synthesis and characterization of MD composites  $y\text{MSBN} = y\text{CMFO} + (1-y)\text{SBN}$ . The paper reports MD properties of the above system for CMFO possessing  $x = 0.3$ . The parent composition CMFO and SBN are initially studied to confirm the formation of the required SBN and CMFO phases and particle size in nanometer range. The paper reports investigations on crystal structure, dielectric and the magnetocapacitance (MC) defined through the relation  $MC = ((\epsilon(H) - \epsilon(0)) / \epsilon(0)) * 100\%$ . MC is determined with applied magnetic field  $H_{dc}$ . The dielectric properties are investigated as a function of temperature from 300 to 470 K and frequency ( $f$ ) between 100 and 1 MHz, while MD properties are determined at room temperature as a function of  $f$  and  $H_{dc}$  up to 6 kOe.

**Experimental:**

**Synthesis of CMFO and SBN:** The hydroxide co-precipitation route has been adopted for the synthesis

of  $\text{Co}_{1.2-x}\text{Mn}_x\text{Fe}_{1.8}\text{O}_4$  (CMFO). The  $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ ,  $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$  and  $\text{MnCl}_2$  of AR grade are used as precursors for the hydroxide co-precipitation. The precipitates are thoroughly washed in distilled water keeping alkaline medium using  $\text{NH}_4\text{OH}$  (pH 9). The dried precipitates are calcined at  $1,000^\circ\text{C}$  for 12 h, and final sintering is carried out at  $1,200^\circ\text{C}$  for 24 h in two steps with intermediate grinding.

The SBN has been synthesized using standard ceramic route of synthesis because the precursors required for coprecipitation of niobium are not cost effective. High purity (99.9%)  $\text{BaCO}_3$ ,  $\text{SrCO}_3$  and  $\text{Nb}_2\text{O}_5$  are used as precursors. Considering the earlier reports, pre-sintering and final sintering processes are carried out at  $1,100^\circ\text{C}$  for 24 h, and  $1,250^\circ\text{C}$  for 12 h, respectively, to form the fine-grained SBN powder (8).

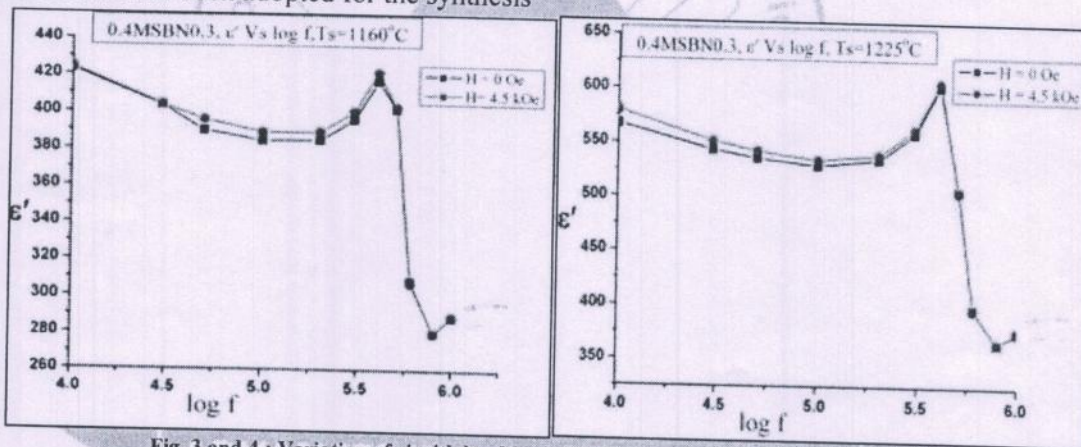


Fig. 3 and 4 : Variation of  $\epsilon'$  with  $\log f$  for 0.4MSBN0.3, at  $T_s = 1160$  and  $1225^\circ\text{C}$

y	MC(1100°C) %		MC(1160°C) %		MC(1225°C) %	
	10 kHz	500 kHz	10 kHz	500 kHz	10 kHz	500 kHz
0.3	0.35	0.18	0.86	0.4	0.16	0
0.4	0.55	0.5	1.2	0.2	0.9	0.08
0.5	0.4	0.04	0.6	0.2	0.93	0.51

Table-1 Magnetocapacitance (MC) for  $y\text{MSBN}0.3$

**Formation of composites:** The resulting powders of CMFO and SBN are ground thoroughly to form uniform and submicron level particle size. The powders of CMFO and SBN thus formed are used to

form the required MD composites using the following formula,

$y(\text{CMFO}0.3) + (1-y)(\text{SBN}) = y(\text{MSBN}0.3)$   
 where 0.3 represents the contents of Mn in CMFO and  $y = 0.3, 0.4$  and  $0.5$ . Considering the earlier



reports, the composites are formed as pellet shaped samples of 1 cm diameter and three separate batches of the composites are formed with sintering temperature  $T_s$  equal to 1,100, 1,160 and 1,225 °C for yMSBN0.3 (9,10).

**Results and discussion:** The individual powders of the ferrite and the ferroelectric materials are investigated for structural studies for confirmation of the formation of the desired phase and the estimation of the particle size. The reflections are in confirmation with the JCPD data on cobalt ferrite possessing cubic spinel crystal structure. The XRD spectra of SBN powder which shows the reflections corresponding to TTb crystal structure and the spectra is in confirmation with the earlier reports. (9).

Figure 1 shows the XRD spectra of composites for 0.4MSBN sintered at 1,100 °C. The peaks corresponding to SBN and CMFO are separately identified in the XRD spectra of composites. The XRD spectra for remaining composites with y between 0.3 and 0.5 and for the sintering temperatures 1,100, 1,160 and 1,225 °C are similar to the XRD spectra as shown in figure 1.

Figure 2 shows variation of  $\epsilon'$  at 1 kHz as a function of T for the MSBN0.3 series. It could be seen that the  $\epsilon'$  versus T behavior shows a DPT at 103 °C. This DPT corresponds to the signature of DPT of SBN at  $T_c = 103$  °C (8). Another interesting observation of  $\epsilon'$  versus T behavior is that the  $\epsilon'$  increases with T in paraelectric region above DPT.

The increase in the  $\epsilon'$  is faster for increasing y. This feature is known to occur because of interfacial polarization occurring at boundaries between the SBN and CMFO phases due to difference in the resistivity (9). Interfacial polarization is known to be prominent at higher frequencies and increases as T increases. The present observation suggests that the increase in  $\epsilon'$  in the paraelectric region appear to be due the presence of interfacial polarization.

Interesting observations are on the variations of dielectric constant ( $\epsilon'$ ) as a function of applied field, i.e., the MD behaviour. Figure 3 and 4 show the variation of  $\epsilon'$  as a function of applied frequency (f) and applied magnetic field ( $H_{dc}$ ) for yMSBN0.3. The variation of  $\epsilon'$  for other composition and sintering temperature  $T_s$  are similar in nature as shown in Fig. Further, Table 2 shows variation of MC as a function of y,  $T_s$  and for frequencies 10 and 500 kHz, respectively for yMSBN0.3. As discussed earlier, the MC occurs due to variation of dielectric constant because of the applied stress occurring due to the piezomagnetic effect in the ferrite phase (3). Further, the MC should be proportional to  $\lambda \times k_m \times (d\epsilon/ds)$ , where  $\lambda$  is magnetostrictive coefficient,  $k_m$  the magnetomechanical coupling coefficient,  $d\epsilon/ds$  the rate of change of dielectric constant as a function of applied stress. For  $\lambda$  being positive, the stress would increase with increase in  $H_{dc}$ , while for  $\lambda$  negative stress would decrease with increase in  $H_{dc}$  and, therefore,  $\epsilon'$  increases with  $H_{dc}$ .

### Conclusions:

The observations on MC are promising and the results could be understood in terms of Landau thermodynamic theory. The MC has been observed to remain fairly constant for MSBN0.3 over a wide range of frequencies between 10 and 500 kHz. Also, the magnitude of MC is sufficiently large for 0.4MSBN0.3. The present observation suggests that further studies on MD composites are required to evolve compositions possessing useful value of MD properties.

### Acknowledgement:

Author would like to express the gratitude towards the late prof. P.B.Joshi for being a moral suportor and guiding us to pursue the research carrier.

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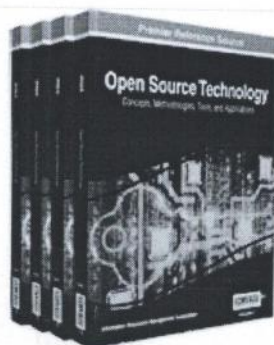
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### The University Cloud Library Model and the Role of the Cloud Librarian

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### Abstract

The latest trend of Cloud Computing is progressing fast and using this technology it is possible to publish and store information on a virtual cloud based infrastructure. Virtualization technology has been adopted by many data centers in the industry. It shares resources on a single system efficiently and reduces infrastructure costs. Libraries are using various technologies along with Web tools at a time. Information sharing and an open access culture are developing fast in the education field. How libraries can make use of the application of cloud computing and virtualization technology for common data storage and managing multiple servers and provide cloud based information services to patrons will be discussed in detail in this chapter. This chapter also discusses in brief the applications of these technologies in libraries along with the university cloud library model and the role of cloud librarians.

### Chapter Preview

#### Cloud Computing

Cloud Computing is the improvement of Distributed Computing, Parallel Computing, Grid Computing and Distributed Databases. The basic principle of Cloud Computing is making tasks distributed in large numbers of distributed computers but not in local computers or remote servers. "The idea of cloud computing has emerged for outsourcing of computing infrastructure, storage of client data and applications that are accessed via a remote server" (Hosch, 2009; Knorr & Gruman, 2008). Traditionally, companies sold product CD's and one had to buy a license to use them. Now companies like Tally, Frank Borland products provide subscription services on

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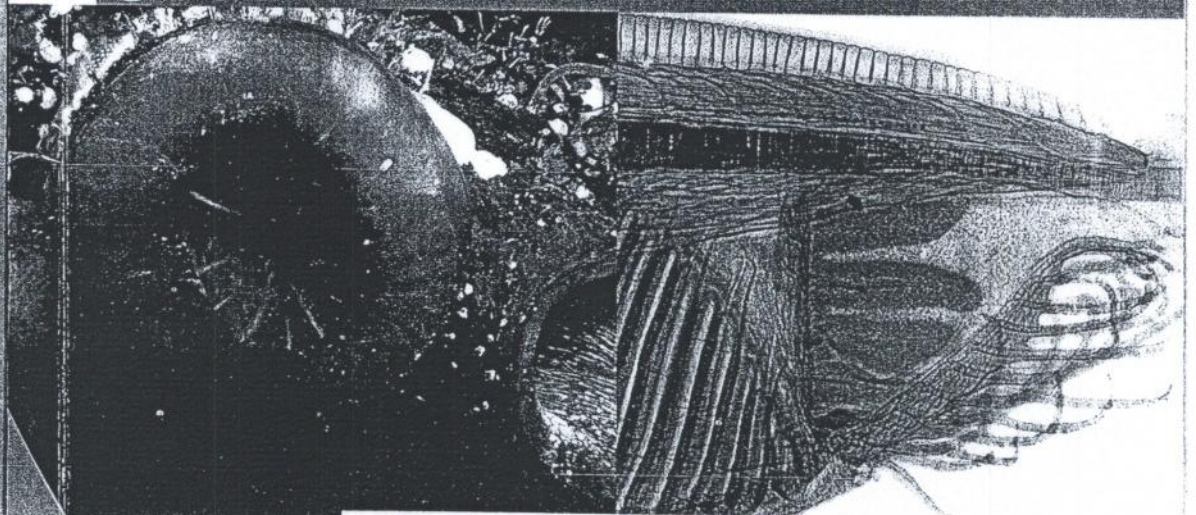
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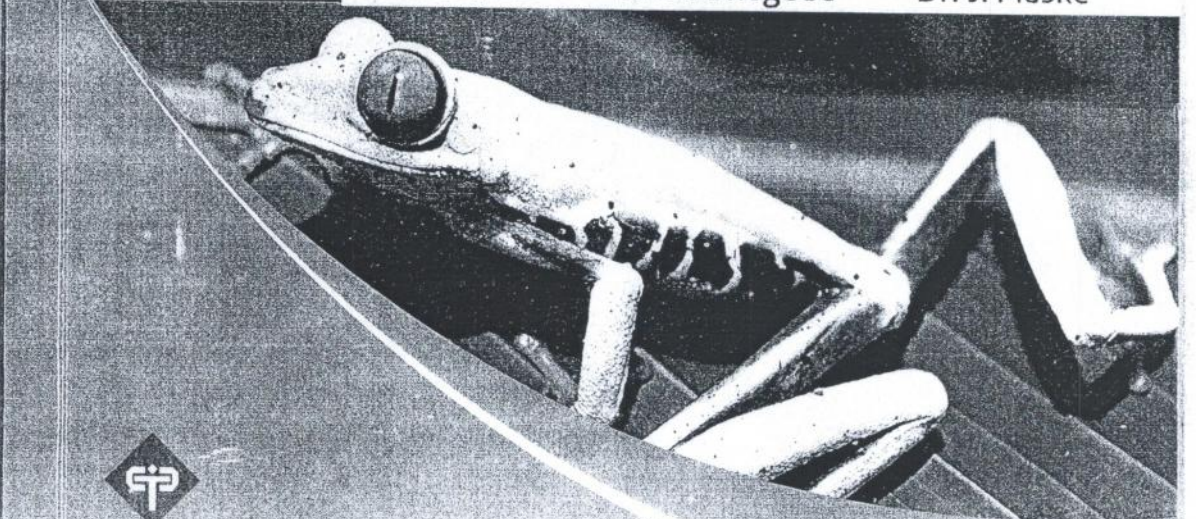
Life and Diversity of Animals - Chordates  
(Protochordata to Amphibia)



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**Life and Diversity of Animals-Chordates  
(Protochordata to Amphibia)**

**For B.Sc. 3<sup>rd</sup> Semester, Paper - I**

As per new syllabus of  
Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

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**A preliminary survey of commonest bird house sparrow *Passer domesticus* in three different localities in and around Nagpur, Maharashtra.**

**Dapke S. N.<sup>1</sup>, S.A. Koushik, and R.V. Didolkar<sup>2</sup>**

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<sup>2</sup>Department of Zoology, L.A.D. and Smt. R.P. college for Women, Nagpur (India).

<sup>1</sup>Corresponding Author : [snehaldapke@yahoo.co.in](mailto:snehaldapke@yahoo.co.in)

**ABSTRACT**

The house sparrow *Passer domesticus* belongs to the family Passeridae and is one of the most widespread and abundant birds in the India and most part of the world. The house sparrow is closely associated with human habitations and live in urban or rural surroundings. This bird species which were widely distributed and observed everywhere has now shown a remarkable decline in its population in many areas. This study was undertaken to collect information about population density of house sparrow in different localities in and around Nagpur. These include a residential area, an agricultural field and a light forest area near residential area. The study was conducted over a period of four months (April-May and October-November 2013) during which regular field trips were made at intervals of two or three days. The ecological density was investigated using line transect method. It was observed that house sparrows are more abundant in agricultural fields as compared to residential colonies and not found in forest areas. It was also observed that they contribute to sustainable agriculture by foraging insects.

(Key words - *Passer domesticus*, Nagpur, Ecological density).

more. Detecting and identifying bird while walking on these transect required ornithological skill. Birds were counted at constant time of the day, while walking at a slow and uniform pace to complete each transect.

#### Study area

The study was conducted in and around Nagpur on following sites.

- 1) Agricultural area - Wathoda near Kalmeshwar Taluka in Nagpur District  
21.2321° N, 78.9180° E
- 2) Urban area - Nagpur west - 21.09° N, 79.09° E
- 3) Forest area near Nagpur west - 21.1540° N, 79.0420° E

#### Results and discussion

Table 1: Occurrence of *P. domesticus* in agriculture area during summer in April-May 2013

Date	Area	Time	Male	Female	Total	Sex/Ratio (M/F)	Weather
7.4.13	Agricultural	Evening	13	9	21	13:9	Clear
14.4.13	Agricultural	Moming	6	13	19	6:13	Clear
21.4.13	Agricultural	Moming	7	15	22	7:15	Clear
7.5.13	Agricultural	Moming	5	20+	25+	5:20+	Clear
2.6.13	Agricultural	Evening	1	3	4	1:3	Cloudy

(+ sign = More than)

Table 2: Occurrence of *P. domesticus* in forest area during summer in April-May 2013

Date	Area	Time	Male	Female	Total	Sex/Ratio (M/F)	Weather
16.4.13	Forest	Moming	0	0	0	0	Clear
27.4.13	Forest	Moming	0	0	0	0	Clear
29.4.13	Forest	Moming	0	0	0	0	Clear
15.5.14	Forest	Moming	0	0	0	0	Cloudy
28.5.13	Forest	Moming	0	0	0	0	Clear



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This preliminary survey of population dynamics of *Passer domesticus* was conducted at three different localities viz. forest, an agricultural field and a residential colony. The following observations were noted after studying the density of *P.domesticus*

1) Over a period of two months in the summer i.e. in April-May a total 91+ birds were seen in agricultural area 70 in residential area and in winter a period of two months in October-November a total 124+ birds were seen in agricultural area in 79 birds in residential area. These trends showed that breeding of birds were more successful in agricultural areas as compared to residential areas. Agricultural areas provided a year round supply of food due to storage of cereals and other food items and leftover after feeding of domestic animals. It also provided relatively quiet and unpolluted environment and safe nest sites in cracks and cavities in buildings (Saether S.A. et al.2012). It was noted that rural house sparrows were found to have a slightly higher body mass than urban areas may be due to easy availability of food in rural areas (Gil D. & Brum H. 2014).

2) There was no bird population observed in forest area near residential area in both seasons. According to data in table 2 and table 5 it was confirmed that house sparrow occurs only in man-made habitats such as farmland and cities. The house sparrow is one of the familiar species which appeared to follow man everywhere and is inseparable from human habitations (Hussain Aatif et al. 2014).

3) Out of total birds, male birds were less common than female birds in agricultural as well as residential areas. Maximum numbers of birds were spotted in bright and sunny days. Similar results were recorded by Goyal M. (2005) in her studies with respect to house sparrows in the areas of Haridwar, Uttaranchal.

4) It was observed that though all the localities are from west Nagpur more number house sparrow was in Futala slum localities. This may be due to more supply of food sources, low hygienic practices. In contrast to this less number of house sparrows were recorded in Hindustan colony which is an affluent locality with landscape gardens, ornamental plants, and well maintained hygienic condition. In Bharatnagar, Rannagar and Tilknagar area due low food resources, traffic and increased disturbances moderate number of house sparrows were seen as compared to agricultural areas.

**Conclusion**

The occurrence of *P.domesticus* in agricultural and urban areas appears to be distinct. More number of house sparrows with slightly bigger body mass were observed in agricultural areas as compared to residential areas in urban centers. No house sparrow was observed in forest area adjacent to residential areas. Therefore, long term studies are needed to understand the density of sparrows and nest sites. The monitoring of sparrow population can be helpful to understand the changes in the surrounding environment.

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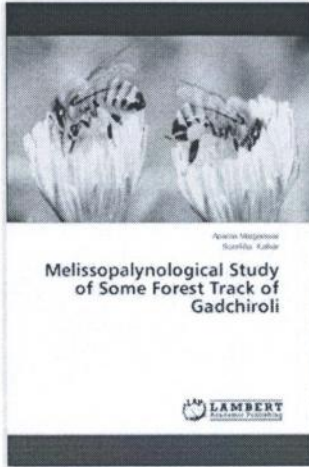
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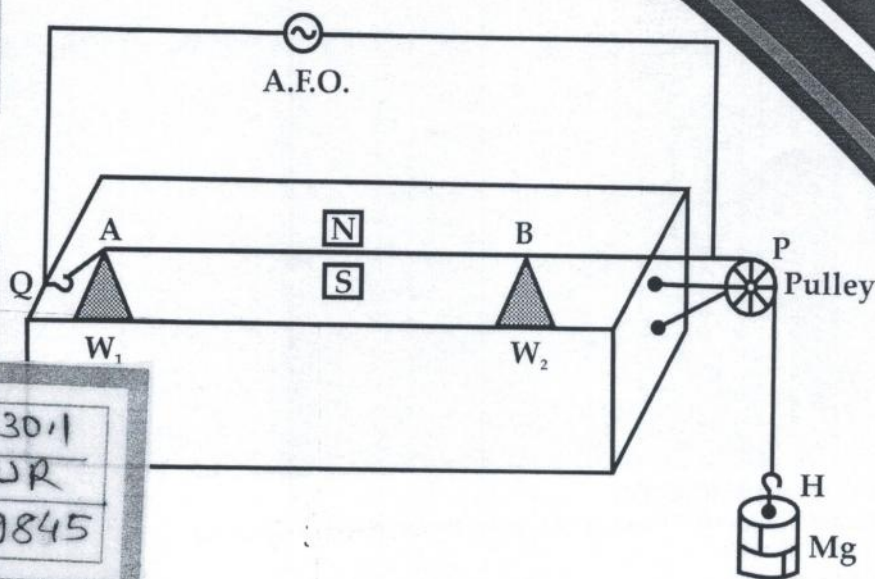
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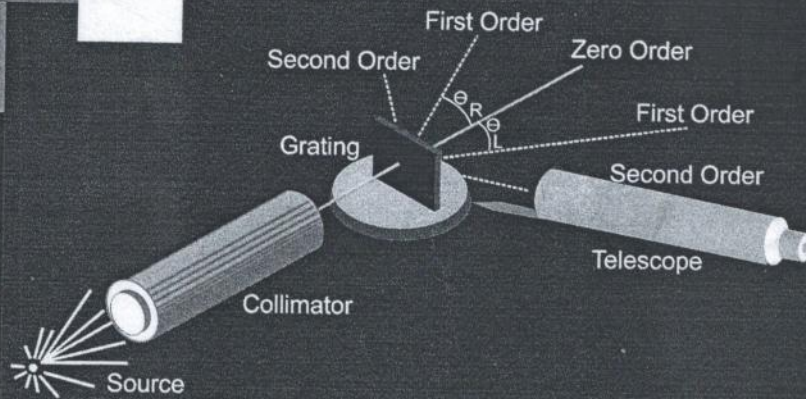
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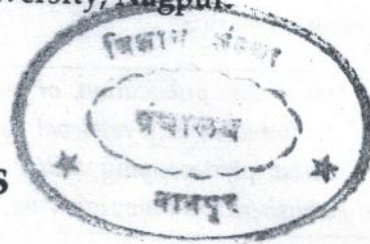
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## Biomechanical Analysis of 2015 - All England Open Women (Singles) Final Match Decider Game Played Between Saina Nehwal and Carolina Marin

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### Abstract:

2015- All England Open women (singles) Final match was played between Saina Nehwal of India and Carolina Marin of Spain. Carolina won the match by 2-1. Saina won the first game and was leading in the second game by 6-2 but she was locked at 13 for long time and then lost the game. So it was the third game that decided the winner of the title. We have analysed the third game that is the decider game biomechanically. The duration of the match was 59 minutes with the final score of the match 21-16, 14-21 and 7-21. After levelling the play 1-1, the decider was completely dominated by Carolina by displaying her best shots and placement of shuttle by applying principles of biomechanics more accurately. Unfortunately, most of the actions to be performed in sports are a combination of several movements and skills that are therefore quite difficult to analyse. Attempt is made here to analyse movements performed in all the 28 points won by both the players in the decider game.

**Key-Words:** Biomechanical, Forehand, Long Service, Short Service, Shuttle Velocity

### Introduction:

The Badminton is one of the fastest racquet sports in accordance with shuttle velocity (Kollath, 1996; Tsai & Chang, 1998). The ability to respond quickly and effectively to a constant changing environment is a key factor of successful performance. The badminton involves various skills like long service, short service, drop shot, overhead smash, forehand smash, backhand smash, flick, clear etc. To start the game, most commonly used skills are long serve and short serve that determines the control of the game. Some studies have been done on smash (Poole, 1970; Tang 1995; Tsai 1998), drop shot (Tsai 2001) and power stroke (Gowitzke 1986, 1991 and 1991). Along with these studies, there were few descriptive studies focused on arm movement during forehand smash (Elliott, 1995; 1996; Springing, 1994; Tang, 1995).

Badminton involves sharp eyesight, quick analysis of opponent's shot, preparing your stance, adjusting your hand, changing the face of your racquet to the incoming shuttle and generating force as well when you plan to smash the shuttle. All of these processes involve application basic biomechanical principles like centres of gravity, line of gravity, base of support, mass of the individual and frictional forces. These are the factors that control the balance and stability of the player.

## Biomechanical Analysis of 2015 - All England Open Women (Singles) Final Match Decider Game Played Between Saina Nehwal and Carolina Marin

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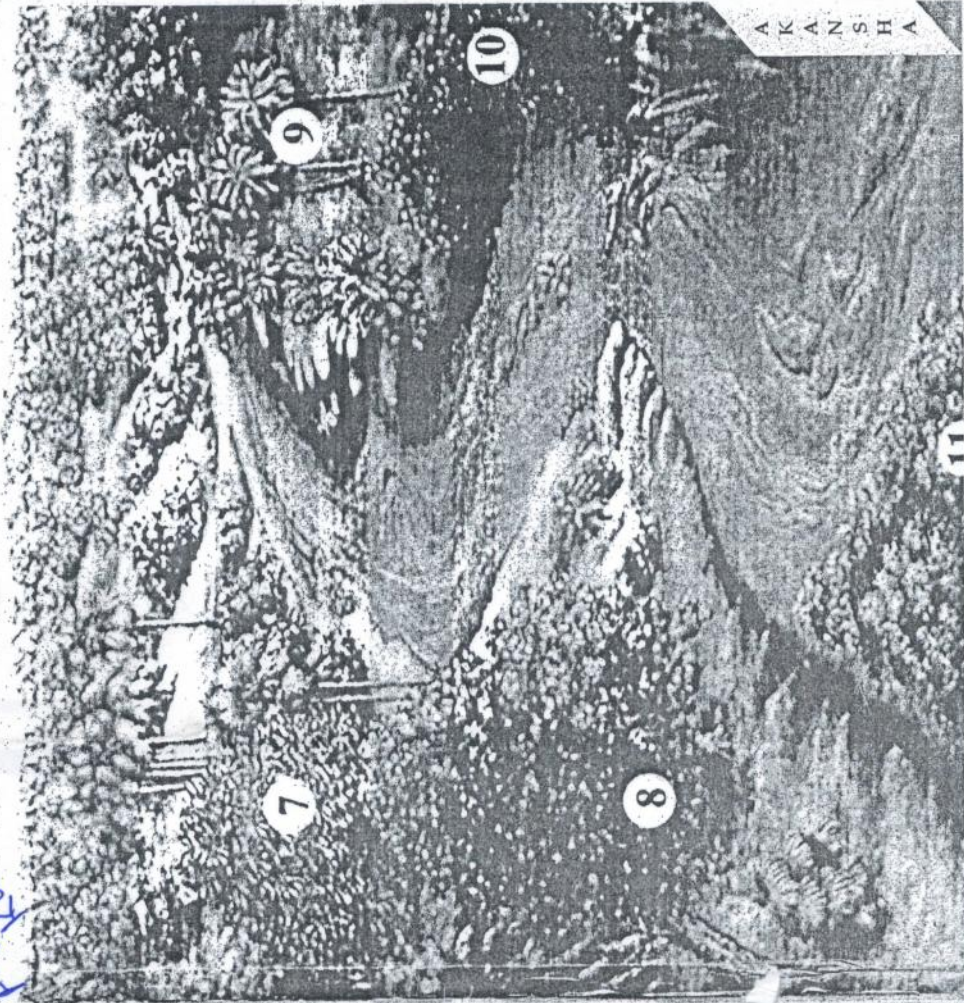
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Asha Gupta



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*Global Warming and Climate Change*

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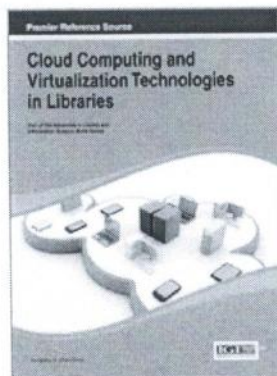
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### The University Cloud Library Model and the Role of the Cloud Librarian

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#### Abstract

The latest trend of Cloud Computing is progressing fast and using this technology it is possible to publish and store information on a virtual cloud based infrastructure. Virtualization technology has been adopted by many data centers in the industry. It shares resources on a single system efficiently and reduces infrastructure costs. Libraries are using various technologies along with Web tools at a time. Information sharing and an open access culture are developing fast in the education field. How libraries can make use of the application of cloud computing and virtualization technology for common data storage and managing multiple servers and provide cloud based information services to patrons will be discussed in detail in this chapter. This chapter also discusses in brief the applications of these technologies in libraries along with the university cloud library model and the role of cloud librarians.

#### Chapter Preview

Top

#### Cloud Computing

Cloud Computing is the improvement of Distributed Computing, Parallel Computing, Grid Computing and Distributed Databases. The basic principle of Cloud Computing is making tasks distributed in large numbers of distributed computers but not in local computers or remote servers. "The idea of cloud computing has emerged for outsourcing of computing infrastructure, storage of client data and

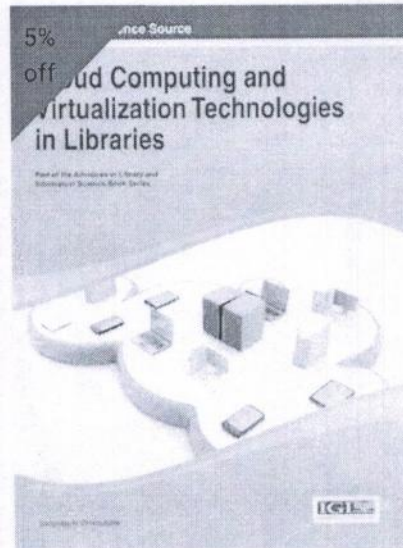
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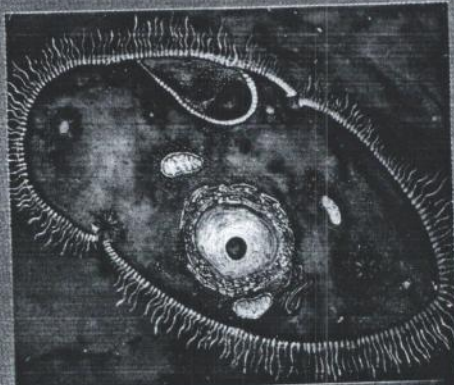
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**A preliminary survey of commonest bird house sparrow *Passer domesticus* in three different localities in and around Nagpur, Maharashtra.**

**Dapke S. N.<sup>1</sup>, S.A. Koushik, and R.V. Didolkar<sup>2</sup>**

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**ABSTRACT**

The house sparrow *Passer domesticus* belongs to the family Passeridae and is one of the most widespread and abundant birds in the India and most part of the world. The house sparrow is closely associated with human habitations and live in urban or rural surroundings. This bird species which were widely distributed and observed everywhere has now shown a remarkable decline in its population in many areas. This study was undertaken to collect information about population density of house sparrow in different localities in and around Nagpur. These include a residential area, an agricultural field and a light forest area near residential area. The study was conducted over a period of four months (April-May and October-November 2013) during which regular field trips were made at intervals of two or three days. The ecological density was investigated using line transect method. It was observed that house sparrows are more abundant in agricultural fields as compared to residential colonies and not found in forest areas. It was also observed that they contribute to sustainable agriculture by foraging insects.

(Key words - *Passer domesticus*, Nagpur, Ecological density).

more. Detecting and identifying bird while walking on these transect required ornithological skill. Birds were counted at constant time of the day, while walking at a slow and uniform pace to complete each transect.

### Study area

The study was conducted in and around Nagpur on following sites.

1) Agricultural area - Wathoda near Kalmeshwar Taluka in Nagpur District

21.2321° N, 78.9180° E

2) Urban area - Nagpur west - 21.09° N, 79.09° E

3) Forest area near Nagpur west - 21.1540° N, 79.0420° E

### Results and discussion

Table 1: Occurrence of *P. domesticus* in agriculture area during summer in April-May 2013

Date	Area	Time	Male	Female	Total	Sex/Ratio (M/F)	Weather
7.4.13	Agricultural	Evening	13	9	21	13:9	Clear
14.4.13	Agricultural	Moming	6	13	19	6:13	Clear
21.4.13	Agricultural	Moming	7	15	22	7:15	Clear
7.5.13	Agricultural	Moming	5	20+	25+	5:20+	Clear
2.6.13	Agricultural	Evening	1	3	4	1:3	Cloudy

(+ sign = More than)

Table 2: Occurrence of *P. domesticus* in forest area during summer in April-May 2013

Date	Area	Time	Male	Female	Total	Sex/Ratio (M/F)	Weather
16.4.13	Forest	Moming	0	0	0	0	Clear
27.4.13	Forest	Moming	0	0	0	0	Clear
29.4.13	Forest	Moming	0	0	0	0	Clear
15.5.14	Forest	Moming	0	0	0	0	Cloudy
28.5.13	Forest	Moming	0	0	0	0	Clear

May 2013

Weather
Year
Year
Year
Year
Year

November

Weather
Year
Year
Year
Year
Year

Year 2013

Weather
Year
Year
Year
Year
Year

November

Year
Year
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Year

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This preliminary survey of population dynamics of *Passer domesticus* was conducted at three different localities viz. forest, an agricultural field and a residential colony. The following observations were noted after studying the density of *P.domesticus*

1) Over a period of two months in the summer i.e. in April-May a total 91+ birds were seen in agricultural area 70 in residential area and in winter a period of two months in October-November a total 124+ birds were seen in agricultural area in 79 birds in residential area. These trends showed that breeding of birds were more successful in agricultural areas as compared to residential areas. Agricultural areas provided a year round supply of food due to storage of cereals and other food items and leftover after feeding of domestic animals. It also provided relatively quiet and unpolluted environment and safe nest sites in cracks and cavities in buildings (Saether S.A. *et al.*2012). It was noted that rural house sparrows were found to have a slightly higher body mass than urban areas may be due to easy availability of food in rural areas (Gil D. & Brum H. 2014).

2) There was no bird population observed in forest area near residential area in both seasons. According to data in table 2 and table 5 it was confirmed that house sparrow occurs only in man-made habitats such as farmland and cities. The house sparrow is one of the familiar species which appeared to follow man everywhere and is inseparable from human habitations (Hussain Aatif *et al.* 2014).

3) Out of total birds, male birds were less common than female birds in agricultural as well as residential areas. Maximum numbers of birds were spotted in bright and sunny days. Similar results were recorded by Goyal M. (2005) in her studies with respect to house sparrows in the areas of Haridwar, Uttaranchal.

4) It was observed that though all the localities are from west Nagpur more number house sparrow was in Futala slum localities. This may be due to more supply of food sources, low hygienic practices. In contrast to this less number of house sparrows were recorded in Hindustan colony which is an affluent locality with landscape gardens, ornamental plants, and well maintained hygienic condition. In Bharatnagar, Rannagar and Tilknagar area due low food resources, traffic and increased disturbances moderate number of house sparrows were seen as compared to agricultural areas.

**Conclusion**

The occurrence of *P.domesticus* in agricultural and urban areas appears to be distinct. More number of house sparrows with slightly bigger body mass were observed in agricultural areas as compared to residential areas in urban centers. No house sparrow was observed in forest area adjacent to residential areas. Therefore, long term studies are needed to understand the density of sparrows and nest sites. The monitoring of sparrow population can be helpful to understand the changes in the surrounding environment.

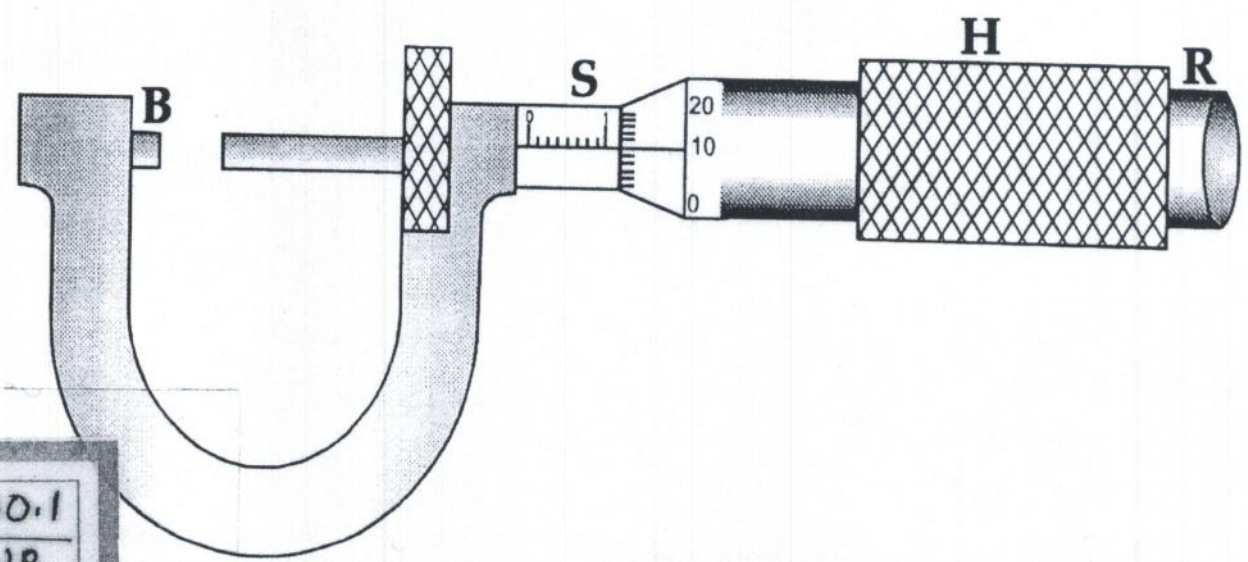
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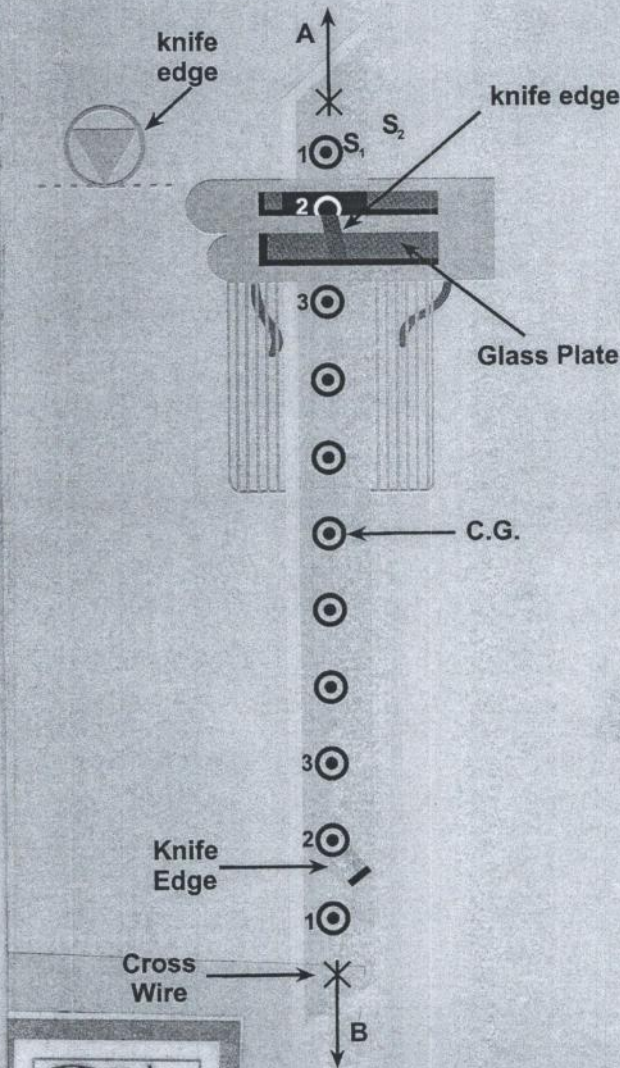
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## Synthetic and Spectral Studies of Rubidium Complexes with P-Bromoisonitrosoacetophenone

Nandeshwar S T<sup>1</sup>, Jadhao S Z<sup>1</sup>, Raut R D<sup>2</sup>

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### Abstract

The Complexes of alkali metals like Rubidium with the ligand p-bromoisonitrosoacetophenone [P-BrHINAP] have been synthesized and characterized by Elemental analysis, Conductivity measurement, Molecular weight & Melting point determination, Nuclear magnetic resonance, Electronic/Absorption and Infrared spectral studies as well as Thermo gravimetric analysis.

**Keywords:** Conductivity, molecular weight, melting point, Nuclear magnetic resonance and Thermogravimetry.

### 1. Introduction

For the formation of complexes of transition metals<sup>1</sup>, the ligand P-bromoisonitrosoacetophenone has already been investigated. Here in the present work of study we are reporting the synthesis of ligand and its neutral complexes with alkali metal Rubidium. The purity of ligands has been checked and confirmed by elemental analysis and melting point determination. Solid complexes of alkali metals have been synthesized and characterized by techniques such as elemental analysis, molecular weight determination, conductivity measurements, nuclear magnetic resonance and thermo gravimetric analysis.

### 2. Materials And Method

The method for synthesis of ligand P-bromoisonitrosoacetophenone was described by Muller and Pechmann<sup>2</sup>. The basic principle used for the synthesis of this ligand is that of Claisen<sup>3</sup>. The reagent isoamyl nitrate<sup>4</sup> was needed for the synthesis, which was prepared from isoamyl alcohol and sodium nitrate. The precipitates so formed were filtered, washed with ethanol or ether as the case needed and subjected to molecular weight and melting point determination, conductivity measurement, elemental analysis, ESR, IR, NMR spectrum and Thermo gravimetric analysis.

### 3. Experimental

The Experimental work has been carried out by using all the chemicals and solvents were of analytical reagent grade. Double distilled water was obtained by distilled water containing potassium permanganate and alkali in glass apparatus.

#### Synthesis of [Rb (P-BrINAP)<sub>2</sub>] complex:

Rubidium acetate (.1mole, .145gm) and [P-BrINAP] (.2mole, .456gm) in the molar proportion of 1:2 was dissolved in the minimum quantity of alcohol separately. Then the mixture of both solutions were taken in a round bottom flask with equal volume of water and refluxed under water condenser on sand bath at 100°C for an hour with occasional shaking. The pH 6.0-7.0 of mixture solution was maintained by adding HCl or NH<sub>4</sub>OH. The solid product obtained was immediately removed from the flask as soon as the reaction period was over and kept in vacuum desiccators. On cooling a yellow coloured complex was obtained. It was filtered, dried in air, recrystallised from chloroform and analyzed for the elements carbon, hydrogen and nitrogen.



FULL  
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PAPER

## Bioinorganic Materials of Alkali Metals with P- Bromoisonitrosoacetophenone

*Nandeshwar S T<sup>1</sup>, Jadhao S Z<sup>2</sup> and Raut R D<sup>3</sup>*

*<sup>1,2</sup> Deptt. Of Chemistry, Institute Of Science, Nagpur;  
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Email ID: <S.Nandeshwar14@Yahoo.In/9421811926>,  
<Ravishankar.Raut@Gmail.Com/9371941944>*

### ABSTRACT

*Complexes of alkali metals [Li and K] with the legend p-bromoisonitrosoacetophenone [p-BrINAP] have been synthesized and characterized by elemental analysis, Conductivity measurement, and magnetic susceptibility, and thermo gravimetric analysis, nuclear magnetic, electromagnetic and infrared spectral studies.*

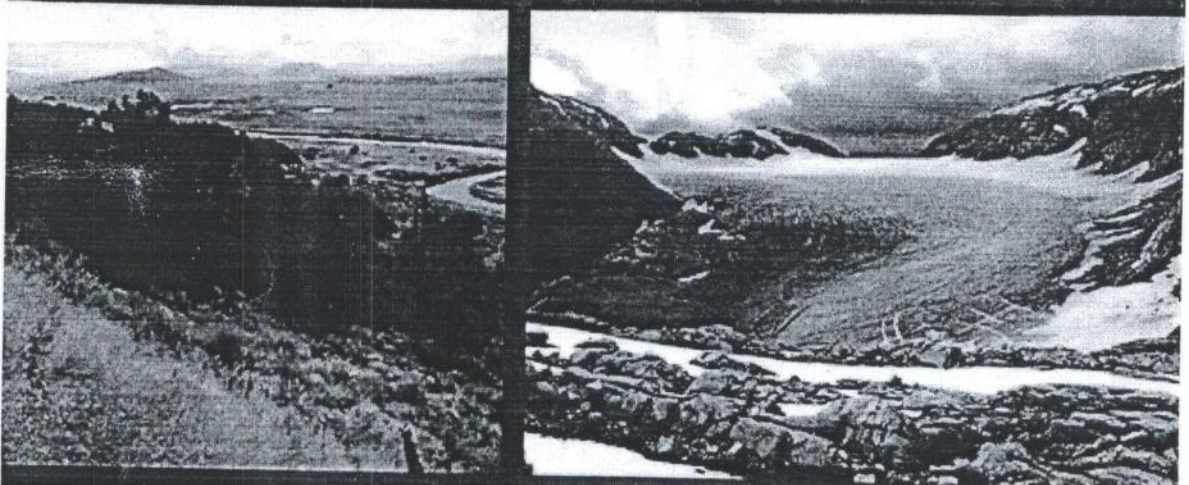
*Antimicrobial activities of legends and its complexes with alkali metals were screened using sensitivity test, minimum inhibition concentration and minimum bacterial concentration method. Metal chelate showed antimicrobial activity as compared to the control of legends.*

**KEYWORDS:** *Alkali Metals, ligand, thermo gravimetric, inhibition and sensitivity.*

### 1. INTRODUCTION

**P**-bromoisonitrosoacetophenone has already been investigated for possible complex formation with transition metals<sup>4</sup>. Here in this communication we are reporting the neutral complexes of this legend with alkali metals. The present work has been carried out in the above context and includes preparation of legends. The purity of legends has been confirmed by elemental analysis and melting point determination. Solid complexes of alkali metals have been synthesized and characterized by techniques such as

# IMPACT OF GLOBAL CLIMATE CHANGE ON EARTH ECOSYSTEMS



*Editors*

**D.R. Khanna   A.K. Chopra**  
**Gagan Matta   Vikas Singh**  
**Rakesh Bhutiani**

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Editors: D.R. Khanna, A.K. Chopra, Gagan Matta, Vikas Singh &  
Rakesh Bhutiani

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## Chapter 28

# Study of Avifauna Visited to Borgaon Region of Nagpur, Maharashtra, India

*Kishor G. Patil and Rajendra V. Tijare*  
Govt. Institute of Science,  
Nagpur, Maharashtra

The favorable ecological conditions like availability of food, wetlands and marshy places attracting the various birds. The present investigation carried out to document avifauna visited Borgaon area, the south-east part of Gorewada national park. The birds were recorded during June 2010 to May 2011 in morning and evening hours. The birds visited to this area prominently for food and shelters were local migratory and residential.

Total 72 species having different feeding habits were detected during the observation. From the observed species some birds found in all the three seasons while others found in winter. The purple rumped sunbird and Shikra observed during rainy season only.

*Keywords: Avifauna, Borgaon, Nagpur.*

### Introduction

Birds have great efficiency to fly. They are good bioindicators in terms of potential pollinators and scavengers. Population of birds is a sensitive indicator of



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## Chapter 23

# Population Dynamics of Zooplankton from the Two Lakes, Bothali (Mendha) and Murkhala, Dist. Gadchiroli, Maharashtra, India

*Rajendra V. Tijare*

*Assistant Professor,  
Govt. Institute of Science, Nagpur, Maharashtra*

The spatial and temporal distribution of zooplankton in Bothali (Mendha) and Murkhala lakes were studied monthly from November 2003 to October 2005. Bothali (Mendha) lake located at 20°-11° latitude and 80°-04' longitude besides Dhanora road, having an area about 39.68 hectares. Murkhala Lake located near Chandrapur road at 20°-39° latitude and 80°-96' longitude.

Maximum population of zooplankton recorded in Murkhala lake than Bothali (Mendha) lake. Among the total zooplanktonic forms rotifers were counted highest which followed by crustaceans forms. Periodical appearance of nauplius larvae indicating the new recruitment in population.

From copepods, cyclopoides were dominant than calanoides. The cladocerans specially *Simocephalus vetulus*, *Alona rectangular* and *Bosminopsis deitersi* were found

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## Importance of Counselling the Students at Graduation Level

### ABSTRACT

*The article describes the need of counselling the science students at graduation level and how to implement them in the welfare of the students going for higher studies or jobs.*

*Counselling the students is important while entering into the graduation level. In India the students lack of professional counselling. As the education has now become global it is necessary to make students aware of the courses, skills, affiliation of the university and the job opportunities*

*Now a day the students at graduation level are facing the problems of stress related to their career related matter. Basically higher education students are divided into following major categories offering Arts, Science, Commerce, management, IT etc. In this article we discuss the stress experienced by the Science stream students and try to find out the solutions to reduce this stress by counselling sessions.*

**Keywords:** Counselling, graduation, skills, success, higher education, science, examination

The higher secondary science students prepare for Medical, Engineering and Architecture entrance tests conducted at National or State agencies. The subjects they prepare for these entrance examinations are Physics, Chemistry, Mathematics and Biology. Almost every student applies for this test and try find his place in the competition. As the admissions are on merit basis only few students get admission in the reputed colleges. At this very first stage of competition large number of students find themselves unsuccessful. But for many of them the reason for failure (less success) is that they not sufficient mature to prepare such examination, they lack proper guidelines and motivation and more importantly they lack self-preparation. All these factors can be removed at the graduation level through proper counselling and student may come out more success. There



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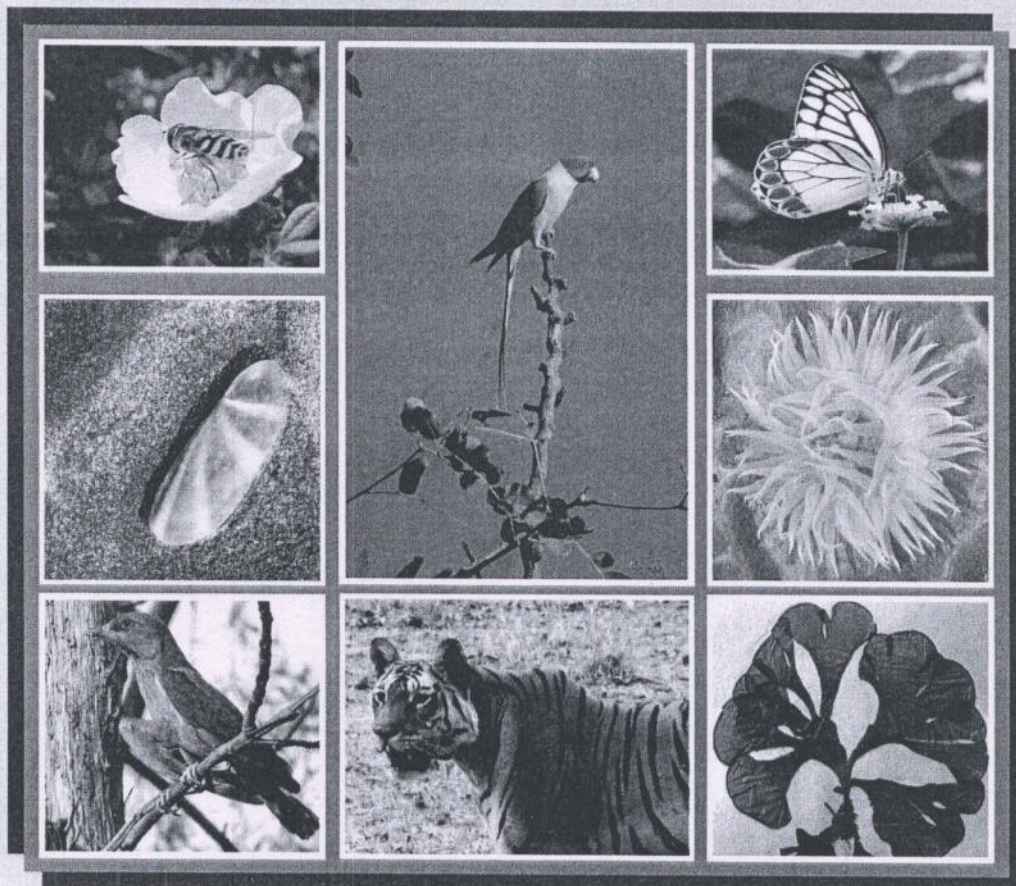
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**Biodiversity : Status and Challenges in Conservation**

**'FAVEO 2013'**

29<sup>th</sup>, 30<sup>th</sup> November 2013



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## Avian biodiversity on *Butea monosperma* tree during spring season and possible role of flavonoids

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**Abstract :** Present work was undertaken to study avian biodiversity on specific tree *Butea monosperma* during spring season for the year 2012 and 2013 respectively. Observations were carried out thrice a week at twelve sites in and around Nagpur, Maharashtra. Observations indicated that various local and migratory birds were mostly attracted to flowering trees like *Butea monosperma* (BM) variously named as Palas. Birds were observed feeding on nectar from open keel and some birds foraging freshly opened BM flower. FTIR and UV visible spectra of methanolic extract of BM flowers confirmed presence of flavonoids like Rutin, Quercetin, Butin and Isobutin. These flavonoids possibly play a role in reducing oxidative stress. Occurrence of migratory birds like Rosy Starling was found to be dependent on the early blooming of BM flower which also coincided with the rise in temperature and humidity. No such correlation was found with local birds. Conservation of BM tree may help in conserving the biodiversity of local as well as migratory birds.

**Key words :** Avian biodiversity, spring season, *Butea monosperma*, Flavonoids. Nagpur

### Introduction

Avian biodiversity is the richness of bird species. Diet of birds may include insects like grasshoppers, fruits like berries, grapes, variety of seeds, and nectar of some flowers. Wild grain is also a valuable source of food for many birds. Even some birds can be seen foraging in tree bark for insects that apparently provide valuable protein. During spring season various flowers bloom, some of them can be observed where maximum biodiversity of birds can be seen. In Nagpur city various local and migratory birds were observed sucking nectar of Palas (*Butea monosperma*) (BM) and Semal (*Bombax ceiba*) flowers. The flowers are visited by a variety of insects, birds and some mammals. Birds dig into the keel-shaped lower petals of the flower to lick up the nectar. In turn the stamen pops out and smacks pollen on the forehead of the bird and some birds foraging freshly opened BM flower as they pollinate the flowers (Rajesh Tandon et al). Birds have high metabolic rate hence are subjected to oxidative stress (Kevin J. McGraw). The expression of most life history traits, such as immunity, growth and the development of sexual signals, is negatively affected by high levels of oxidative stress. Dietary antioxidants can reduce oxidative stress and have therefore been the focus of numerous studies in behavioral and evolutionary ecology in the last few decades (Xinyan Tang et al). Oxidative stress reducing flavonoids are found in BM flowers. Flavonoids in food are important for birds as they act as antioxidant and restore intracellular immunity (Carlo Catony, et al.).

### Study areas

To study food and feeding habit of birds during spring season 12 sites in and around Nagpur were selected. These sites are - 1. Gorewada lake and forest, 2. L.I.T.college campus, 3. Satpuda botanical garden, 4. Ambazari garden, 5. Surabuldi, 6. Zilpi lake, 7. Telhara lake, 8. Dahegoan, 9. Haladgaon, 10. Paradgoan, 11. Bhandara road and 12. Navegoan bandh.

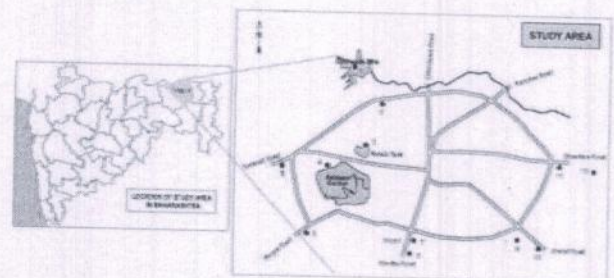


Fig 1-Location of Nagpur in the state of Maharashtra and study areas in Nagpur.

### *Butea monosperma* (Palas)

**Description:** It is found throughout India and variously named as Palash, Palas, Flame of Forest etc. It is medium sized deciduous tree belonging to the family Fabaceae, growing up to 15 m tall. The leaves are pinnate with a petiole 7.5-20 cm long with small stipules and three leathery leaflets. Flowers are 2.5 cm long, bright-red, and produced in racemes up to 15 cm long. The fruit is a pod 15-20 cm long and 4-6 cm broad (<http://www.worldagroforestry.org>). Palas tree loses



	Aegithimidae	Common Iora	R
	Corvidae	House Crow	R
		Jungle Crow	R
		Drongo	R
		Treepie	R
	Laniidae	Long Tailed Shrike	R
	Passeridae	sparrow	R
	Megalaimidae	Coppersmith barbet	R
	Zosteropidae	Oriental White Eye	R
	Chloropseidae	Leafbird	M
	Phylloscopidae	Greenish Warbler	M
		Tickell's Leaf Warbler	M
	Oriolidae	Golden Oriole	R

R-Resident, M-migrant (Ref- "Birds of the Indian Subcontinent" 2<sup>nd</sup> Edi, By-Richard Grimmett, Carol Inskipp and Tim Inskipp)

Probable Identification of F  
Aromatic Hydrocarbons: A1  
Peaks in fingerprint region:

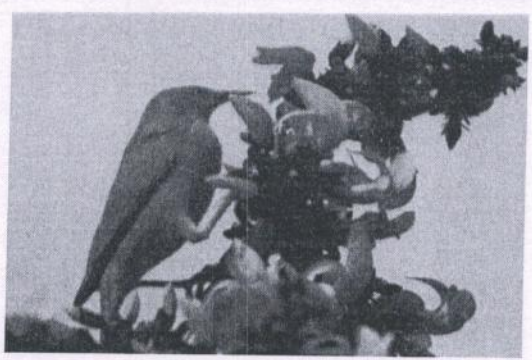


Figure-3 and fig  
Results and Discussion

According to the data from the that 5 orders, 18 families and 31 species on *Butea monosperma* tree. They or foraging freshly opened BM mostly local and some like Rosy Star are migratory. Generally Rosy Star flower (Raju Kasambe and Tarique faithfully in mid-to-end February, at the mid to the end of April. Found that *S.roseus* arrived early in of January. From meteorological data occurrence of *S. roseus* and temperature. From figure 1 and 2, it was observed 2012, maximum and minimum temperature 16.5°C respectively. During January, minimum temperature was 28.9°C. Temperature varied more than the 1

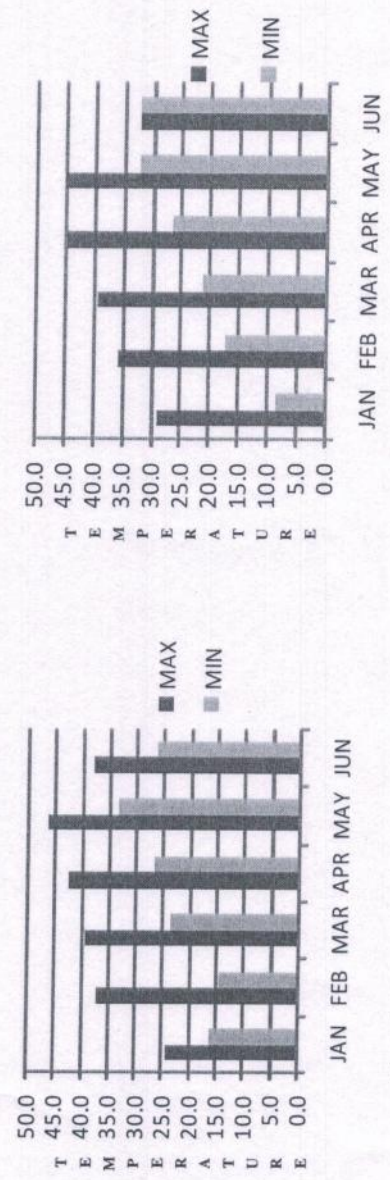


Figure-1. Maximum and minimum temperature for year 2012  
Figure-2. Maximum and minimum temperature for year 2013  
Meteorological data 2012  
Meteorological data 2013

Table 2 : Results showing presence of flavonoids in sample by UV-Vis Spectrophotometer

Instrument	Absorbance	Indicates Presence
UV-Vis Spectrophotometer	204nm	Flavonoids
	264nm	
	272nm	

cation of Functional Groups:

carbons: Ar-H = 3000-3050  $\text{cm}^{-1}$

int region: 500-1500  $\text{cm}^{-1}$

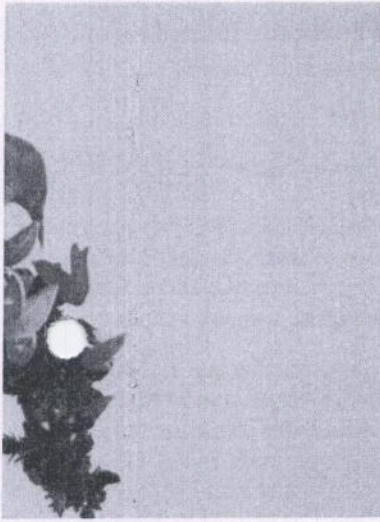


Figure-3 and figure-4 Bird Photographed while foraging on *Butea monosperma* flower

on

From the data from the table -1 it was observed that 15 species and 31 species of birds are found on a tree. They are either sucking nectar from an opened BM flower. These birds are like Rosy Starling (*Sturnus roseus*) and locally Rosy Starling sucks nectar of BM flowers (Sani and Tarique Sani), which arrived quite early in February, and left fairly punctually in April. From observations it was observed that during January 2013 i.e. at the end of the meteorological data comparative study of *roseus* and temperature range was made. It was observed that during January minimum temperatures were 24.5°C and maximum was 28.9°C and 8.3 °C respectively.

During January 2013 maximum and minimum temperatures were more than the previous year. It could be due to the early blooming of *Butea monosperma* in the previous year, which perfectly coincided with the arrival of *S. roseus*. Comparatively departure of *S. roseus* was uniform all around mid to end-April. It was observed with local birds. In 2012, absorbance wavelength at 204nm, confirmed presence of flavonoids in sample analyzed by spectrophotometer. As evident from table-3 FTIR functional groups are aromatic hydrocarbons in the 1500-1600  $\text{cm}^{-1}$ . FTIR confirmed that these

flavonoids are Rutin, Quercetin, Butin and Isobutin. It was noted that birds prefer food enriched with flavonoids. Birds can obtain immunological benefits from the ingestion of flavonoids (C.Catoni et.al.). It has been reported that free radicals arising as by-products of normal metabolic activities have deleterious effects on cellular proteins, lipids and DNA, this phenomenon is known as oxidative stress. Since reproduction is an energy demanding activity, which increases both basal and field metabolic rates, hence breeding efforts generate oxidative stress (Alonso-Alvarez, C. et al). It was shown that the radicals scavenging activity may be present in flavonoids (Wolf Bors., et. al). It has been also reported that antioxidant flavonoids could restore the intracellular antioxidant system and promote primordial germ cells proliferation via their antioxidant action involving the protein kinase A (PKA) signaling pathway (Kevin J. McGraw).

#### Conclusion

*Butea monosperma* plant was found to be requisite for local and migratory bird. Possibly it provided immunological support and reduced oxidative stress produced due to various physiological activities. The arrival period of Rosy Starling on BM appeared to be related to flowering, which in turn was found to be dependent on fluctuation in temperature. Therefore it is necessary to plant more and more trees. Conservation of existing trees is equally important.

### Acknowledgement

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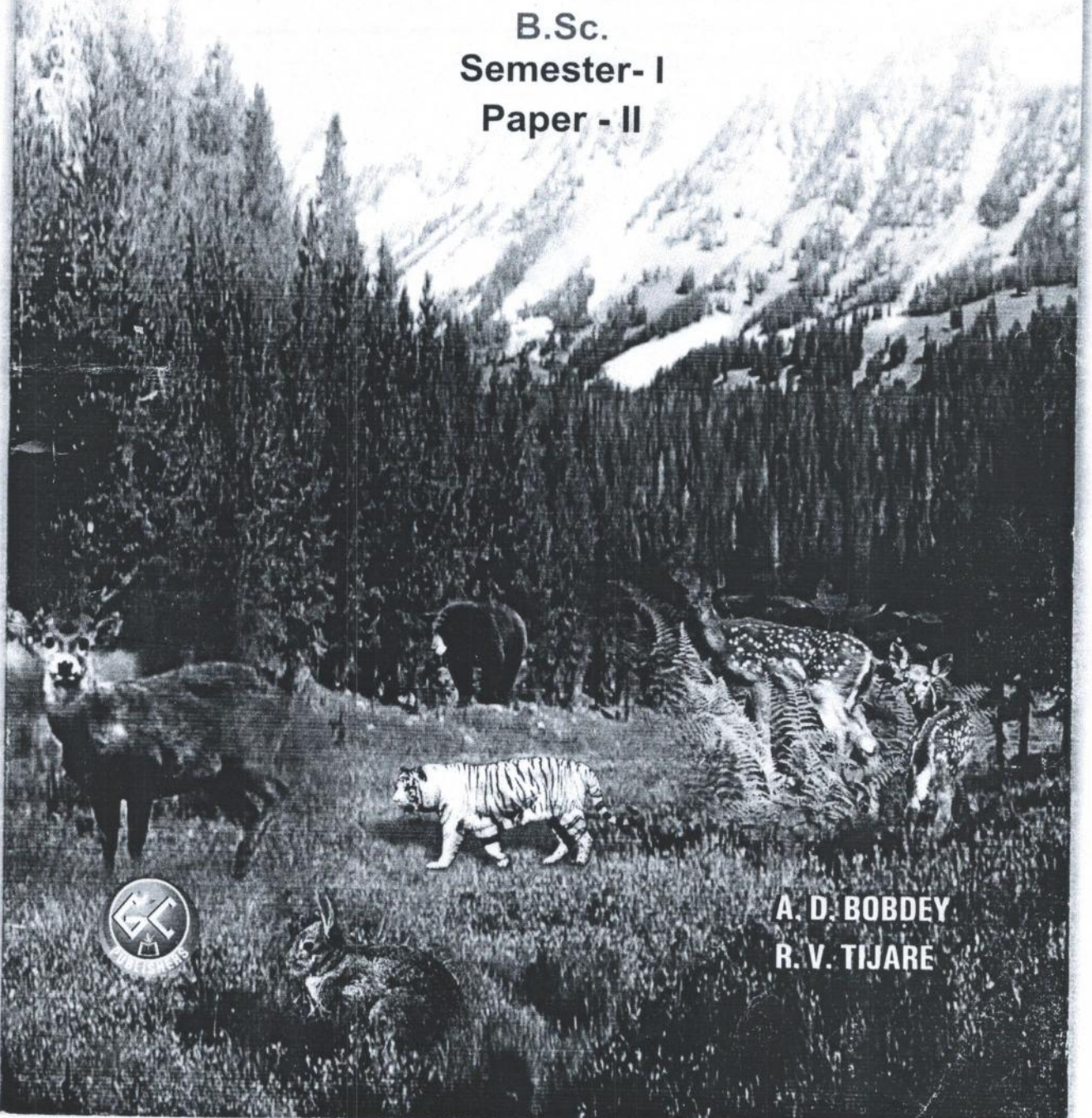
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Semester- I  
Paper - II



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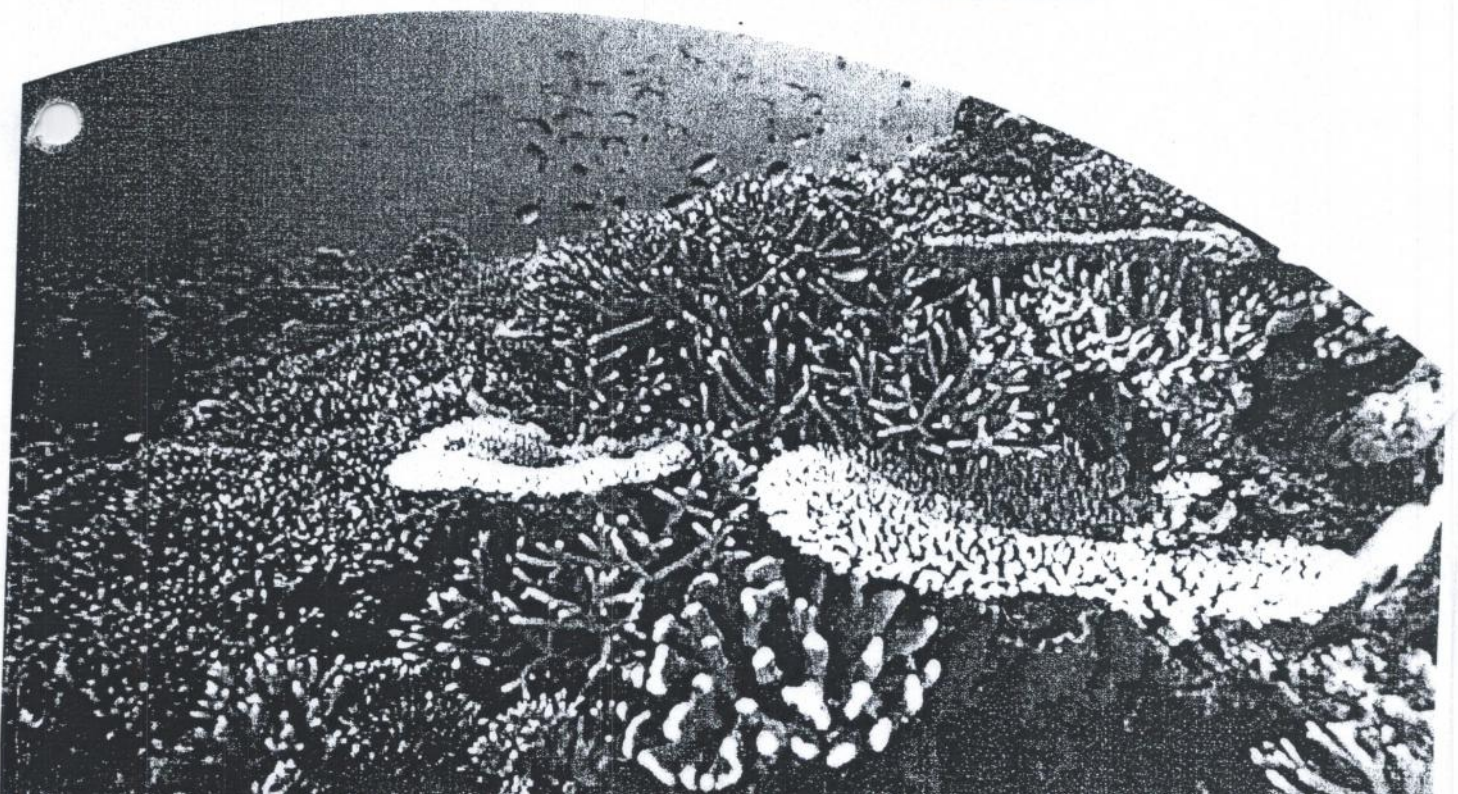


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## PHYSICO-CHEMICAL ANALYSIS OF WADGAON DAM WATER DISTRICT NAGPUR (MAHARASHTRA)

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### ABSTRACT :-

Present study intends to investigate water quality of the perennial water of Wadgaon dam, district Nagpur in Maharashtra State. The water of Wadgaon dam is mainly used for drinking and irrigation purpose. The monthly variations of physico-chemical parameters were studied from March 2013 to August 2013. The water samples collected from four different stations of the dam were analyzed which shows the remarkable variations in physico-chemical parameters as temperature (25°C-32°C), pH (8.2-8.6), electrical conductivity (360.5-526µmhos/cm), dissolved oxygen (7 mg/l), total dissolved solids (223.25-341.9 mg/l), turbidity (2.75-56 NTU), total alkalinity(118-144 mg/l), total hardness (144-181 mg/l), BOD (2.85-3.6 mg/l), and COD (9.5-15.75mg/l).

**Key words :-** *Water quality, Wadgaon Dam, Physico-chemical parameters, Monthly variations.*

### INTRODUCTION

Water is the vital ingredient of life as it is one of the most important and abundant compound of the aquatic ecosystem. The development of water resources for inland fisheries and energy production are of tremendous commercial importance. Water is used extensively in human habitation, industry, agriculture and for recreation. Depending on application, the quality and quantity of water needed differ widely. (Datta Munshi and Datta Munshi, 1987).

In recent years with the advancement of science and technology a large number of industries have grown up along the banks of major river without knowing their consequences. Recently, due to the environmental activists the people have become conscious about hazardous effects of effluents of factories. The pollution of the aquatic environment has jeopardized not only the general fabric of human health and hygiene

but also has affected the biodiversity of flora and fauna. (Verma and Datta Munshi, 1983).

The availability of good quality water is an indispensable feature for preventing diseases and improving quality of life. Therefore regular assessment of water quality for environmental monitoring become a crucial factor in the exploitation or conservation of aquatic resources (Patil *et.al.*, 2012).

Among many water bodies in and around Nagpur, Wadgaon Dam is an important one and its water is supplied to the inhabitants of Hinganghat and Sindi village to fulfill their basic needs and also supplied to Nagpur and Wardha districts for irrigation purpose. Due to this importance, the present study on physico-chemical parameters was undertaken. In the present investigation monthly variations of physico-chemical parameters were studied during the period of six months, i.e. March 2013 to August 2013.

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## Importance of Counselling the Students at Graduation Level

### ABSTRACT

*The article describes the need of counselling the science students at graduation level and how to implement them in the welfare of the students going for higher studies or jobs.*

*Counselling the students is important while entering into the graduation level. In India is the students lack of professional counselling. As the education has now become global it is necessary to make students aware of the courses, skills, affiliation of the university and the job opportunities*

*Now a day the students at graduation level are facing the problems of stress related to their career related matter. Basically higher education students are divided into following major categories: offering Arts, Science, Commerce, management, IT etc. In this article we discuss the stress experienced by the Science stream students and try to find out the solutions to reduce this stress by counselling sessions.*

**Keywords:** Counselling, graduation, skills, success, higher education, science, examination

The higher secondary science students prepare for Medical, Engineering and Architecture entrance tests conducted at National or State agencies. The subjects they prepare for these entrance examinations are Physics, Chemistry, Mathematics and Biology. Almost every student applies for this test and try find his place in the competition. As the admissions are on merit basis only few students get admission in the reputed colleges. At this very first stage of competition large number of students find themselves unsuccessful. But for many of them the reason for failure (less success) is that they not sufficient mature to prepare such examination, they lack proper guidelines and motivation and more importantly they lack self-preparation. All these factors can be removed at the graduation level through proper counselling and student may come out more success. There

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