

## Report of the Guest Lecture

**Lecture Title: "CRYSTAL FIELD THEORY"**

(Saturday, March, 26, 2022, 4:00 PM)

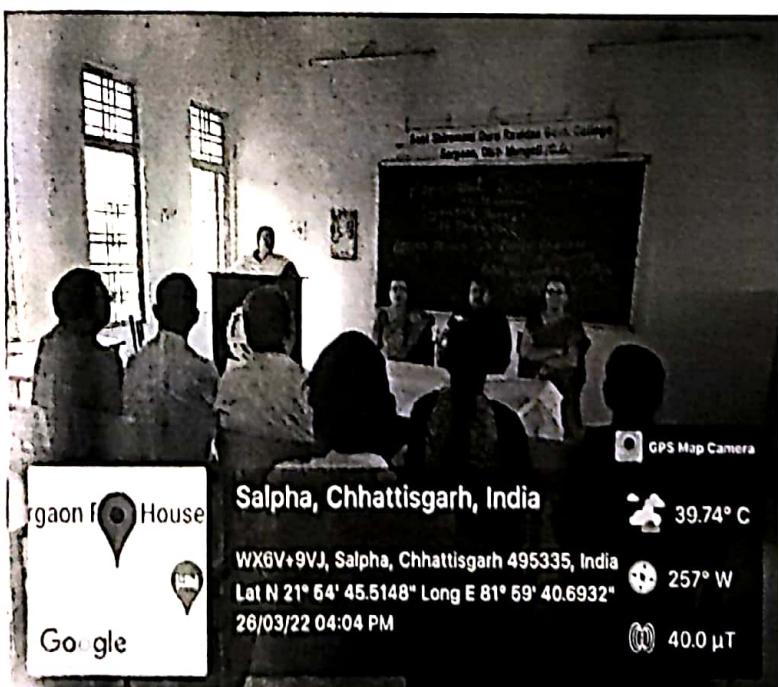
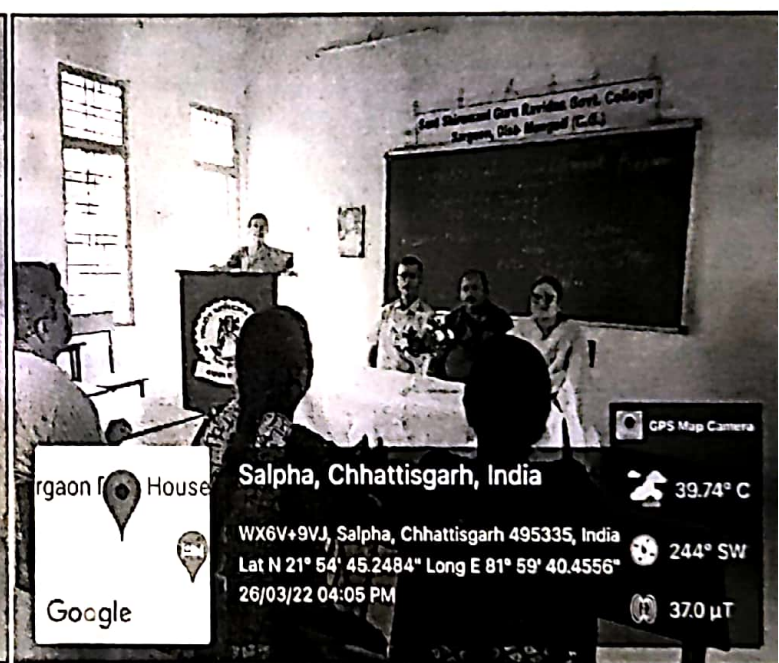
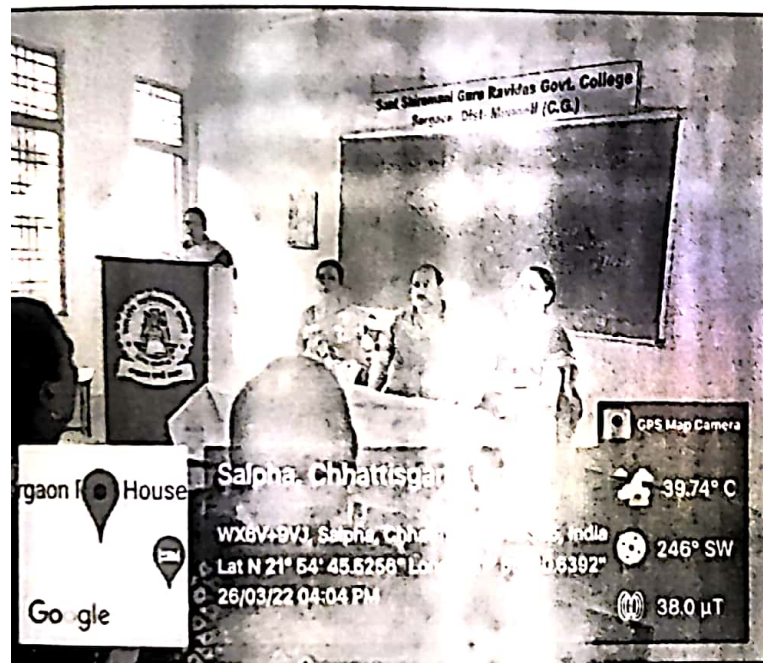
**Speaker: Dr. Pushpa Bhandari**

In her inspiring lecture, Dr. Pushpa Bhandari, Department of Chemistry, Govt. Bilasa Girls P.G., College Bilaspur, Distt. – Bilaspur, Chhattisgarh introduced the participants to the Crystal field theory. In this context, she has pointed out Crystal field theory (CFT) describes the breaking of degeneracies of electron orbital states, usually d or f orbital's, due to a static electric field produced by a surrounding charge distribution (anion neighbors). This theory has been used to describe various spectroscopies of transition metal coordination complexes, in particular optical spectra (colors). She explained the Overview of crystal field theory, according to crystal field theory, the interaction between a transition metal and ligands arises from the attraction between the positively charged metal cation and the negative charge on the non-bonding electrons of the ligand. The theory is developed by considering energy changes of the five degenerate d-orbitals upon being surrounded by an array of point charges consisting of the ligands. As a ligand approaches the metal ion, the electrons from the ligand will be closer to some of the d-orbitals and farther away from others, causing a loss of degeneracy. The electrons in the d-orbitals and those in the ligand repel each other due to repulsion between like charges. Thus the d-electrons closer to the ligands will have a higher energy than those further away which results in the d-orbitals splitting in energy. This splitting is affected by the following factors:

- the nature of the metal ion.
- the metal's oxidation state. A higher oxidation state leads to a larger splitting relative to the spherical field.
- the arrangement of the ligands around the metal ion.
- the coordination number of the metal (i.e. tetrahedral, octahedral)
- the nature of the ligands surrounding the metal ion. The stronger the effect of the ligands then the greater the difference between the high and low energy d groups.


She also mentioned High-spin and low-spin, Crystal field stabilization energy, The optical properties (details of absorption and emission spectra) of many coordination complexes and geometries and crystal field splitting-Crystal Field Splitting in Tetrahedral Complex, Crystal Field splitting in Octahedral Complex etc.


The lecture key point when the ligands approach the central metal ion, d- or f-subshell degeneracy is broken due to the static electric field. Because electrons repel each other, the d electrons closer to the ligands will have a higher energy than those further away, resulting in the d orbitals splitting. The crystal field stabilization energy (CFSE) is the stability that results from ligand binding.



In the beginning, Dr. Sandhya Patre, Assistant Professor, Department of Chemistry, SSGR Govt. College, Sargaon, Distt. Mungeli, C.G. introduced the guest to the participants. The Principal and Patron of the session, Dr. [Name] Ambasth addressed the participants and requested them to utilize the teachings of Dr. Pushpa B. [Name].

At the end of the session, Dr. Sandhya Patre, Assistant Professor, Department of Chemistry, presented vote of thanks to the speaker and the participants.

  
**Principal**  
**Sant Shromani Guru Ravidas**  
Govt. College, Sargaon  
Distt. Mungeli (C.G.)

  
Principal  
(Dr. Sandhya Patre)

कार्यालय-प्राचार्य, संत शिरोमणी गुरु रविदास, शासकीय महाविद्यालय, सरगाँव  
जिला-मुंगेली (छ.ग.)

महाविद्यालयीन स्तरीय सेमीनार का आयोजन

विभाग -

विषय -

दिनांक -

स्थल - कक्ष क. -

प्रतिभागियों की सूची -

1. Ashlesh.
2. अजय
3. अमन
4. अमित
5. अंजली
6. अंज
7. अंजू शतलधरे
8. अनुराग
9. अविन्द्र कुमार
10. Ashu
11. गोदावरी सोनवे
12. समता नवरंगी
13. दिक्षा साहू
14. जमुनिशा नेताम
15. मनीषा शतलधरे
16. मधु साहू
17. इगिता साहू
18. कामिनी वर्मा
19. कुशी साहू
20. Ashu
21. मधु साहू
22. Anam kharakar
23. Devam
24. भगवता साहू

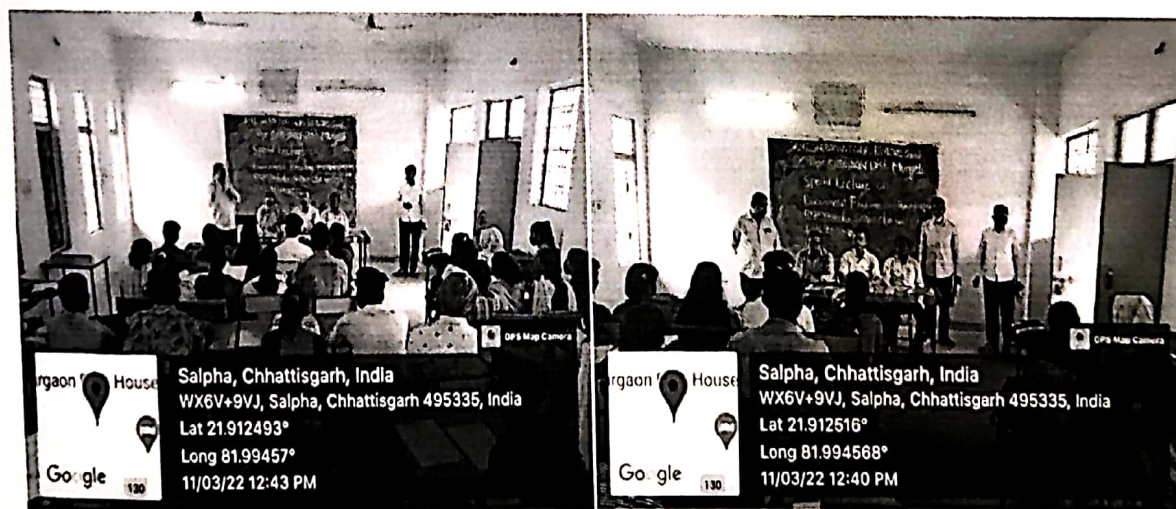
26. भारती साहू
27. कौलत सिंह
28. भावना साहू
29. Mohan.
30. योगेन्द्र साहू
31. शैलेन्द्र साहू
32. हर्षिता भादव
33. पंकज
34. जुली रात्रे
35. ज्योति साहू
36. कल्पना
37. भावना चव्हारी
38. कर्मसी
39. damini sonhe
40. रघुशंकर
41. समता देवीवान  
विभागाध्यक्ष

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Sant Shiromani Guru Ravidas Government College Sargaon, Dist-Mungeli (C.G.)  
(College Code-2904) [www.ssrgcsargaon.ac.in](http://www.ssrgcsargaon.ac.in) email- [ssrgovtcollegesargaon@gmail.com](mailto:ssrgovtcollegesargaon@gmail.com)

Sargaon, Date 11.03.2022

**Report of the Special Lecture on  
Environment Problem and their Impact on Human Health  
Organized by  
The Science Club  
Date:- 11<sup>th</sup> March, 2022**

A special lecture was organized on Environment Problem and their Impact on Human Health, 11/03/2022 by **The Science Club**. The chief guest was the principal of the college, Dr. S. P. Ambasth and resource person of the special lecture was Dr. A. K. Chandel, Professor, Economics, Sant Shiromani Guru Ravidas Government College Sargaon, Dist-Mungeli, C.G. Participants were the teachers of science faculty and students of B.Sc.-I, II and III. In the beginning, Dr. Sandhya Patre, Assistant Professor of Chemistry introduced the chief guest to the participants.



Being the Head of the Department of Botany, Dr. N. K. Singh explained the existence, function and possible hazards of environment on human health.

At the end of the seminar, Prof. Aman Kumar Toppo, Assistant Professor of Zoology presented vote of thanks to the resource person and the participants.



**Principal**  
**Sant Shireman Gura Ravidas**  
Govt. College, Sargaon  
Distt. Mungeri (C.G.)

महाविद्यालयीन स्तरीय सेमीनार का आयोजन

विभाग -

विषय -

दिनांक -

स्थल - कक्ष क. -

प्रतिभागियों की सूची -

1. Arora
  2. Sanjana
  3. Preeti
  4. Nileema
  5. Vansh
  6. Ghosh
  7. Kacpmini
  8. Rajde
  9. Pinki
  10. Indrani
  11. Kavita
  12. Shubham
  13. Hiteshwarani
  14. Karan Kumar Koushal
  15. Anjali Kurever
  16. Ar
  17. Durgesh
  18. Durgesh
  19. Ramande
  20. Ar
- Ami  
विश्व  
रिंकी साहू  
कमलेश्वरी सोनवानी  
सुब्राबु नवल  
भरणा चतुर्वेदी  
वर्षा साहू  
Hemkala Bhaskar  
निरंका टोसन

प्राप्ति मंगेशकर  
Charan  
Neham Kaurheli  
अमीर  
स्वाती शशि  
ज्योति साहू  
स्मीमा  
Ranchoendry  
इश्वर प्रताप  
Ar  
परमेश्वरी  
ज्योति  
Bhanti Chandra  
सिद्धी वैष्णव  
किरण राजपुत  
कान्ची चक्रवर्ती  
प्रीति राजपुत  
लक्ष्मीन साहू  
Ar  
राजेश्वरी  
भारती डहनिया  
योगेश  
Ar  
नरसिंह

द्विभागी

विभागाध्यक्ष