JANATA SHIKSHAN SANSTHA'S
KISAN VEER MAHAVIDYALAYA ,WAI

Number of students undertaking project work
2022-23
Core Course Practical in Chemistry
M.Sc. II Sem IV

Sr. No.	Roll No.	Name of Students	Name of Project
1	1, 3	Mr. Malusare Suraj Sampat Mr.Gaikwad Kiran Kalidas	Synthesis of carboxylic acid derivative of benzimidazole using various organic acids
2	2, 11	Mr. Ashutosh Shrikrushna Pisal Mr. Abhishek Shamrao Kumbhar	Synthesis and characterization of some hetero cyclic compound using Schiff bases
3	4, 6	Mr. Savane Akash Malhari Mr. Dhaigude Suraj Dilip	Emblica officinalis catalysed knoevenagel condensation reaction
4	5, 21	Mr. Patil Ajit Suresh	Synthesis of benzodiazipine derivatives
5	7, 8	Ms. Dhumal Komal Shivaji Ms. Shinde Divya Krishna	Synthesis of imidazole via multicomponent condensation reaction
6	9, 22, 23	Mr. Mungase Saurabh D. Mr. Mungase Namdev M. Mr. Shinde Vinod P.	Synthesis of barbituric acids and their derivatives
7	12, 13, 14	Ms. Kamble Mayawati Ravindra Ms. Jadhav Priyanka Vijay Ms. Sanas Arati Suryakant	Synthesis and characterization of metal oxide, nanoparticals and graphine composite
8	15, 19	Ms. Tarade Pranali Pandurang Ms. Kachare Dipali Uttam	Efficient solvent free synthesis of quinazoline derivative catalysed by zinc ferrite under air atmosphere
9	16, 18	Ms. Kadam Nikita Suryakant Ms. Dhanawade Mayuri Ganesh	Synthesis and characterization of nio particals coated with citric acid as catalyst for multicomponent reaction
10	17, 20	Mr. Tarade Rushikesh Sanjay Mr.Mone Suraj Sharad	Synthesis of characterization of schiff bases of benzaldehyde with nitroaniline and their cobalt, nickel and copper metal complexes

Head
Department Of Chemistry
Kisan Veer Mahavidyalaya,Wai

JANATA SHIKSHAN SANSTHA'S

KISAN VEER MAHAVIDYALAYA, WAI

DEPARTMENT OF CHEMISTRY

Certificate

This is to Certify that, following candidates, **Miss. Kamble Mayawati Ravindra ,Miss Jadhav Priyanka Vijay & Miss. Sanas Arati Suryakant** of M.Sc II (Chemistry) has successfully completed the project work entitled "SYNTHESIS & CHARACTRISTION OF METAL OXIDE, NANOPARTICLES & GRAPHINE COMPOSITE in practical fulfilment of the award of master of Chemistry as laid down by the Shivaji University,Kolhapur during the academic year 2022-23

Place : Wai

Date : 17/06/2023

Mrs. Patil. Dipali. S
(Project Guide)

Prof (Dr.) D.N Zambare
Head of Department
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External Examiner.
Shivaji University, Kolhapur

JANATA SHIKSHAN SANTHA'S
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CERTIFICATE
DEPARTMENT OF CHEMISTRY

This is to certify that, **Mr. *Suraj Sampat Malusare*, Mr. *Kiran Kalidas Gaikwad***, has successfully completed the project work on **"SYNTHESIS OF CARBOXYLIC ACID DERIVATIVE OF BENZIMIDAZOLE USING VARIOUS ORGANIC ACIDS"** which is being submitted here with as partial fulfillment for the award of **Degree of Master of Science Department of Chemistry**, ShivajiUniversity Kolhapur.

This project is the result of data information collected from the respective information media and we have successfully verified the result obtained.

All the resulting aspects are found to be correct and appropriate in the view of this project and the best of our knowledge.

Date:-

Place:- Wai

Prof. Dr. D. N. Zambare
Head of Chemistry Department
Kisanveer Mahavidyalaya, Wai.

Mrs. D.S. Patil
Project Guide,
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External examiner
Shivaji University, Kolhapur

Janata Shikshan Sanstha's

Kisan veer Mahavidyalaya, Wai

(Institute, Affiliated to Shivaji University, Kolhapur)

Department of Chemistry

★ CERTIFICATE ★

This is to certify that, Mr. Savane Akash Malhari & Mr. Dhaigude Suraj Dilip and has successfully completed the project work and submitted project report on "Emblica officinalis catalysed knoevenagel Condensation Reaction" for the partialfulfillment of the requirement for the degree of Master of Science in **Organic Chemistry** from the Department of **Chemistry**, as per the rules and regulations of Kisan VeerMahavidyalaya, Wai, Dist: Satara.

Date: 08/06/23.

Place: KVM, Wai

Mrs. D. S. Patil
Name and Sign of Supervisor

Mr A. A. Dhanawade
Name and Sign of Supervisor

Name:
Name and Sign of External Examiner

Dr. D.N. Zambare
Name and Sign of Head of Department

Head
Department of Chemistry
Kisan Veer Mahavidyalaya
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JANATA SHIKSHAN SANTHA'S
KISAN VEER MAHAVIDYALAYA, WAI

CERTIFICATE
DEPARTMENT OF CHEMISTRY

This is to certify that, **Mr. Ajit Suresh Patil**, has successfully completed the project work on **"Synthesis of Benzodiazepine Derivatives"** which is being submitted here with as partial fulfillment for the award of **Degree of Master of Science Department of Chemistry**, ShivajiUniversity Kolhapur.

This project is the result of data information collected from the respective information media and we have successfully verified the result obtained.

All the resulting aspects are found to be correct and appropriate in the view of this project and the best of our knowledge.

Date:-

Place:- Wai

03/06/23.

Mrs. D.S. Patil
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J.S.S. SANSTHA'S WAI Dist.Satara KISANVEER MAHAVIDYALAYA

Prof. Dr. D.N. Zambare
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Head
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External examiner
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JANATA SHIKSHAN SANSTHA'S
KISAN VEER MAHAVIDYALAYA, WAI

DEPARTMENT OF CHEMISTRY

Certificate

This is to certify that the project report entitled "***EFFICIENT SOLVENT FREE SYNTHESIS OF QUINAZOLINE DERIVATIVE CATALYAZED BY ZINC FERRITE UNDER AIR ATMOSPHERE"*** submitted by **Miss. Tarade Pranali Pandurang & Miss. Kachare Dipali Uttam** in fulfilment of the project work , prescribed by SHIVAJI UNIVERSITY, KOLAHAPUR for M.Sc. course in Organic Chemistry have been completed satisfactorily under my guidance during the academic year 2022-2023.

Place: Wai

Date: 01/06/23

Mrs. Patil. Dipali. S

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Prof (Dr.) D.N, Zambare

Head

Head of Dept. Of Chemistry

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External Examiner.

Shivaji University, Kolhapur

JANATA SHIKSHAN SANSTHA'S
KISAN VEER MAHAVIDYALAYA, WAI

DEPARTMENT OF CHEMISTRY

Certificate

This is to certify that the project report entitled **"SYNTHESIS AND CHARACTERIZATION OF SCHIFF BASES OF BENZALDEHYDE WITH NOTROANILINES AND THEIR COBALT, NICKEL AND COPPER METAL COMPLEXES"** submitted by **Mr. Tarade Rushikesh Sanjay & Mr. Mone Suraj Sharad** in fulfilment of the project work prescribed by SHIVAJI UNIVERSITY, KOLAHAPUR for M.Sc. course in Organic Chemistry have been completed satisfactorily under my guidance during the academic year 2022-2023.

Place : Wai

Date : 01/06/23

Mrs. Patil. Dipali. S

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Prof (Dr.) D.N. Sambare

Head

Department Of Chemistry

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External Examiner.

Shivaji University, Kolhapur

JANATA SHIKSHAN SANSTHA'S
KISAN VEER MAHAVIDYALAYA, WAI

DEPARTMENT OF CHEMISTRY

Certificate

This is to Certify that, following candidates, **Miss. Dhumal Komal Shivaji & Miss, Shinde Divya Krishna** of M.Sc II (Chemistry) has successfully completed the project work entitled "SYNTHESIS OF IMIDAZOLE VIA MULTICOMPONENT CONDENSATION REACTION" in practical fulfilment of the award of Master of Chemistry as laid down by the **Shivaji University, Kolhapur** during the academic year 2022-23.

Place : Wai

Date :

Mrs. Patil. Dipali. S
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JANATA SHIKSHAN SANSTHA'S
KISHAN VEER MAHAVIDYALAYA, WAI

DEPARTMENT OF CHEMISTRY

Certificate

This is to certify that the project report entitled **"SYNTHESIS AND CHARACTERISATION OF NiO NANOPARTICLE COATED WITH CITRIC ACID AS A CATALYST FOR MULTICOMPONENT REACTION"** submitted by **Miss. Kadam Nikita Suryakant & Miss. Dhanawade Mayuri Ganesh** in fulfilment of the project work , prescribed by SHIVAJI UNIVERSITY, KOLAHAPUR for M.Sc. course in Organic Chemistry have been completed satisfactorily under my guidance during the academic year 2022-2023.

Place : Wai

Date : 01/06/23

Mrs. Patil. Dipali. S

(Project Guide)

J.S SANSTHA'S WAI Dist. Satara KISHANVEER MAHAVIDYALAYA

Prof (Dr.) D.N.Zambare

Head

Department Of Chemistry

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External Examiner.

Shivaji University, Kolhapur

JANATA SHIKSHAN SANTHA'S
KISAN VEER MAHAVIDYALAYA, WAI

CERTIFICATE
DEPARTMENT OF CHEMISTRY

This is to certify that, **Mr. Abhishek Shamrao Kumbhar,**
Mr. *Ashutosh Shrikrushna Pisal*

has successfully completed the project work on

" SYNTHESIS & CHARACTERISATION OF SOME HETROCYCLICCOMPOUND BY USING SCIFF BASSES"

"which is being submitted here with as partial fulfillment for the award of Degree of Master of Science Department of Chemistry, ShivajiUniversity Kolhapur.

This project is the result of data information collected from the respective information media and we have successfully verified the result obtained.

All the resulting aspects are found to be correct and appropriate in the view of this project and the best of our knowledge.

Date:- 26/06/23
Place:- Wai

26/06/23.

D.S Patil
Project Guide,

J.S.S.SANSTHA'S WAI Dist.Satara KISANVEER MAHAVIDYALAYA

Prof. Dr. D. N. Zambare
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Professor and Head
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Kisanveer Mahavidyalaya, Wai.
External examiner
Shivaji University, Kolhapur

JANATA SHIKSHAN SANSTHA'S

KISAN VEER MAHAVIDYALAYA, WAI

FOR THE DEGREE

MASTER IN ORGANIC CHEMISTRY

"SYNTHESIS OF CHARACTRISTION OF METAL OXIDE NANOPARTICALS & GRAPHINE COMPOSITE"

BY

Miss. MAYAWATI RAVINDRA KAMBLE

Miss . PRIYANKA VIJAY JADHAV

Miss . ARATI SURYAKANT SANAS

UNDER THE GUIDANCE OF

Mrs. Patil Dipali. S

(M.Sc. SET. NET.)

JANATA SHIKSHAN SANSTHA'S

KISAN VEER MAHAVIDYALAYA, WAI

DEPARTMENT OF CHEMISTRY

Certificate

This is to Certify that, following candidates, **Miss. Kamble Mayawati Ravindra ,Miss Jadhav Priyanka Vijay & Miss. Sanas Arati Suryakant** of M.Sc II (Chemistry) has successfully completed the project work entitled "SYNTHESIS & CHARACTRISTION OF METAL OXIDE, NANOPARTICLES & GRAPHINE COMPOSITE in practical fulfilment of the award of master of Chemistry as laid down by the Shivaji University,Kolhapur during the academic year 2022-23

Place : Wai

Date : 17/06/2023

Mrs. Patil. Dipali. S
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ACKNOWLEDGEMENT

I Foremost, it gives me immense pleasure to express my sincere thankful to my research guide Mrs. D. S. PATIL Department of Chemistry, for his guidance and constant support from the initial to final level which enabled me to develop an understanding of the problem. His enthusiasm and optimism of science is an invaluable source of inspiration for me. It was great pleasure and privilege to study under his mentorship.

I would like to thanks DR.G. J. Fagare, Principal of Kisan Veer College, for providing facilities to carry out me search work in college laboratory.

I am very much thankful to , **Mrs. D. S. Patil , Mr. A.A.Dhanawade** for their continuous support during my research work

I would like to thanks to Head Department of Chemistry, Dr.D. N. Zambre. Sir for constant support and thanks to non-teaching staff, Kisan Veer Mahavidyalaya, Wai.

Miss. KAMBLE MAYAWATI RAVINDRA

Miss . JADHAV PRIYANKA VIJAY

Miss . SANAS ARATI SURYAKANT

DECLARATION

I Hereby declare that the project entitled "Synthesis &characterization of metal oxide Nanoparticals, Graphene oxide" Completed and written by me under the guidance supervision of Miss D.S.Patil has not previously formed the basis for the award of our Degree for and other university or examining body in academic year 2022-2023

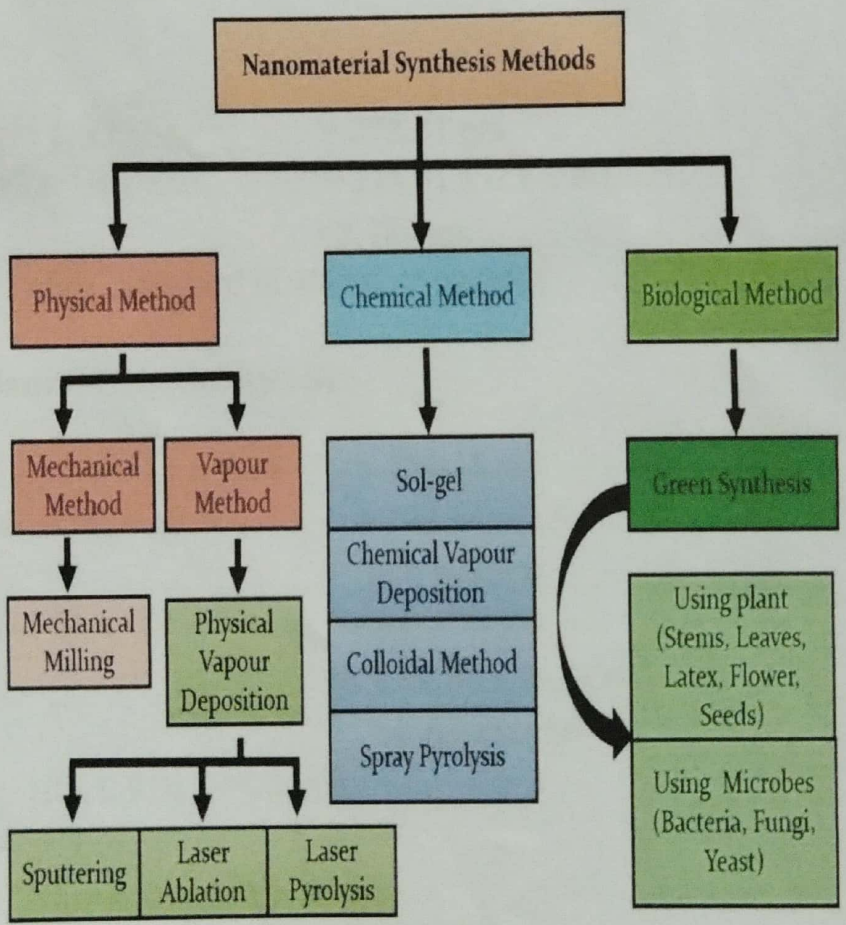
Place-Wai
Date-

Sr. No	Roll No	Name of Student	Sign
1	13	Miss. Kamble Mayawati Ravindra	
2	12	Miss. Sanas Aarati Suryakant	
3	14	Miss.Jadhav Priyanka Vijay	P.V. Jadhav.

INDEX

INTRODUCTION

Nano science is an emerging area of science which involves the study of materials on an ultra-small scale and the novel properties that these materials demonstrate. Nano science has the potential to reshape the world around us. It could lead to revolutionary breakthroughs in fields ranging from manufacturing to health care.



"SYNTHESIS & CHARACTRISTION OF METAL OXIDE, NANOPARTICLES & GRAPHINE COMPOSITE"

- **Experimental Procedure :**

Chemicals:- $NiCl_2$, SLS, NH_4OH

- **Preparation of Chemicals :-**
- **$NiCl_2$:-**

1000ml 1m $NiCl_2$ = 136.03 gm

- 100ml 0.1 $NiCl_2$ = 23769 x 0.1 x 0.1
- = 2.376 gm

2.376 gm of $NiCl_2$ dissolved in 100ml of water

- **$FeSO_4$:**

- 1000 ml 1m $FeSo_4$ = 278.01 gm
- 100 ml 0.1m $FeSo_4$ = 278.01 x 0.1 x 0.1
- =2.780 gm

2.780 gm of $FeSo_4$ dissolved in 100ml of water

- **Sodium lauryl Sulphate (SLS) :-**

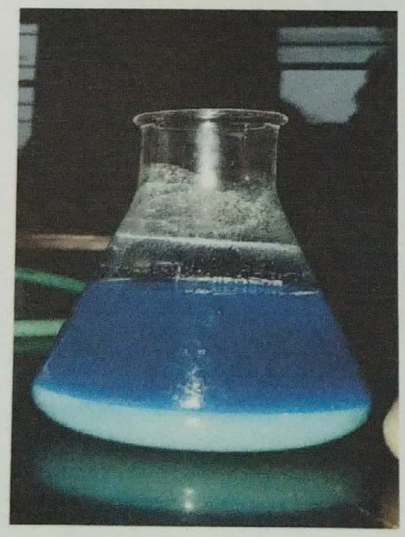
1000ml 1m SLS = 288.38 gm

- 500ml 0.1m SLS = 288.38 x 0.5 x 0.1
- = 14.419gm
- 14.419 gm of SLS dissolved in 500ml of water
- **NH_4OH :-** $\frac{\textbf{10 x W \% x denisity}}{\textbf{Molecular Wt}}$
- = 10 x 0.910 x 25/35.05
- = 6.490 M
- N1 V1 = N2 V2
- 6.490 x V1 = 0.1 x 500
- N1 = 7.704 ml

- 7.704 ml NH_4 OH of dissolved in 500 ml Distilled water.

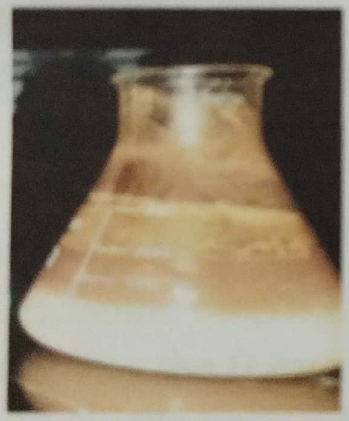
Procedure :

- **2. NiO :-**
- 25 ml 0.1 ml $NiCl_2$ + 10ml of 0.1 SLS
- (String 1 hour)
- Added 50ml of 0.1m NH_4OH
- (String 3 hours)
- Filtrate on sunction pump
- Washing the product of ammonia (NH_4OH)
- Dry the product
- Heat the product Oven at 180- 220 c (1-2 Hours)
- Check the UV visible



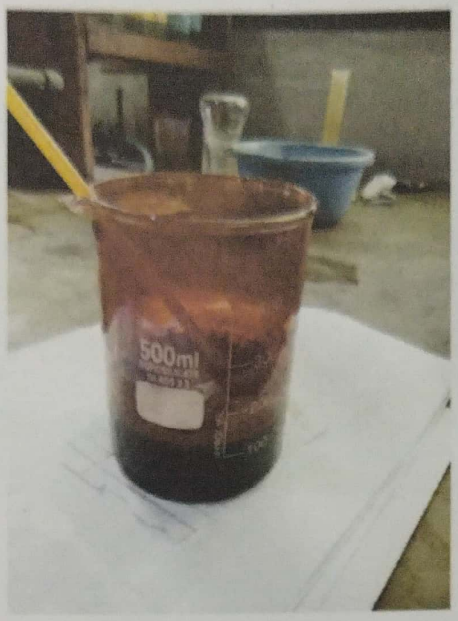
- **3. FeO:-**
- 25 ml 0.1 ml $FeSO_4$ + 10ml of 0.1M SLS
- (String 1 hour)
- Added 75 ml of 0.1m NH_4OH
- (String 3 hours)
- Filtrate on sunction pump
- Washing the product of ammonia (NH_4OH)
- Dry the product
- Heat the product Oven at 180- 220 c (1-2 Hours)

Check the UV visible & spectro fluriometer.



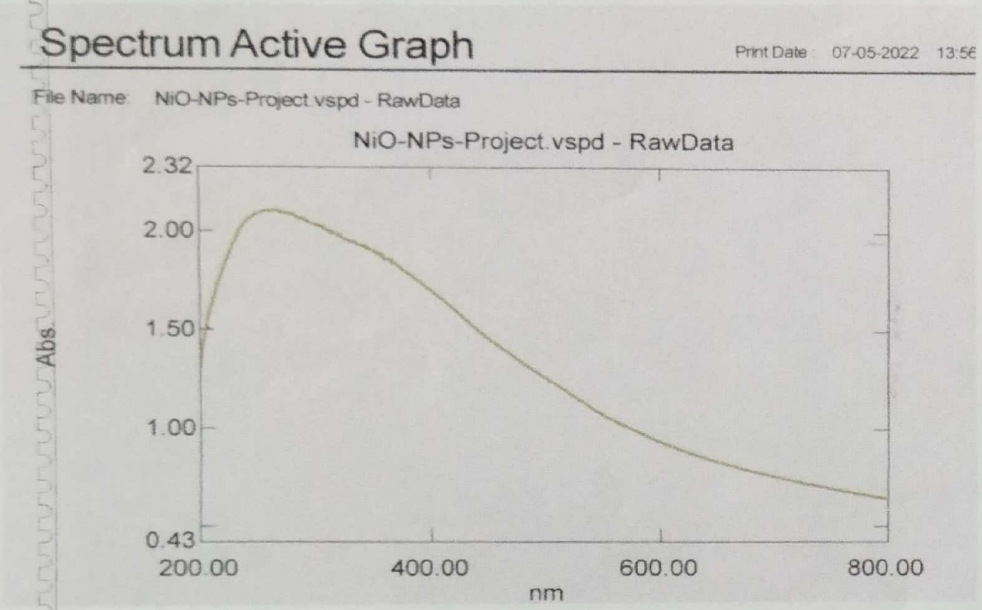
- **Graphene oxide (GO) synthesis by modified Hummers Method**
- **Apparatus** :- water beaker , measuring cylinder , magnetic stirrer
- **Chemicals :-** Graphite , Sulphuric Acid ,Potassium Permanganate ($KMnO_4$) Hydrogen Peroxide (H_2O_2) , Water

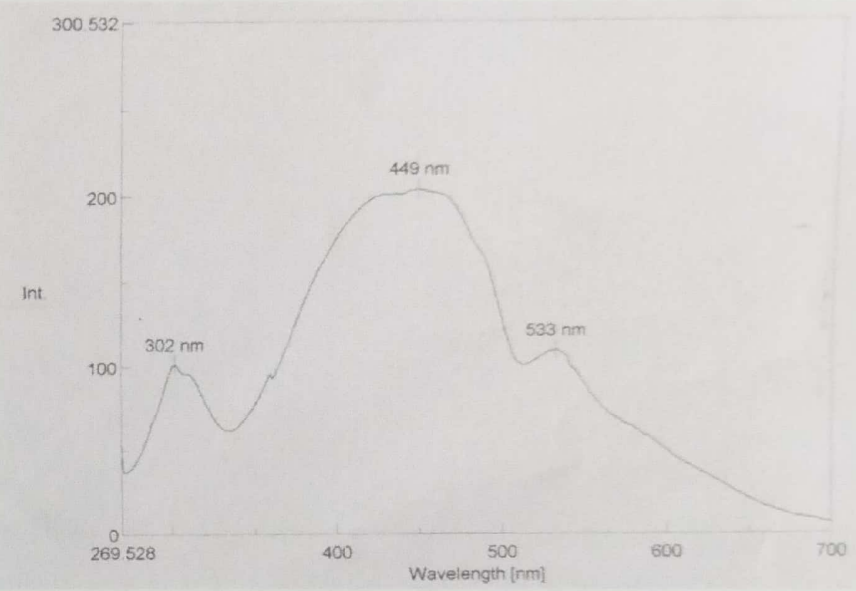
- **Experimental Procedure :-**
- Take sulphuric acid (125ml) in ice bath and add graphite
- (5 g) with proper stirring
- Add potassium permanganate (15 g) very slowly by keeping the less
- than 20^0c and stir for more 3 hours (Note:- You may remove the ice
- bath after 20 min and again setup for step3)
- Add distilled water (250 ml) dropwise by keeping the temperature
- less than 50^0c
- After some time the color of colloidal chamges to dark brown
- indicates the formation of graphene oxide
- Add distilled water (250ml) instantly for complete oxidation
- Add hydrogen peroxide(10ml) for the completion of the reaction
- Graphene oxide (GO) colour would be dark brown chek the UV-VIS
- Spectroscopy absorbance peak would be obtained around 250 nm

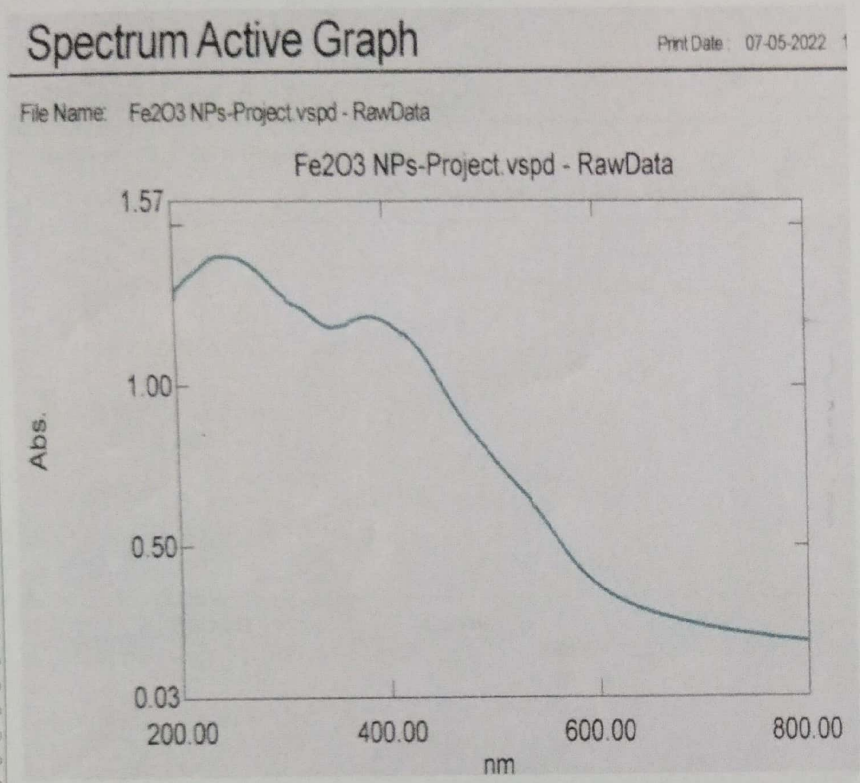


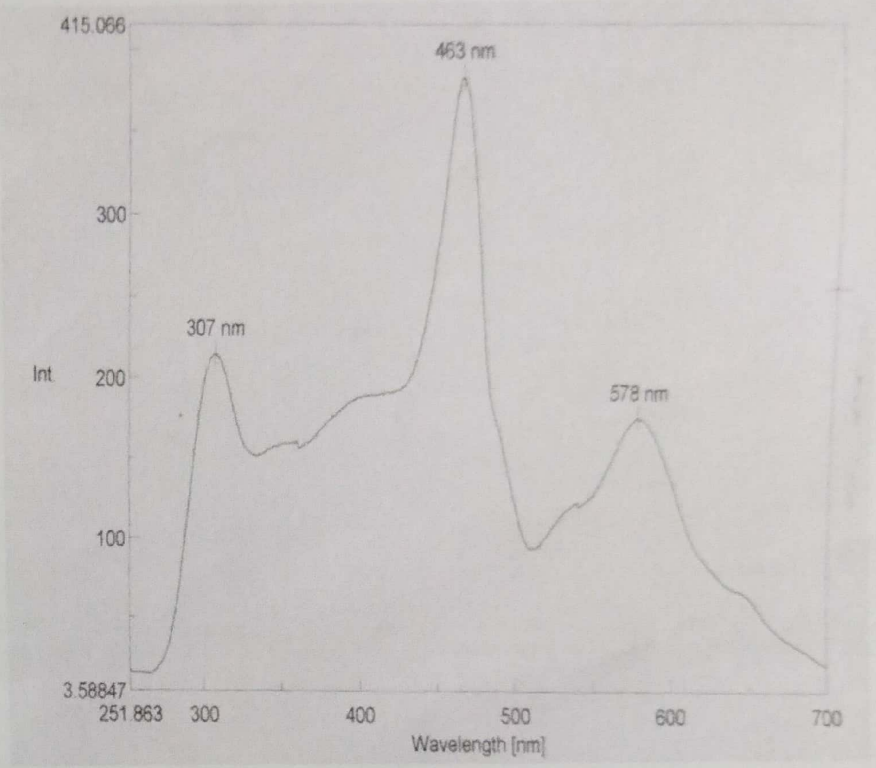
RESULT :-

Sr. No.	Nanomaterials	Absorption wavelength (nm)	Emission wavelength (nm)
1	NiO	263	302, 449, 533
2	FeO	249, 387	307, 463, 578
3	GO	254, 324	301, 393, 470, 537





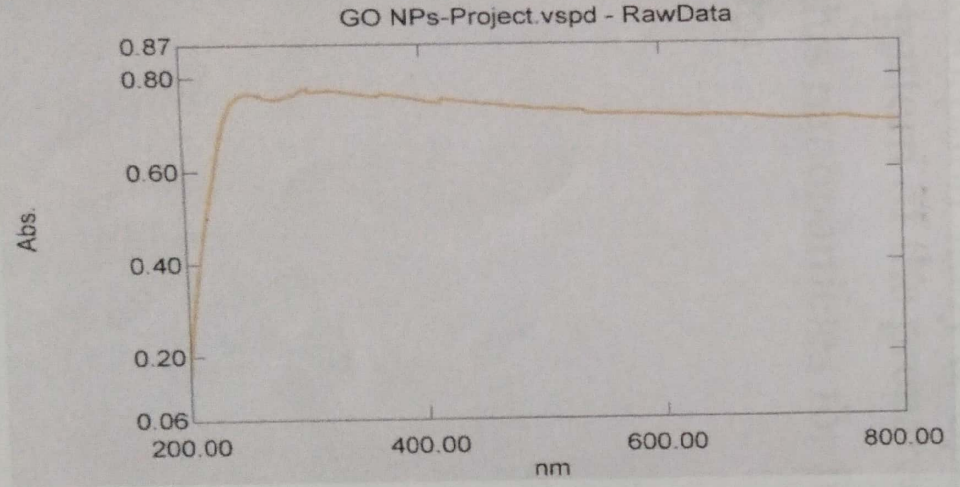


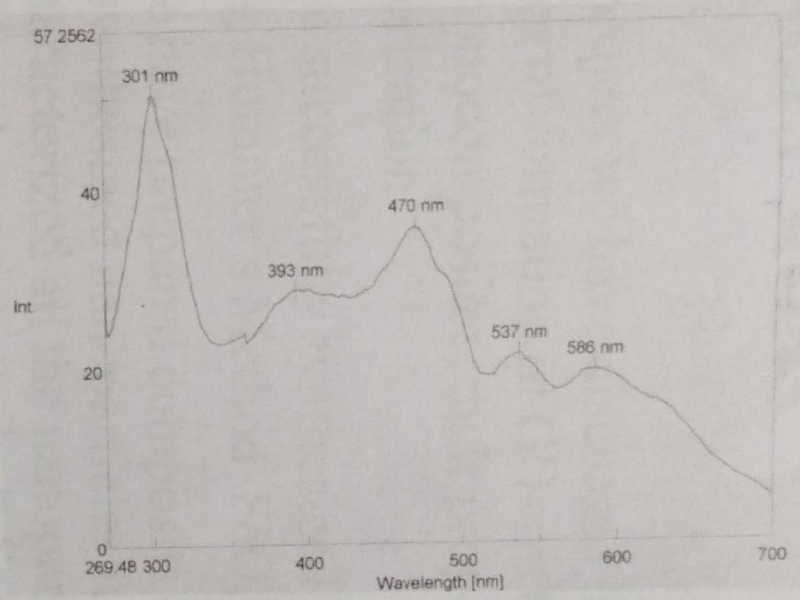


Spectrum Active Graph

Print Date 07-05-2023

File Name: GO NPs-Project.vspd - RawData





CONCLUSIONS

- In this project we have discussed in detail the strategies of formation of GO- metal oxide mixed nanocomposites, their properties, characterization.
- We have successfully synthesized Graphine Oxide, by using Hummer's Method FeO, NiO nanoparticles
- Also we have prepared composits of R-GO with above synthesized nanoparticles further morewe have characterized all the nanoparticles for UV-Visible for absorption study & Spectroflurometry for emission pattern of the prepared nanoparticles.
- We can use this nanoparticles for fuel cell & Supercapacitor.

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Thank You