

**SYNTHESIS AND CHARACTERIZATION OF NICKEL OXIDE  
NANOPARTICLE BY USING SOL-GEL METHOD**

**RESEARCH PROJECT SUBMITTED TO  
SAVITRIBAI PHULE PUNE UNIVERSITY, PUNE**



**FOR THE DEGREE OF  
MASTER OF SCIENCE**

**IN**

**ORGANIC CHEMISTRY**

**UNDER THE FACULTY OF SCIENCE**

**BY**

**MISS. KOMAL SUBHASH SANGLE**

**UNDER THE GUIDANCE OF**

**MR. DHANRAJ BAHIRAM SIR**

**DEPARTMENT OF CHEMISTRY**

**G.M.D. ARTS, B.W. COMMERCE AND SCIENCE COLLEGE, SINNAR  
422103**

**OCT/NOV 2024-2025**



Maratha Vidya Prasarak Samaj's

G.M.D. ARTS, B.W. COMMERCE AND SCIENCE COLLEGE,

SINNAR, DIST- NASHIK

## DEPARTMENT OF CHEMISTRY

This is to certify that the work incorporated in the project entitled

**Topic name:** Synthesis and Characterization of Nickel oxide NPs using sol-gel method.

Was satisfactorily carried out by **Miss. Komal Subhash Sangle** of **M.Sc. Organic Chemistry**. She has completed this project under my supervision and guidance during **Academic Year 2024 -2025**. This project work submitted by his original and the scientific information obtain from other sources have been acknowledged.

**Mr. Dhanraj Bahiram Sir**

(Project Guide)



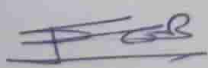
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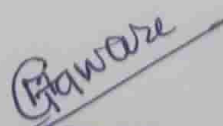
## CERTIFICATE

This is to certify that PG dissertation entitled Synthesis and Characterization of Nickel Oxide Nanoparticle Using Sol-gel Method submitted by **Miss. Komal Subhash Sangle** and it was carried out by the candidate under the supervision of **Mr. Dhanraj Bahiram Sir**. She has successfully completed the project work in Organic Chemistry (**CHO-607**) during the Sem-III of academic year 2024-2025.

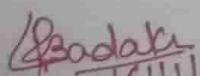
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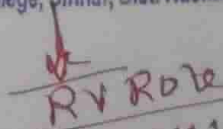
  
**Mr. Dhanraj Bahiram**  
(Project Guide)

  
**Prof. (Dr.) M. H. Saware**  
**HEAD**  
**DEPARTMENT OF CHEMISTRY**  
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**Internal Examiner**  
16/11/24

  
**External Examiner**  
16/11/24

  
**External Examiner**  
16/11/24

## DECLARATION

I hereby declare that the presented Research Project on **Synthesis and Characterization of Nickel oxide NPs using sol-gel method** is uniquely prepared by me at G.M.D. Arts, B.W. Commerce And Science College Sinnar under the guidance of Mr. Dhanraj Bahiram Sir.

Place: Sinnar  
Date:

Sign- Komal .  
Name-Komal Subhash Sangle

## ACKNOWLEDGEMENT

- The success and outcome of this project required a lot of guidance and assistance from many people. All that I have done is only due to such supervision and assistance and I would never forget to thank them.
- I would like to thank M.V.P. Samaj's **G.M.D. Arts, B.W. Commerce and Science College Sinnar**, for providing me with the necessary resources, infrastructure and facilities to carry out this project.
- I respect and am grateful to our Respected Principal **Dr.P.V.Rasal Sir** for providing me with an opportunity to do the project and giving all the support and guidance which helped me to complete the project successfully.
- I would like to thank, our HoD **Prof. (Dr) M.R. Gaware Sir** for his constructive help during project.
- I would like to thank **Mr. Dhanraj Bahiram Sir (Project Guide)**, for their constant encouragement, insightful feedback and expert guidance that helped me to navigate through the various challenges of this project.
- I would like to thank all the faculty members of the Department of Chemistry and the supporting staff, for imparting me with the theoretical and practical knowledge necessary to complete this project.
- I would like to thank my classmates and colleagues, for their feedback, suggestions, and stimulating discussions that enriched my understanding of the subject matter.

Sign Komal

**Komal Subhash Sangle**