

# Dr. Ashwini Somnath Varpe (Ph.D.)

## Research Associate – Physics

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☎ 7709161354, 📍 Pune, Maharashtra, India.   

### Key Skills:

- Writing, formatting, and publishing research papers in high-impact journals
- **Machine learning** for data analysis and optimization
- Synthesis, characterization, and application of nanostructures
- Sol-gel auto-combustion, spray pyrolysis, and solid-state methods
- **Characterization tools:** FTIR, XRD, FESEM, VSM, UV-Visible spectroscopy
- **Computational tools:** Python, Matlab, Linux, C programming, Gnuplot, LaTeX
- Literature reviews and research project management
- Presentation and communication skills with conference recognition

### Professional Summary:

- Physics researcher specializing in nanostructures and thin films.
- Expertise in machine learning for scientific writing and publishing.
- Expertise in Scopus, Web of Science, and SCI-indexed journals.
- Ph.D. Focus: Spinel ferrite Composite Nanostructures.
- Extensive publications on nanocomposites, gas sensing, dye degradation, and dielectric properties.
- Proficient in sol-gel auto-combustion, spray pyrolysis, Python, and Matlab.
- Experienced in journal guidelines, literature reviews, and peer-review processes.

### Objectives:

To enhance the expertise in **machine learning** for data analysis and **scientific publishing**. To contribute in cutting-edge research in physics, specializing in nanostructures. To utilize skills in computational tools such as Python, Matlab, and LaTeX for effective research and analysis.

### Academic Qualifications:

Examination	Year	University/ Institute	Percentage
Ph.D.	2023	SPPU (RYK College Nashik)	
M. Phil.	2017	SPPU(Ahmednagar College)	A
M.Sc.	2014	SPPU(RYK College Nashik)	71.50
B.Sc.	2012	SPPU (Sangamner College)	77.83
HSC	2009	Maharashtra Board	63.17
SSC	2007	Maharashtra Board	76.46

### Work Experience:

Total 7 years' experience in Physics Materials Science.

9 months experience in Artificial Intelligence- Machine Learning.

### Employment:

Labtech Innovations Pvt. Ltd.

Location: Pune

Duration: 8<sup>th</sup> July 2024 – 31<sup>st</sup> March 2025.

Designation: Research Associate

### Roles & Responsibilities:

- Research & Development
- Data Analysis & Reporting
- Publications & Communication
- Project Management

**Editorial Board Member** –  
Bentham Science - The Open  
Biomaterials Science Journal.

### Experience:

Worked as Ph.D. Student at  
Department of Physics, H. P. T. Arts  
& R.Y. K. Science College, Nasik.

### Technical Skills:

C Programming, Python, Matlab,  
Linux, Windows, Gunplot, Latex etc.

### Fellowship:

Worked as Senior Research Fellow  
(SRF) on the project awarded by  
EMR-II, Council of Scientific and  
Industrial Research (CSIR).

**Ph.D. Title:** Synthesis and  
Characterization of  $AB_2O_4$  Spinel  
Ferrite Nanostructures.

**M. Phil. Title:** Study of Dielectric  
Properties of RE doped  $Al_2O_3$  Thin  
Films.

## **Publications:**

1. Enhanced Photocatalytic Performance of  $\text{CdFe}_2\text{O}_4/\text{Al}_2\text{O}_3$  Nanocomposite for Dye Degradation. **Ashwini S. Varpe**, Mrinalini D. Deshpande, Dipak R. Tope, Ashok V. Borhade. **Journal of Environmental Science and Pollution Research** 2023. (IF-5.19).
2. Removal of Cd(II) and Pb(II) ions from water solution by  $\text{CoFe}_2\text{O}_4/\text{Al}_2\text{O}_3$  nanocomposite. **Ashwini S. Varpe**, Mrinalini D. Deshpande, Dipak R. Tope, Ashok V. Borhade, **The European Physics Journal Plus**, 137 (2022) 705, (IF-3.75).
3. The influence of rare earth (RE) dopants on structural, optical and gas sensing properties of spray deposited PbO thin films, where RE = Ce, Nd and Eu. V .N. Suryawanshi, **Ashwini S. Varpe**, Mrinalini D. Deshpande **PRAMANA–Journal of Physics**, **96**, 38 (2022).
4. Effect of annealing temperature on optical, dielectric and  $\text{NH}_3$  gas sensing properties of  $\text{Zn}_x\text{Fe}_{3-x}\text{O}_4$  ( $x = 0$  and  $0.5$ ) nanoparticles synthesized by sol-gel auto-combustion method. **Ashwini S. Varpe**, Mrinalini D. Deshpande, **Journal of Alloys and Compounds**, 892, (2021) 162124 (IF-.6.37).
5. Influence of Sn doping on CO and  $\text{CO}_2$  sensing of ZnO thin films prepared by spray pyrolysis method. **Ashwini S. Varpe** and Mrinalini D. Deshpande, **AIP Conference Proceedings**, 2335, 080011 (2021).
6. Study of structural, optical and dielectric properties of sol-gel derived  $\text{ZnFe}_2\text{O}_4\text{-Al}_2\text{O}_3$  composite nanoparticles. **Ashwini S. Varpe** and Mrinalini D. Deshpande, **Journal of Sol-gel Science and Technology**, 96 (2020) 718-727.
7. Band gap engineering in PbO nanostructured thin films by Mn doping. V .N. Suryawanshi, **Ashwini S. Varpe**, Mrinalini D. Deshpande, **Thin Solid Films** 645 (2018) 87–92.
8. Structural and Optical Characteristics of Ce, Nd, Gd, and Dy doped  $\text{Al}_2\text{O}_3$  Thin films. **Ashwini S. Varpe**, Mrinalini D. Deshpande, **PRAMANA–Journal of Physics**, 89 (2017) 4.

## **National/International Conferences:**

1. INUP i2i – ideal to innovation familiarization Workshop on Nanofabrication Technologies, held at IIT Bombay, Mumbai during January 19-21, 2022.
2. International Conference on Functional Materials and Applied Physics (FMAP-2021) organized by Department of Physics, SVNIT, Surat, during 14-15 May 2021.
3. International Conference on Complex and Functional Materials (ICCFM – 2018), Organized by S. N. Bose National Centre for Basic Sciences, Kolkata during 13-16 December 2018.
4. INUP Hands- on Training Workshop on Nanofabrication Technologies, held at IIT Bombay, Mumbai during March 19-23, 2018.
5. 24<sup>th</sup> Raman Memorial Conference on “Unraveling Physics of Advanced Materials”, organized by Department of Physics, S. P. Pune University, Pune, February 23-24, 2018.
6. Best Poster prize in AVISHKAR-2016 participated in University Level Research Project Competition organized by S. P. Pune University Pune, January 10, 2017.

7. International E-Workshop/Conference on Computational Condensed Matter Physics and Material Science (IWCCMP-2015), organized by Advanced Materials Research Group, CNT Laboratory, ABV-IIIITM, Gwalior (M. P.), India, October 18-22, 2015.
8. International Photovoltaic Solar Energy Conference (Solar Asia-2015) organized by Department of Physics, S. P. Pune University, Pune, July 30-August 1, 2015.
9. Raman Memorial Conference organized by Department of Physics, S. P. Pune University, Pune, February 13-14, 2015.
10. National Conference on Recent Trends in Nanoscience : Techniques and Applications for Life Sciences organized by Department of Microbiology, H. P. T. Arts and R. Y. K. Science College, Nasik, December 19-20, 2014.

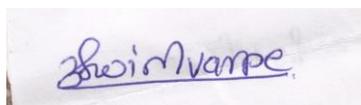
**Personal Details:**

**Date of Birth:** 7<sup>th</sup> July 1991

**Marital status:** Married

**Husbands Name:** Mr. Ajit Appasaheb Gunjal

**I hereby declared that the above written are true to the best of my knowledge and belief.**

A photograph of a handwritten signature in blue ink on a white background. The signature reads "Dr. Ashwini S. Varpe".

**(Dr. Ashwini S. Varpe)**