

## BIO-DATA

1. Name and full correspondence address: **DR. BHAGWAT SUNITA MAHENDRA**  
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3. Institution: Department of Physics  
Abasaheb Garware  
College Karve Road  
Pune – 411 004  
Maharashtra

### 4. Academic Qualification

	Degree	Year	Subject	University/Institution	% of marks
1.	B.Sc.	June 1985	Physics	University of Pune, Pune	First with Distinction
2.	M.sc.	June 1987	Physics	Department of Physics, University of Pune, Pune	First
3.	Ph.D.	January 1992	Physics	Department of Physics, University of Pune, Pune	-----

5. Ph.D thesis title, Guide's Name, Institute/Organization/University, Year of Award  
**Synthesis and processing of oxide-based thin film configurations using ion and laser beams**

Guide: Prof. S.B. Ogale

### 6. Work experience

Presently working as Head of the Department and Vice-Principal (Science)  
BOS Member, Physics, Savitribai Phule Pune University

S.No.	Positions held	Name of the Institute	From	To	Pay Scale
1.	Lecturer	A.G. College, Pune	11/07/1994	26/07/1998	Standard scale as per UGC rules
2.	Lecturer (Sr. Grade)	A.G. College, Pune	27/07/1998	26/07/2003	
3.	Reader	A.G. College, Pune	27/07/2003	26/07/2006	
4.	Associate Professor	A.G. College, Pune	27/07/2006	Till today	

### Recognitions/ Awards

1. Nationally selected CSIR Fellow
  - a) Junior Research Fellow (July 1987 – January 1990)
  - b) Senior Research Fellow (January 1990 – June 1992)
  - c) Research Associate (June 1992 – July 1993)

2. Recipient of joint collaboration scholarship of TIFR and Department of Physics, University of Pune, in M.Sc. II as a topper in M.Sc. I.
3. Recipient of prestigious **Commonwealth Fellowship** sponsored by ACU (Association of Commonwealth Universities), UK and UGC. For the fulfillment of this worked on conducting coatings at Department of Physics, Loughborough University, Loughborough, U.K.
4. Recognized guide for M.Phil and Ph.D.  
No. of students completed Ph.D.: 2      Ph. D. Students Registered: 02  
No. of students completed M.Phil: 1
5. PG recognized teacher
6. Received Second prize in the Poster Competition at International Conference on Lasers and Advanced Materials, Pune, March 2010
7. Received **Best Poster Award Prize** for the poster presented on “**Characterization of Spray Deposited (Co, Cu, Ni, Zn) Ferrite Thin Films**” by Pratibha Rao, D.M. Phase and **Sunita Bhagwat** at International Workshop on Nanotechnology and Advanced Functional Materials organized by MRSI Pune Chapter and NCL, Pune on July 24-25, 2013

#### Research Projects implemented

Sr. No.	Title of Project	Tenure	Status	Funding Agency	Amount sanctioned (Rs.)
1.	Ferrite nano thin films as potential gas sensors towards reducing gases	Dec 2012 To Dec 2015	Completed	DST, New Delhi	15,65,184
2.	Synthesis of ferrites as a gas sensor material and study of their structural, magnetic, electric and	April 2013 to April 2016	Completed (Extended by UGC)	UGC, New Delhi	12,45,800
3.	Tin oxide as a hydrocarbon sensor: A comparative study of spin coated thin films and hydrothermally	April 2015 To April 2017	Completed	BCUD, SPPU, Pune	2,30,000
4.	Synthesis of MnZn Ferrites and the study of effect of Ball Milling on their Structural and Magnetic properties	Oct 2010 To Oct 2012	Completed	UGC (WRO), Pune	1,60,000

#### Students Received Prizes:

1. **Ms. Soha Bedekar** (M.Sc. II) has received **Consolation prize** in the Poster Competition that presented on **Temperature Dependent Structural and Magnetic Properties of Cobalt Ferrite**, Soha Bedekar, Pooja Raut and **Sunita Bhagwat** at **Raman Memorial Conference 2013** organized by Department of Physics, University of Pune, Pune
2. **Ms. Saylee Deogoankar** (M.Sc. II) has presented the topic **Structural and Optical Properties of Spray Deposited BaTiO<sub>3</sub> Films on Si(100)** and won **First prize** in

**Ppt Lecture Competition** organized by **IPA Pune Chapter** and held at F.C. College, Pune on February 17, 2014.

3. **Rushikesh Godbole** has received **Best Oral Presentation Award** for the presentation on **Synthesis of nano-crystalline Tungsten (W) and its applications** at National Conference on Advanced Chemical Sciences with Special Reference to Molecular Spectroscopy organized by Department of Chemistry, Fergusson College, Pune on 19-20 December, 2014.
4. **Ms. Priya Pattewar** (M.Sc. II) has received **Best Poster Award** at Raman Conference – 2015 for the presentation on **Structural and optical properties of spray deposited WO<sub>3</sub> thin films** organized by Department of Physics, SPPU, Pune on 13-14 February, 2015.
5. Received **Best oral presentation award** by **R.V. Godbole**, Ph.D. student under the guidance of Dr. Sunita Bhagwat on **Synthesis of thin films of Molybdenum (Mo), its carbide and composite**, R.V. Godbole, **Sunita Bhagwat** and V.P. Godbole, at State Seminar on “Recent Trends in Materials Science and Applied Physics” organized by Department of Physics, Hutatma Rajguru Mahavidyalay, Rajgurunagar, Pune, held on January 05, 2016.
6. Received **1<sup>st</sup> prize** by **Kadambari Kasar** and **Sonali Wakchaure** whereas **2<sup>nd</sup> prize** by **Nilima Kandhare**, M.Sc. students under the guidance of **Dr. Sunita Bhagwat** in Poster Presentation Competition held under Student Research and Laboratory Safety Committee at MES Abasaheb Garware College, Pune on 6<sup>th</sup> March 2018.
7. Received **1<sup>st</sup> prize** by **Ms. Aditi Dave** and **Ms. Namrata Bhamare**, M.Sc. students under the guidance of **Dr. Sunita Bhagwat** in Raman Conference – 2019 for the presentation on Synthesis and Characterization of Graphene Oxide and Reduced Graphene Oxide for Gas Sensing Study organized by Department of Physics, SPPU, Pune on 14-15 February, 2019.

## **Publications**

1. **Green synthesized CeO<sub>2</sub> quantum dots: a study of its antimicrobial potential**  
Vaishali Pisal, Pratik Wakchaure, Niranjana Patil, **Sunita Bhagwat**  
Materials Research Express 6(2019) 115409.
2. **Palladium Enriched Tungsten Oxide Thin Films: An Efficient Gas Sensor for Hazardous Gases**  
Rushikesh Godbole, Vijay Godbole, **Sunita Bhagwat**  
The European Physical Journal B 92 (2019) 1-11.
3. **Effect of Film Thickness on Gas Sensing Properties of Sprayed WO<sub>3</sub> Thin Films**  
Rushikesh Godbole, Vijay Godbole, Prashant Alegaonkar, **Sunita Bhagwat**  
New Journal of Chemistry 41 (2017) 11807-11816.

4. **Magnesium ferrite nanoparticles: a rapid gas sensor for alcohol**  
Rhushikesh Godbole, Pratibha Rao and **Sunita Bhagwat**  
Materials Research Express 4 (2017) 025032.
5. **Tungsten oxide thin films: Detection and trapping of hazardous gases**  
Rhushikesh Godbole, Amol Vedpathak, Vijay Godbole and **Sunita Bhagwat**  
Materials Research Express 4 (2017) 076401.
6. **Surface morphology dependent tungsten oxide thin films as toxic gas sensor**  
Rhushikesh Godbole, V.P. Godbole, **Sunita Bhagwat**  
Materials Science in Semiconductor Processing 63 (2017) 212–219.
7. **Nanocrystalline Pd:NiFe<sub>2</sub>O<sub>4</sub> thin films: A selective ethanol gas sensor**  
Pratibha Rao, R.V. Godbole, **Sunita Bhagwat**  
Journal of Magnetism and Magnetic Materials 416 (2016) 292–298.
8. **Highly Responsive and Stable Y<sup>3+</sup> Doped NiMg-Ferrite Thick Films as Efficient Humidity Sensor**  
Pratibha Rao, Rajeev C. Chikate and **Sunita Bhagwat**  
New Journal of Chemistry 40 (2016) 1720-1728.
9. **Chlorine gas sensing performance on Palladium doped Nickel ferrite thin films**  
Pratibha Rao, R.V. Godbole and **Sunita Bhagwat**  
Journal of Magnetism and Magnetic Materials 405 (2016) 219-224.
10. **Copper doped nickel ferrite nano-crystalline thin films: A potential gas sensor towards reducing gases**  
Pratibha Rao, R.V. Godbole and **Sunita Bhagwat**  
Materials Chemistry and Physics 171 (2016) 260-266.
11. **Porous Magnesium Ferrite as a Gas Sensor**  
Rhushikesh Godbole, Pratibha Rao, V.P. Godbole and **Sunita Bhagwat**  
Proceedings of National Conference on Advanced Materials and Applications (NCAMA-2016), 114-119.
12. **Influence of Fuel to Oxidizer Ratio on Gas Sensing Characteristics of ZnFe<sub>2</sub>O<sub>4</sub> Nanoparticles**  
R.V. Godbole, Pratibha Rao, V.P. Godbole, P.S. Alegaonkar and **Sunita Bhagwat**  
Proceedings of the 2<sup>nd</sup> International Symposium on Physics and Technology of Sensors (ISPTS-2-2015), IEEE Xplore, 147-153.
13. **Effect of fuel to oxidizer ratio of LPG sensing performance of MgFe<sub>2</sub>O<sub>4</sub> nanoparticles**  
R.V. Godbole, Pratibha Rao, P.S. Alegaonkar and **Sunita Bhagwat**  
Materials Chemistry and Physics 161 (2015) 135-141.

14. **Ferrite thin films: Synthesis, characterization and gas sensing properties towards LPG**  
Pratibha Rao, R.V. Godbole, D.M. Phase, R.C. Chikate and **Sunita Bhagwat**  
Materials Chemistry and Physics 149-150 (2015) 333-338.
15. **Synthesis of nano-crystalline Tungsten (W) and its applications**  
R.V. Godbole, **Sunita Bhagwat** and V.P. Godbole  
Proceedings of National Conference on Advanced Chemical Sciences (NCACS 2014), 38-46.
16. **Deposition and characterization of magnetic zinc ferrite thin films using spray pyrolysis**  
Pratibha Rao, Sonali Shende and **Sunita Bhagwat**  
Proceedings of AMPC 2013, 1 (2013) 510-518.
17. **Structural and magnetic properties of nano-sized Zn substituted MnFe<sub>2</sub>O<sub>4</sub> particles**  
Pratibha Rao, Sheetal Chalke and **Sunita Bhagwat**  
International Journal of Applied Physics 2(3) (2012) 147-157.
18. **Effect of Vanadium ion doping on the structural and dielectric properties of Nickel-Zinc ferrite**  
Pratibha Rao, Anupama Bhattacharya and **Sunita Bhagwat**  
International Journal of Physics and Applications 4(2) (2012) 129-138.
19. **Study of Dielectric Properties of Nano-crystalline Mn-Zn Ferrite**  
**Sunita Bhagwat** and Pratibha Rao  
IOSR Journal of Applied Physics 3(1) (2013) 1-6.
20. **Effect of Geopathic Stress Zone on Soil Properties**  
R.R.Sorate, A.G.Kharat, N.P.Dharmadhikari and **Sunita Bhagwat**  
Elixir Geoscience 54C (2013) 12365-12367.
21. **Geopathic stress aspect for sustainable development of built environment**  
R.R.Sorate, A.G.Kharat, N.P.Dharmadhikari, S.S.Pimplikar, Girish Narang, Dheeraj Deshmukh, Snehal Sorate and **Sunita Bhagwat**  
International Journal of Scientific and Research Publications, 2(12) (2012) 1-3.
22. **Use of magnetron-sputtering technique for the control of the properties of indium tin oxide thin films**  
**Sunita Bhagwat** and R.P. Howson  
Surface and Coatings Technology 111 (1999) 163-171.
23. **Thermally induced transformations at an ion-implanted  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>/  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> interface: A Mossbauer spectroscopy study**  
**Sunita Bhagwat**, Sushama Joshi, S.B. Ogale, G. Marest, A. Benyagoub, N. Moncoffre and F. Thimon, J. Appl. Phys. 79(8) (1996) 4141-4145.
24. **Pulsed laser treatment of Fe<sub>2</sub>O<sub>3</sub> film on Al<sub>2</sub>O<sub>3</sub>**  
**Sunita Bhagwat**  
J. Appl. Phys. 67(1) (1990) 569-571.
25. **Ion-beam mixing of Fe/SiO<sub>2</sub> interface: A conversion electron Mossbauer spectroscopy and X-ray diffraction study**  
**Sunita Bhagwat**, S.N. Yedave, D.M. Phase, S.M. Chaudhari, S.M. Kanetkar and

S.B.Ogale

Phy. Rev. B 40(1) (1989) 700-703.

**26. Synthesis of iron oxynitride by nitrogen ion implantation of iron oxide**

S.B. Ogale, Seema Teli, **Sunita Chopada**, D.M. Phase and S.M. Kanetkar  
Mat. Res. Soc. Symp. Proc. 100 (1988) 261-265.

**Papers presented in the National / International Conferences:**

(Listed few of them)

1. **Materials Science Society, Boston, U.S.A.** in December 1988 and 1997.
2. **Applied Science, Heidelberg, Germany** in September 1992.
3. **International Conference on Lasers and Advanced Materials**, Department of Physics, A.G. College, Pune on March 4-6, 2010.
4. **1st International Symposium on Physics and Technology of Sensors (ISPTS)** organised by Centre for Materials for Electronics Technology (C-MET), Pune which will be held on March 8-10, 2012.
5. **International Conference and Workshop on Nanostructured Ceramics and other Nanomaterials (ICWNCN)** by Department of Physics, University of Delhi, Delhi which will be held on March 14-16, 2012.
6. **Second International Conference on “Advances in Materials Processing and Characterization” (AMPC 2013)**, organized by Department of Mechanical Engineering, Anna University, Chennai, 6-8 February 2013.
7. **National Conference on “Functional Nanomaterials: Synthesis, Characterization and Applications”**, organized by Department of Physics, University of Pune, Pune, 31 January - 2 February 2013.
8. **International Workshop on “Nanotechnology and Advanced Functional Materials”** organized by MRSI Pune Chapter and NCL, Pune on July 24-25, 2013
9. **1st National Conference on Energy and Environment** organized by Department of Energy and Department of Environment Science, University of Pune on February 20-22, 2014.

**Also participated in many National conferences and workshops related to syllabus framing.**