

Prof. (Dr.) Kishor Mahadu Sonawane, M.Sc., B. Ed., Ph.D.

Present position

- **Professor in Physics**

Contact Details (Mention e-mail) – fergusson.edu or despune.org

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Work Experience

- **Teaching: 29 years**
- **Research/Industrial: 22 years**

Personal Profile

- Professor at Department of Physics, Fergusson College (Autonomous) affiliated to Savitribai Phule Pune University, India.
- M.Sc. degree in 1992 and Ph.D. Degree in 2006 from Swami Ramanand Teerth Marathwada University, Nanded, India.
- Recognized research guide for Ph.D., Savitribai Phule Pune University. Two scholars have completed their Ph.D. and two are pursuing. Served as a reviewer for reputed Research Journals.
- Research areas of interest are Metal oxide thin film, Gas Sensor, Thin film Solar Cell.
- Completed One Minor project from SPPU
Completed One Major Project from DAE-BRNS, BARC, Mumbai.
Currently working on One Major Project from DAE-BRNS, BARC, Mumbai.
- Member of Board of Studies in Physics, Savitribai Phule Pune University and Modern College, Shivajinagar. Also worked on various committees of Savitribai Phule Pune University and Fergusson College.

Course(s) Taught (Only Titles)

1. Classical Mechanics (M.Sc.)
2. Physics of Nanomaterials (M.Sc.)
3. Physics of Semiconductor Devices
4. Electronics
5. Physics of Nanomaterials (B.Sc.)
6. Renewable Energy
7. Energy Studies
8. Analog Electronics
9. F.Y., S.Y, T.Y.B Sc. Practical's
10. M.Sc. –I & II Practical's

Field of Specialization/Areas of Interests

- Thin Film Deposition
- Gas Sensor
- Solar Cell

Education

- **Ph.D. – (Physics):** from June 2003 to Sept. 2006
Title of the Thesis: “Study of Gamma Attenuation Coefficients of Various Solid and Liquid Samples at Various Energies”
Name of University / Institution: Swami Ramanand Teerth Marathwada University, Nanded, India
Year of Award: 2006
- **Master of Science/Arts- (subject name):** 1992
 University/College: Fergusson College, Pune
- **Bachelor of Science- (subject name):** 1990
 College, University, Place: Pune University, Pune

Member of College Committees/ Professional Bodies and Others

College Level	Professional Bodies	Others
Board of Studies in Physics Fergusson College (Autonomous), Pune	Board of Studies in Physics, SPPU	Life Member, Indian Science Congress Association
Examination Committee, Modern College (Autonomous) Pune	Chairman/Paper setter/Examiner for theory & practical examination of B. Sc. Physics, M.Sc. Physics Savitribai Phule Pune University	Life Member, Indian Physics Association
Paper setter for B.Sc. Physics, Bharati Vidyapeeth (Deemed University)	Ph.D. referee at Amravati University, Maharashtra and Narmada University, Gujrat	Life Member, Indian Association for Physics Teachers.
	Local Inquiry Committee (LIC) of the Pune University for continuation of research center	Member of the Sectional Committee of the Section of Physical Sciences for 2018-2019
	Recorder of the section of Physical Sciences, Indian Science Congress Association (ISCA) (2016-2018)	

Employment History

- 1) **Organization :** Bharati Vidyapith's, Yashwantrao Mohite College, Pune
Role : Teacher
Duration : Dec. 1992 to May 1993

- 2) **Organization** : Sanghavi Kesari College, Chinchwad, Pune
Role : **Lecturer**
Duration : **Aug. 1993 to Nov. 1996**
- 3) **Organization** : Fergusson College, Pune
Role : **Lecturer**
Duration : **Dec. 1996 to Nov. 1997**
- 4) **Organization** : Fergusson College, Pune
Role : **Lecturer**
Duration : **Dec. 1997 to Dec. 2005**
- 5) **Organization** : Fergusson College, Pune
Role : **Assistant Professor**
Duration : **Jan. 2006 to Sept. 2015**
- 6) **Organization** : Fergusson College, Pune
Role : **Associate Professor**
Duration : **Sept. 2015 to Feb. 2022**
- 7) **Organization** : Fergusson College, Pune
Role : **Professor**
Duration : **Feb. 2022 onwards**

Research Projects

Title of the Project	Name of Funding Agency	Amount (Rs)	Duration (Year) (From To)	Type (Minor/Major)	Outcome
Synthesis and Characterization of Transparent Conducting Oxide (TCO) thin films for Gas Sensing Applications	B.C.U.D., University of Pune BCUD/OSD/672 dated 23/04/2011	Rs. 2.5 Lacs	2009-2011	Minor	Completed
Study of Metal Oxide Semiconductor thin films for Gas Sensing Applications	DAE-BRNS 34/14/61/2014 BRNS/2143 dated 19/12/2014	Rs. 31.24 Lacs	2015-2018	Major	Completed
Synthesis of earth abundant, low cost, environmentally harmless Cu_2MSnX_4 (CNTS/Se)-based thin film solar cells	BRNS Project No. 58/14/19/2019 - BRNS/10604	Rs. 34.86 Lacs	2019-2023	Major	Ongoing

Research Publications in National and International Journals

1. Bansode, S.R., Harpale, K.V., Mutadak, P., **Sonawane, K.M.**, Chaskar, M.G., More, M.A. and Sharma, R.B. Morphology-dependent field emission investigations from the 2-dimensional Bi₂Se₃-RGO nanocomposites. *Materials Science and Engineering 2021: B*, 274, p.115450.
2. Kawade, A.N., Bhujbal, P.K., Supekar, A.T., **Sonawane, K.M.***, Pathan, H.M., Shaikh, S.F. and Al-Kaitani, A.A., Comparative study of eosin-y and rose bengal sensitized SnO₂-ZnO composite electrode for dye-sensitized solar cell. *ES Energy & Environment 2021*, 14, pp.73-78.
3. Bankar, P.K., Kolhe, P.S., Mutadak, P.R., Kawade, A., **Sonawane, K.M.*** and More, M.A., Evaluation of field electron emission properties of ZnIn₂S₄ nanopetals grown on conducting carbon substrate. *Physica E: Low-dimensional Systems and Nanostructures 2021*, 125, p.114363.
4. Bankar, P.K., Mutadak, P.R., Gavhane, D.S., Kolhe, P.S., **Sonawane, K.M.*** and More, M.A., Improved field electron emission behaviour of Ag nanoparticles supported Bi₂S₃ nanowires. In *AIP Conference Proceedings 2020* (Vol. 2265, No. 1, p. 030473). AIP Publishing LLC.
5. Kolhe, P., Bankar, P., Mutadak, P., Maiti, N., **Sonawane, K.** and More, M., Enhanced field emission behavior of BiVO₄-MoS₂ nanocomposite. In *AIP Conference Proceedings 2020* (Vol. 2265, No. 1, p. 030474). AIP Publishing LLC.
6. Harpale, K., Kolhe, P., Bankar, P., Khare, R., Patil, S., Maiti, N., Chaskar, M.G., More, M.A. and **Sonawane, K.M.***, Multifunctional characteristics of polypyrrole-zinc oxide (PPy-ZnO) nanocomposite: Field emission investigations and gas sensing application. *Synthetic Metals 2020*, 269, p.116542.
7. Kawade, A.N., Bhujbal, P.K., Supekar, A.T., Pathan, H.M. and **Sonawane, K.M.***, Eosin-Y sensitized tin oxide (SnO₂): Fabrication and its analysis. *Optik 2020*, 216, p.164968.
8. Thombare, B.R., Gavhane, D.S., Lole, G.S., Bankar, P.K., Dusane, P.R., Kolhe, P.S., Khupse, N.D., Choudhary, R.J., Phase, D.M., Devan, R.S. and **Sonawane, K.M.**, Cobalt ferrite decorated multiwalled carbon nanotubes as the electrode for efficient field electron emission. *Physica E: Low-dimensional Systems and Nanostructures 2020*, 121, p.114131.
9. Kolhe, P.S., Mutadak, P., Maiti, N. and **Sonawane, K.M.***, Synthesis of WO₃ nanoflakes by hydrothermal route and its gas sensing application. *Sensors and Actuators A: Physical 2020*, 304, p.111877.
10. Kolhe, P.S., Kulkarni, S.G., Maiti, N. and **Sonawane, K.M.***, Effect of Cu doping concentration on H₂S gas-sensing properties of Cu-doped SnO₂ thin films. *Applied Physics A 2019*, 125(5), pp.1-11.
11. Kolhe, P.S., Shirke, P.S., Maiti, N., More, M.A. and **Sonawane, K.M.***, Facile hydrothermal synthesis of WO₃ nanoconifer thin film: multifunctional behavior for gas sensing and field emission applications. *Journal of Inorganic and Organometallic Polymers and Materials 2019*, 29(1), pp.41-48.
12. Kolhe, P.S., Shinde, A.B., Kulkarni, S.G., Maiti, N., Koinkar, P.M. and **Sonawane, K.M.***, Gas sensing performance of Al doped ZnO thin film for H₂S detection. *Journal of Alloys and Compounds 2018*, 748, pp.6-11.
13. Kolhe PS, Koinkar PM, Maiti N, **Sonawane KM***, Synthesis of Ag doped SnO₂ thin films for the evaluation of H₂S gas sensing properties. *Physica B: Condensed Matter*. 2017 Nov 1; 524:90-6.
14. Kolhe, P.S., Bankar, P.K., Gavhane, D.S., **Sonawane, K.M.**, Maiti, N. and More, M.A., Synthesis of bismuth tungstate (Bi₂WO₆) nanoflakes and their field emission investigation. In *AIP Conference Proceedings 2016* (Vol. 1731, No. 1, p. 120029). AIP Publishing LLC.
15. Harpale, K., More, M.A., Koinkar, P.M., Patil, S.S. and **Sonawane, K.M.**, Polypyrrole nanostructures and their field emission investigations. *Modern Physics Letters B 2015*, 29(06n07), p.1540035.

16. Patil, S.S., Harpale, K., More, M.A., Kulkarni, A. and **Sonawane, K.**, Morphology dependent field emission characteristics of polypyrrole thin film emitters. In *2014 27th International Vacuum Nanoelectronics Conference (IVNC) 2014* (pp. 239-240). IEEE.
17. Kolhe, R.K., Kulkarni, K.D., **Sonawane, K.M.***, More, M.A. and Gosavi, S.W., March. Synthesis and characterization of In doped ZnO thin films for LPG sensing. In *2012 1st International Symposium on Physics and Technology of Sensors (ISPTS-1) 2012* (pp. 346-348). IEEE.
18. Jain, D.K., Jain, V., Singh, G.N. and **Sonawane, K.M.**, Laser Raman and IR spectra of biomolecule: 6-aminouracil. *ASIAN JOURNAL OF PHYSICS* 2000, 9(2), pp.487-489.
19. Mital, H.P., Arora, C.B., Jain, V. and **Sonawane, K.M.**, Laser Raman and FTIR spectra of 2-amino-5-methylpyridine. *ASIAN JOURNAL OF PHYSICS* 2000, 9(2), pp.509-509.

Participation in Conferences/Seminars/Symposia/Workshop:

1. Kishor M. Sonawane, I-V Characteristics of Calotropis procera(Rui) cell, National Conference, **“90th Indian Science Congress” Frontier Science and cutting edge technology Bangalore University, Bangalore (3-7 Jan 2003)”**
2. Kishor M. Sonawane, Attenuation Coefficient for Photon energy absorption of Mercury, **“91st Indian Science Congress”, Punjab University, Chandigarh (3-7 Jan 2004).**
3. Kishor M. Sonawane, Measurement of absorption coefficient of mercury at various energies 0.123Mev to 1.33Mev, **“93rd Indian Science Congress”, ANGARU University Hyderabad (3-7 Jan 2006).**
4. Kishor M. Sonawane, Gas sensing characteristics of Nanocrystalline molybdenum-doped SnO₂ thin film for detection of methanol vapor, **“13th National Seminar on Physics & Technology of Sensors”, Dept. of Electronics Science, University of Pune, P-9-1 (2008) March 2008**
5. Kishor M. Sonawane, Synthesis and characterization of SnO₂ thin film, **“INNOVATION-2009” N.A.C. & Sci. College, Ahmednagar**
6. Kishor M. Sonawane, Synthesis and characterization of SnO₂ thin film as gas sensor, **“INNOVATION-2010”, H.V. Desai College, Pune.**
7. Kishor M. Sonawane, M A More, Nanocrystalline cobalt doped SnO₂ thin film, **“Advanced Material Development and Performance (AMDP2011)” University of Tokushima, Japan July 2011.**
8. Kishor M. Sonawane, Synthesis & characterization of In doped ZnO thin film, **“AVISHKAR Dec.-2011”, B. Gholap College, Sangavi, Pune.**
9. Kishor M. Sonawane, Synthesis and characterization of Al doped SnO₂ thin film as sensor, **“Recent Trends in Biophysics & Medical Electronics” K.J.S. College, Kopargaon, Dist.: A’Nagar, Feb.2012**
10. Kishor M. Sonawane, Synthesis & characterization of In doped ZnO thin film, **“International Symposium on Physics and Technology of sensors (ISPTS-1)” Centre for Materials and Electronics Technology (CMET), Pune March-2012**
11. Kishor M. Sonawane, **“Development in Thin Film Processing and Characterization Technology”, Bharati Vidyapeeth Y.M. College, Pune Oct. 2012.**
12. Kishor M. Sonawane, Synthesis and characterization of Cu doped SnO₂ thin film, **“INNOVATION 2012”, B.J.S. College, Wagholi, Pune.**
13. Kishor M. Sonawane, **“Recent Trends in Thin Film Deposition Techniques and Their Characterization”, B.P.H.E. Societies, Ahmednagar College, Ahmednagar, Dec. 2012.**

14. Kishor M. Sonawane, Synthesis and characterization of Cu doped SnO₂ thin film as Gas Sensor, **“Functional Nanomaterials: Synthesis, Characterization and Applications”**, **Department of Physics, University of Pune, Pune, Feb. 2013.**
15. Kishor M. Sonawane, Kashmira Harpale, Enhanced Field Emission from the Electrochemically Synthesized Polypyrrole Nanorods, **“DAE-BRNS Conference on Organic Devices: The Future Ahead (ODEFA-2014)” Bhabha Atomic Research Centre, Mumbai, March 2014.**
16. Kishor M. Sonawane, Polypyrrole nanostructures and their field emission investigations, **“Advance Material Development Performance (AMDP 2014)” Korea Maritime and Ocean University, South KOREA, July 2014.**
17. Kishor M. Sonawane, Amol Pawar, Room Temperature H₂S Gas Sensor using Hydrothermally grown ZnO nanorods, **“Advanced in Electronics & its Interdisciplinary Applications” Fergusson College, Pune, 19- 20 Sept. 2014.**
18. Kishor M. Sonawane, Growth of ZnO Nanorods using Hydrothermal for Gas Sensing Application, **“102nd Indian Science Congress Conference (ISCA-2015)” University of Mumbai, Jan. 2015.**
19. Kishor M. Sonawane, Shridhar Puranik, Pankaj Kolhe, Synthesis of Graphene Oxide by modified Hummers Method and its Characterization, **“Advanced Materials and Applications”**, **Fergusson College, Pune, 4- 5 Mar. 2016.**
20. Kishor M. Sonawane, Swapnil Shinde, Pankaj Kolhe, Tungsten Oxide Thin Film Deposition by Spray Pyrolysis and their Characterization, **“Functional Ecofriendly Smart Emerging Materials (FESEM)”**, **B. Gholap College, Sangvi Pune, Mar. 2016.**
21. Kishor M. Sonawane, Pankaj Kolhe, Prashant Kakde, Fabrication of WO₃ Film by Facile Route and Their Characterization, **“105th International Conference by Indian Science Congress, Manipur University”, Imphal, March 2017.**
22. Kishor M. Sonawane, Pankaj Kolhe, Gas Sensing study of Al doped ZnO thin Film fabricated by Spray Pyrolysis technique, **“Advanced Material Development and Performance (AMDP- 2017)” S.P. Pune University, Pune, July 2017.**
23. Kishor M. Sonawane, Parisee Shirke, Pankaj Kolhe, Synthesis WO₃ Nanotrees based Gas Sensor and its Field Emission Investigation, **“Nanotechnology for Human Welfare (ICNHW-2018)” HV Desai College, College of Engineering Pune (CoEP), Pune and Microbiologists Society, Savitribai Phule Pune University, Pune, February 2018.**
24. Kishor M. Sonawane, NT Mandlik, Thermoluminescence and Photoluminescence study of K₂Ca₂(SO₄)₃: Cu nanophosphor for the measurement of high dose gamma rays, **“Luminescence and its Applications [NCLA2018]”, CSIR-NIIST, Trivandrum (Kerala) Feb. 2018.**
25. Kishor M. Sonawane, Pankaj Kolhe, Prashant Bankar, Improved Field Electron Emission Behaviour of Ag Nanoparticles Supported Bi₂S₃ Nanowires, **“DAE SOLID STATE PHYSICS SYMPOSIUM (2019)” Dec. 2019.**
26. Kishor M. Sonawane, One Day Workshop, **“Syllabus for M.Sc. Physics (Departmental Courses)”**, **University of Pune and Department of Physics, Fergusson College, Pune, Jan. 1999.**
27. Kishor M. Sonawane, **“Workshop on Awareness and Teaching of New topics in F.Y.B.Sc. Physics Syllabus”** **University of Pune and Department of Physics, Fergusson College, Pune Sept. 2002.**
28. Kishor M. Sonawane, **“One Day Workshop T.Y.B.Sc. Physics revision of syllabus for core courses”**, **University of Pune and Department of Physics, Fergusson College, Pune Jan. 2004.**

29. Kishor M. Sonawane, **“Workshop for Teachers: T.Y. B.Sc. Physics”**, University of Pune, **20-21 Feb. 2004.**
30. Kishor M. Sonawane, **“Workshop on C-programming and Computational Physics” Department of Physics, University of Pune, 27-28 Jan 2005.**
31. Kishor M. Sonawane, **“Seminar on Remembering Einstein” University of Pune and B. Gholap College, Sangavi, Pune, Jan. 2006.**
32. Kishor M. Sonawane, **“One Day Workshop M.Sc –II Physics Syllabus Revision”**, University of Pune and Department of Physics, Fergusson College, Pune, Dec. 2008.
33. Kishor M. Sonawane, **“One Day Workshop T.Y. B.Sc. Physics Syllabus Framing”**, University of Pune and HPT. RYK College, Nasik, Dec. 2009.
34. Kishor M. Sonawane, **“Seminar on Intellectual property rights and patents” Department of Physics, Fergusson College, Pune, Nov. 2011.**
35. Kishor M. Sonawane, **“One-day training program for Laboratory Staff as Resource person” Department of Physics, Fergusson College, Pune, Dec. 2011.**
36. Kishor M. Sonawane, **“Workshop on F.Y.B.Sc. Question Bank preparation under “Examination Reforms- UGC XI Plan” Fergusson College, Pune 28-30 March 2012.**
37. Kishor M. Sonawane, **“One Day Workshop Panel discussion on Research Methodology” Fergusson College, UGC and SPEED, March 2012.**
38. Kishor M. Sonawane, **“One Day Workshop Interaction of Physics Teacher with DST Program Advisory Committee (PAC) Members” Department of Physics, University of Pune, Sept. 2012.**
39. Kishor M. Sonawane, **“One Day Workshop Revision of M.Sc.-I Physics Syllabus”**, University of Pune, March 2013.
40. Kishor M. Sonawane, **“Workshop Revision of M.Sc. I Physics Syllabus (credit system)”**, Department of Physics, Fergusson College, Pune, March 2013.
41. Kishor M. Sonawane, **“One Day Workshop Workshop on New Choice Based Credit System for PG Courses”**, BCUD University of Pune & B. Gholap College, Sangavi, Pune, June 2013.
42. Kishor M. Sonawane, **“Training Programme Research Planning & Technical Paper Writing”**, University of Pune & Fergusson College, Pune, Jan 2014.