

Dr. Haribhau Gholap, Ph.D. (Physics), SET

Present position

- Assistant Professor, Department of Physics, Fergusson College (Autonomous) Pune

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Work Experience

- Teaching: 18 years
- Research/Industrial: 7.5 years

Personal Profile

Presently, I am working as Assistant Professor in the Department of Physics, Fergusson College (Autonomous), Pune. My Ph.D. (Physics) degree specialized in materials science on the thesis entitled "Bifunctional Nanoparticles based on Semiconductor Quantum dots: Synthesis & Applications " from the Department of Physics, awarded (June 2013) University of Pune (UoP) under the guidance of Dr. Arun Banpurkar and Dr.Gauri Kulkarni in association with Dr. Satishchandra B. Ogale, Senior Scientist, National Chemical Laboratory, Pune. Indian Academy of Science Bangalore and Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR) awarded research fellowship at International Center of Materials Science (ICMS), Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR), Bangalore under guidance of Dr.Ranjan Datta in 2014 as well as University Grant Commission (UGC), New Delhi awarded Raman Postdoctoral Fellowship at USA under Dr.Kartik Ghosh in 2016.

Course(s) Taught (Only Titles)

1. Nuclear Physics
2. Solid State Physics
3. Material Science
4. Experimental techniques in Physics
5. Physics of Nanomaterials
6. Optics
7. Heat and thermodynamics

8. Vacuum Technology and Thin Film Physics
9. Atoms, molecules and solids
10. Physics principles and applications
11. Mechanics and properties of matter
12. Modern Physics

Field of Specialization/Areas of Interests

1. Study of nanomaterials specially semiconductor quantum dots, metal oxides, nanocomposites
2. Energy, biological and biomedical applications
3. Nanobiotechnology

Education

- **Ph.D. (Physics):** from 2010 to 2013
Title of the Thesis: Bifunctional Nanoparticles based on Semiconductor Quantum dots: Synthesis & Applications
Name of University / Institution: Department of Physics, University of Pune, Pune.
Year of Award: June 2013
- **Master of Science- (Physics):** 2004
 Department of Physics, Savitribai Phule Pune University
- **Bachelor of Science- (Physics):** 2002
 Jijamata College, Bhende, Newasa, A.nagar, Savitribai Phule Pune University

Fellowship/Awards/ Certifications/Achievements/Recognitions

1. **Recognized guide in Physics** for M.Phil. degree with Savitribai Phule Pune University from year 2015.
2. Recognition as Permanent Post-Graduate **(PG) Teacher** of Savitribai Phule Pune University, Pune
3. One year **UGC Raman Post-Doctoral Fellowship in USA**, awarded by UGC, New-Delhi (Govt. of India) in 2016-2017.
4. **Visiting Fellowship** by Jawaharlal Nehru Centre for Advanced and Scientific Research (JNCASR), Bangalore in 2014.
5. **Qualified State Eligibility Test (MH-SET) in Physical Science**, accredited by U.G.C. & conducted by Savitribai Phule Pune University state Agency in February 2005.
6. Indian Academy of Science, Bangalore awarded research fellowship for two months at International Center of Materials Science (ICMS), Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR), Bangalore under guidance of Dr.Ranjan Datta in 2014.
7. Prof.P.S.Damble Prize for the “**Best Oral Presentation**” in Raman Memorial Conference (RMC) in 2012 at Department of Physics, University of Pune
8. “**Best Poster Presentation**” award in National Level Seminar on Nanoscience at Sinnar, Nashik on **January 2010**.
9. University Grant Commission (UGC), New Delhi awarded “Teacher Fellowship”: 2011-2013.
10. IISER Pune awarded travel grant for Level One Workshop on Researched Based Pedagogical Tools (**RBPT**) organized by IISER Pune as well as Sheffield Hallam University, UK and sponsored by Department of Biotechnology (DBT), India as well as British Council, India at **Jaipur, Rajasthan in 2018**.

Member of College Committees/ Professional Bodies and Others

College Level	Professional Bodies	Others
Students Welfare Officer (SWO) 2015-2016	Life member: Indian Physics Association	
	Life member: Indian Association of Physics Teachers Material Research Society of India (MRSI, India) Indian Biophysical Society	
	Member of Materials Research Society, USA for the Period: 2009-2010 Member of Materials Research Society, Singapore: June 2013-June 2015	

Employment History

Example:

- Organization** : New Arts, Science, Commence College, Ahmednagar
Role : Lecturer (full time)
Duration : 13th July 2005 to 30th October 2005
- Organization** : Fergusson College, (Autonomous) Pune
Role : Assistant Professor
Duration : 21st November 2005 to till the date

Research Projects

Title of the Project	Name of Funding Agency	Amount (Rs)	Duration (Year) (From To)	Type (Minor / Major)	Outcome
Synthesis of semiconductor Quantum Dots-Metal oxide nanocomposite by chemical route	BCUD, Savitribai Phule Pune University	Rs. 2.7 lakhs	2013-2015	Minor	Completed
Organometallic Synthesis of Semiconductor Quantum Dots	BCUD, University of Pune	Rs. 2.5 lakhs	2009-2012	Minor	Completed

Research Publications in National and International Journals

- Magnetite/CdTe magnetic-fluorescent composite nanosystem for magnetic separation and bio-imaging
A. Kale, S. Kale, P. Yadav, **H. Gholap**, R. Pasricha, J. Jog, B. Lefez, B. Hannoyer, P. Shastry and S. Ogale, Nanotechnology 22 (2011) 225101 (12pp).
- Quantum dot bio-conjugate: as a western blot probe for highly sensitive detection of cellular protein
S. Kale, A. Kale, **H. Gholap**, A. Rana, R. Desai, A. Banpurkar, S. Ogale, P. Shastry J Nanopart Res (2012)

14:732.

3. CdTe-TiO₂ nanocomposite: An impeder of Bacterial Growth and Biofilm, **H. Gholap**, R. Patil, P. Yadav, A. Banpurkar, S. Ogale and W. Gade, Nanotechnology 24 (2013) 195101pp (Impact Factor: 3.82).
4. Fluorescent CdTe QDs Embedded Chitosan Nanoparticles : a stable, biocompatible preparation for bioimaging, V. Ghormade, **H. Gholap**, S. Kale, V. Kulkarni, S. Bhat, K. Paknikar, J Biomater Sci Polym Ed. 2015 Jan;26(1):42-56.
5. Quantum dots conjugated Zinc oxide nanosheets: An agent impeding microbial growth and biofilm, R. Patil, **H. Gholap***, S. Warule, A. Banpurkar, G. Kulkarni and W. Gade, Applied Surface Science 326 (2015) 73–81. (Corresponding author).
6. Synthesis and bio-film inhibition activity of Betulinan C and its analogs, N. Firke, A. Markandeya, R. Patil, **H. Gholap**, R. Deshmukh, S. Pingale, Research J. Pharm. and Tech. 8(1): January 2015, page 54-58.
7. Stable p-type conductivity in B and N co-doped ZnO epitaxial thin film, R. Sahu, **H. Gholap**, G. Mounika, K. Dileep, B. Vishal, S. Ghara, and R. Datta, Phys. Status Solidi B 253, No. 3, 504–508 (2016).
8. Hierarchical nanostructures of Au@ZnO: antibacterial and antibiofilm agent, **H. Gholap*** S. Warule, J. Sangshetti, G. Kulkarni, A. Banpurkar, S. Satpute and R. Patil, Appl Microbiol Biotechnol 100:5849–5858, (2016). (Corresponding author).
9. In situ fabrication of highly crystalline CdS decorated Bi₂S₃ nanowires (nano-heterostructure) for visible light photocatalyst application, R. Panmand, Y. Sethi, R. Deokar, D. Late, **H. Gholap**, J. Baeg and B. Kale, RSC Adv, 6, 23508-23517, (2016).
10. The interactions between CdTe quantum dots and proteins: Understanding nano bio interface, S. Joglekar, **H. Gholap**, P. Alegaonkar, A. Kale, AIMS Materials Science 4(1): 209-222 (2017).
11. Study to elucidate effect of titanium dioxide nanoparticles on bacterial membrane potential and membrane permeability, M. Khater, G. Kulkarni, S. Khater, **H. Gholap**, R. Patil, Materials Research Express, 7 (3), 035005, (2020).
12. ZnO/CdS Nanocomposite: An Anti-Microbial and Anti-Biofilm Agent, **H. Gholap***, A. Gholap, R Patil, Advances in Microbiology, 10 (4), 166-179, (2020). (Corresponding author)
13. Comparative studies on measurement of membrane potential of bacterial cells treated with ZnO nanoparticles by Spectrofluorometry, fluorescence microscopy and flowcytometry M. Khater, S. Khater, **H. Gholap**, R. Patil, G. Kulkarni, Journal of Microbiological Methods, Volume 173,105920.

Participation in Conferences/Seminars/Symposia/Workshop:

1. Superparamagnetic (Fe₃O₄) CdTe (Core) Shell Bifunctional Nanoparticles” MRS Fall Meeting, held at **Boston, Massachusetts, USA during November 30-December 4, 2009.**
2. Magnetic –Fluorescent nanoparticles for Bioimaging and Bioseparation Applications” International Workshop on Nanotechnology and Advanced Functional Materials (NTAFM) held at **National Chemical Laboratory (NCL) Pune, India during July 9-11, 2009.**
3. Research paper presented as minor research project (**Innovation- 2009**) in regional Conference for Pune University College Teachers, BCUD, University of Pune at New Arts, Commerce and Science College, Ahmednagar on **Dec 9-10, 2009.**
4. National Seminar on “**NANOSCIENCE**” sponsored by University Grant Commission (UGC) G.M.D and B.V Arts, Science and Commerce College, Sinner, Dist. Nashik **Jan 21-23, 2010.**
5. Superparamagnetic (Fe₃O₄) CdTe (core) shell Nanoparticles, in Raman Memorial Conference (**RMC-2010**) organized by IPA (Pune Chapter) and Department of Physics, University of Pune-7 during **Feb 24-25, 2010.**
6. Research paper presented as part of minor research project (**Innovation- 2010**) in the regional Conference for Pune University College Teachers, BCUD, University of Pune at H.V Desai College Pune-2 during **November 22-23, 2010.**
7. Research paper presented as a part of National Science day and International year of Chemistry (IYC

2011) National Chemical Laboratory (NCL), Pune on **Feb 24, 2011**.

8. Quantum dot bio-conjugate: as a western blot probe for highly sensitive detection of cellular proteins” in National Chemical Laboratory (NCL) “ Science Day” organized by NCL Pune-8 during **Feb 27-28, 2012**.
9. Antiquorum sensing studies of ZnO , ZnO - CdS and ZnO -CdTe nanocomposites in Raman Memorial Conference (**RMC- 2012**) organized by IPA (Pune Chapter) and Department of Physics, University of Pune-7 during **March 2-3, 2012**.
10. Research paper presented as part of minor research project (**Innovation- 2012**) Regional Conference for Pune University College Teachers, BCUD, University of Pune at Bhartiya Jain Sanghtana College Wagholi, Pune d on **March 26-27, 2012**.
11. Bifunctional Nanoparticles based on Semiconductor Quantum Dots: Synthesis & Application” in Raman Memorial Conference (**RMC- 2013**) at Department of Physics, University of Pune in association with IPA, Pune Chapter on **Feb 22-23, 2013**.
12. Advanced Functionality of quantum dots based nanocomposites as quorum sensing inhibitor of biofilm formation” International Conference of Materials for Advanced Technology (**ICMAT-2013**), held at Suntech, Singapore during June **30-July 5, 2013**.
13. CdTe-TiO₂ Nanocomposite: An impeder of Bacterial Growth and Biofilm” International Workshop on Nanotechnology and Advanced Functional Materials (**NTAFM-2013**), held at National Chemical Laboratory (NCL) Pune, India during July **24-25, 2013**.
14. Research paper presented as part of minor research project (**Innovation - 2014**) Regional Conference for Pune University College Teachers, BCUD, University of Pune at H. V. Desai College, Pune on **April 26, 2014**.
15. CdTe quantum dots conjugated zinc oxide nanosheets: An agent impeding microbial growth and biofilm, International Conference on Recent Advances in Nanoscience and Nanotechnology (**ICRANN**)-2014 held at Jawaharlal Nehru University, New Delhi on **December 15-16, 2014**.
16. National Conference on ‘Advances in Chemical Sciences with Special References to Molecular spectroscopy, Materials Science and Organic Electronics’ (**NCACS-2014**) sponsored by University Grant Commission (UGC), New Delhi at **Department of Chemistry, Fergusson College, Pune-4 on December 19-20, 2014**.
17. Advanced functionality of Au-ZnO nanocomposite as a quorum sensing inhibitor of Biofilm formation, 2nd International Symposium on Physics and Technology of Sensors (**ISPTS-2**) held at YASHDA, Pune on **March 8-10, 2015**.
18. Synthesis, characterization and biological evaluation of CdTe and CdTe/ZnS quantum dots embedded chitosan nanoparticles for their application in bioimaging, in National Symposium on Medical Biophysics (**NSMB-2015**) at **Department of Physics, Savitribai Phule Pune University during September 24-25, 2015**.
19. Research paper presented as part of minor research project (**Innovation - 2015**) Regional Conference for Pune University College Teachers, BCUD, University of Pune at Fergusson College, Pune-4 on **June 17-18, 2015**.
20. Advanced functionality of ZnO/CdS nanocomposite for inhibition of quorum sensing mediated bacterial biofilm formation, International Conference on Nanoscience and Technology (**ICONSAT 2016**) at IISER, Pune during **Feb 29-March 2, 2016**.
21. Stable p-type conductivity in B and N co-doped ZnO epitaxial thin film by PLD, in National Conference on Advanced materials and Applications (**NCAMA-2016**) at Fergusson College, Pune during **March 4-5, 2016**.
22. Nanocomposite g-C₃N₄/CdSe as an Anti Quorum-Sensing Molecule in *Candida albicans* Biofilm, The **National Academy of Sciences, India (NASI), 87th Annual Session of NASI & Symposium on “Basic Research- Its Role in National Development”** at SPPU, Pune on **December 8-10, 2017**.
23. Synthesis of water soluble Te nanorods and CdTe nanoparticles: The influence of precursors Cd/Te molar ratio, (International Conference on Nanotechnology for Human Welfare (**ICNHW-2018**) at H.V. Desai College, Pune during **Feb 1-3, 2018**.

Events Organized/Coordinated:

Sr. No.	Name of the Event	Name of organizing Institute/ College/ University	Nature of contribution	Dates
1.	National Conference on Advanced Materials and Applications (NCAMA-2016)	Department of Physics, Fergusson College with the support from BCUD, Savitribai Phule Pune University and Department of Biotechnology (DBT), Govt. of India	Member	4 th & 5 th March 2016
2.	Hands on training Course : Introduction to Nanomaterials and Nanoscience	Department of Physics, Fergusson College under DBT-STAR College Scheme	Course co-ordinator	18 th December 2014 to 27 th December 2014
3.	Lecture Workshop on "Nanotechnology: Energy & Health" held at	Fergusson College, Pune Sponsored by three Science Academies' (Bangalore, Allahabad, Delhi)	Co-ordinator	October 10-11, 2014
3.	Vedic Science and Technology Day	jointly organized by Deccan Education Society, Pune & FROST Pradnya Vikas Shikshan Sanstha, Pune	Member	January 10 th & 11 th 2014
4.	Innovation- 2015	Fergusson College, Pune	Organizing committee Member	June 17-18, 2015
5.	National Conference on "Ancient Science and Technology: Retrospection and Aspiration (ASTRA-2015)	Fergusson College, Pune	Member	January 10 th & 11 th 2015
6.	Magical Nanoworld	Fergusson College Pune	Course Coordinator	Feb 9, 2016
7.	State Level Elocution Competition-2016	Students Welfare Board, Savitribai Phule Pune University at Fergusson College, Pune- 4	Co-ordinator	January 20 th , 2016
8.	One day workshop on NET/SET Examination Guidance for M.Sc Physics Students	Students Welfare Board, Savitribai Phule Pune University (SPPU), Pune	Co-ordinator	Feb 23 rd 2016
9.	One day Girl Students Personality Development Programme	Students Welfare Board, Savitribai Phule Pune University (SPPU), Pune at Fergusson College, Pune-4	Co-ordinator	August 25 th 2015

Additional skills/Activities

Resource Person in workshop/symposia:

1. Orientation Course for **Trained Graduate Teachers in Science** as a Resource Person organized at Jawahar Navodaya Vidyalaya, Pune on **May 8th 2011**.
2. UGC sponsored State Level Workshop on “**Nanotechnology and its applications in Polymaterials and Biomaterials**” held at Department of Physics, New Arts, Commerce and Science College, Shevgaon, Dist. Ahmednagar from 12th to 13th January 2011.
3. Resource Person for taking Scholarship Interviews for B.Sc & M.Sc Physics students sponsored by **Malhotra Weikfield Foundation**, Pune on **August 8-9th 2013**.
4. Guest lecture delivered on “**Frontiers in Material Science and Nanomaterials**” for T.Y.B.Sc students at Department of Physics, H.V. Desai College, Pune held on **December 24th 2013**.
5. Guest lecture delivered on” Semiconductor Quantum Dots based Nanocomposites for Biomedical Applications” at Centre for Materials for Electronics Technology (C-MET), Pune on **January 31st 2014**.
6. Guest lecture delivered on” Structural and Optical characterization of BN: ZnO and Li, BN: ZnO thin film grown by Pulsed Laser Deposition” at Centre for Materials for Electronics Technology (C-MET), Pune on **July 11th 2014**.
7. Resource person for **NET/SET workshop for M.Sc Physics** Students organized by Prof. Ramakrishna More Arts, Commerce & Science College Akurdi, Pune-44 on **January 19th 2015**.

Participation in Orientation/ Refresher courses:

1. “**General Orientation Programme**” sponsored by UGC held at UGC-ASC from 27th July to 22th August 2010.
2. UGC sponsored “**Refresher Course in Physics**” held at the Department of physics, University of Pune, Pune from 16th November to 6th December 2010.
3. UGC sponsored “**Refresher Course in Physics**” held at the Department of physics, University of Pune, Pune from 11th November to 1st December 2013.