Dr. Swati Kashinath Gaikwad, Ph.D., SET

Present position

- **Assistant Professor in Physics**

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

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https://www.linkedin.com/in/swati-gaikwad-b00382102

https://scholar.google.co.in/citations?user=CednzbYAAAAJ&hl=en

https://www.researchgate.net/profile/Swati-Gaikwad-2

Work Experience

- **Since Teaching: 15 June 20217 (7 years)**

Personal Profile

Dr. Swati Kashinath Gaikwad earned her Ph.D. in Physics from the Department of Physics, Savitribai Phule Pune University, Pune, in 2023. With 7 years of teaching experience, she actively teaches B.Sc. and M.Sc. Physics courses. Her academic interests include magnetic and ferroelectric materials. She is dedicated to providing quality education, inspiring scientific inquiry among students, and contributing to research and educational growth.

Course(s) Taught (Only Titles)

1. PHY2301: Principles and Applications of Optics
2. PHY2401: Introduction to Quantum Physics and Special Theory of Relativity
3. PHY3501: Mathematical Methods in Physics
4. PHY3502: Solid State Physics
5. PHY3603: Thermodynamics and Statistical Mechanics
6. PHY3604: Nuclear Physics
7. PHY1103: Physics practical laboratory-I
8. PHY1203: Physics practical laboratory-II
9. PHY2303: Physics practical laboratory-III
10. PHY2403: Physics practical laboratory-III
11. PHY3506: Physics practical laboratory-I
12. PHY3507: Physics practical laboratory-II
13. PHY3508: Physics practical laboratory-III
14. PHY3608: Physics Practical VI
15. PHY4206: Physics Practical Laboratory - IV: Electronics Lab
16. PHY5401: Nuclear Physics
17. PHY5407: Physics Practical Laboratory -VII: Special Lab. II
18. PHY100: Physics Laboratory-I (Major) (NEP Pattern)

19. PHY112: Physics Laboratory-I (Minor) (NEP Pattern)
20. PHY150: Physics Laboratory-I (Major) (NEP Pattern)
21. PHY162: Physics Laboratory-I (Minor) (NEP Pattern)
22. PHY1011: Physics Practical-I (Major and Minor) (NEP 2.0)
23. PHY200: Physics Practical-III (Major) (NEP-2020 Pattern)
24. PHY212: Physics Practical-III (Minor) (NEP-2020 Pattern)
25. PHY-211 (MINOR): Oscillations and Optics (NEP-2020 Pattern)

Field of Specialization/Areas of Interests

- Material Science
- Magnetism
- Ferroelectric materials, Ferrites
- Magnetoelectric composite materials

Education

- **Ph.D. – (Physics):** 2015 to 2023
  Title of the Thesis: Multiferrroic Magnetoelectric Composites of Rare-Earth Modified Ni-Co Ferrite and lead free Ba(Ti,Zr)) O_3-(Ba,Ca)TiO_3 Piezoelectric**.**
  Name of University / Institution: Department of Physics, Savitribai Phule Pune University, Pune-411007
  Year of Award: 21 November 2023
- **Master of Science- (Physics)**: 2014
  University/College: Department of Physics, Savitribai Phule Pune University, Pune-411007
- **Bachelor of Science- (Physics)**: 2011
  NDMVPs, Karmveer Kakasaheb Wagh Arts, Commerce and Science College,
  Pimpalgon (Baswant), Taluka: Niphad, District: Nashik, Pin:422209,
  (Affiliated to Savitribai Phule Pune University, Pune-7).

Fellowship/Awards/ Certifications/Achievements/Recognitions

1. Recipient of **UGC-BSR-JRF fellowship** in the year 2015, from 16-10-2015 to 14-06-2017.
2. Recipient of **DST- PURSE fellowship** in the year 2014, from 07-10-2014 to 15-10-2015.

Member of College Committees/ Professional Bodies and Others

College Level	Professional Bodies	Others
● Anti-ragging committee cell member from 2018 to till date ● S. Y .B. Sc. Physics Practical In charge from June 2022 ● S. Y. B. Sc. theory in charge from June 2017 to May 2021 ● Extra credit course XCC022 and XCC023 course coordinator (A.Y.2022-23)	Member of Indian Association of Physics Teachers, IAPT	-

Employment History

1) Organization : Deccan Education Society's Fergusson College (Autonomous), Pune-411004
Role : Assistant Professor
Duration : Since 15th June 2017

Responsibilities	● S. Y. B. Sc Physics theory Incharge ● S.Y. B.Sc. Physics Practical Incharge

Research Projects

Title of the Project	Name of Funding Agency	Amount (Rs)	Duration (Year) (From To)	Type (Minor/Major)	Outcome
Development of Lead-free Piezoelectric Materials for Stress Sensor Applications	Deccan Education Society's Fergusson College (Autonomous), Pune-411004	1,00,000/-	1 October 2023 to 31 March 2024	Minor	-

Research Publications in National and International Journals

1. Published a research paper entitled, "Effect of Dy^{3+} and Tb^{3+} Rare-Earth Cation Co-Substitution on the Structure, Magnetic, and Magnetostrictive Properties of Ni-Co-Ferrites." **Swati K Gaikwad**, Shahaji P Kharat, Keerthi Haritha, Yesh D Kolekar, CV Ramana, 2023/7/14, American Chemical Society, Inorganic Chemistry, 62, 30, 11837-11848
2. Published a book chapter in a book entitled, "Aspects of gauge field theory" by Tarun Laxminarayan Palla, Saurabh Pant, **Swati K. Gaikwad**, Shahaji P. Kharat in the book, Recent Trends in Science and Technology- Mathematics and Stat (MS), with ISBN Number: 978-81-948061-9-6 with page number 7.12 to 7.35.
3. Published a research paper entitled, "Enhanced Magnetoelectric Effect in Lead-Free Piezoelectric $BaZr_{0.2}Ti_{0.8}O_3$- 0.5 $Ba_{0.7}Ca_{0.3}TiO_3$ and Fe-Rich Magnetostrictive $Co_{0.8}Fe_{2.2-x}Dy_xO_4$ Nanocomposites for Energy Harvesting Applications", Shahaji P. Kharat, **Swati K. Gaikwad**, Bharat G. Baraskar, Debabrata Das, R. C. Kambale, Y. D. Kolekar, and C. V. Ramana in the Journal of Materials Science & Engineering B., May 2023 https://doi.org/10.1016/j.mseb.2023.116363
4. Published a research paper entitled, "Correlation between Cation Distribution, Magnetic and Dielectric Properties of Dy^{3+}-Substituted Fe-Rich Cobalt Ferrite", Shahaji P. Kharat, **Swati K. Gaikwad**, Rahul C. Kambale, Yesh D. Kolekar, and C. V. Ramana , in Inorganic Chemistry on September 1, 2022,61, 48, 19319-19332, https://doi.org/10.1021/acs.inorgchem.2c03125
5. Published a research paper entitled, "Effect of Crystal Structure and Phase on the Dielectric, Ferroelectric, and Piezoelectric Properties of Ca^{2+}- and Zr^{4+}-Substituted Barium Titanate", Shahaji P Kharat, **Swati K Gaikwad**, Paul Gaurav Nalam, Rahul C Kambale, Ajit R James, Yesh

D Kolekar and CV Ramana in Cryst. Growth Des. 2022, 22, 9, 5571–5581, https://doi.org/10.1021/acs.cgd.2c00679

6. Published a paper in conference proceedings, "Magnetic properties of $CoFe_2O_4$ and $ZnFe_2O_4$ nanoparticles synthesized by novel chemical route Conference Paper · May 2016, DOI: 10.1063/1.4948162, S. P. Kharat, T. C. Darvade, **S. K. Gaikwad**, B. G Baraskar, S. G. Kakade, R. C. Kambale and Y. D. Kolekar,* DAE conference date 21–25 December 2015
7. Published a paper in conference proceedings, "Effect of Zr^{4+} substitution on ferroelectric and dielectric properties of $BaTiO_3$ ceramics", Conference Paper · May 2016, DOI:10.1063/1.4948227 **, S. K. Gaikwad**, V. G. Ghodekar, O. A. Ramdasi, S. P. Kharat, S. G. Kakade, R. C. Kambale and Y. D. Kolekar,AIP Conf. Proc. 1731, 140061 (2016); 10.1063/1.4948227, Conference date: 21–25 December 2015.
8. Published a research paper entitled, "Chemical-Composition Tuning-Enabled Optimization of Structure, Properties, and Performance of Lead-Free (1–x) $BaZr_{0.05}Ti_{0.95}O_3$–(x) $Ba_{0.92}Ca_{0.08}TiO_3$ Electroceramics, Swati K Gaikwad, Shahaji P Kharat, Bharat G Baraskar, Paul G Nalam, Ajit R James, Yesh D Kolekar, CV Ramana, 2024/1/30, The American Chemical Society Journal of Physical Chemistry C.

Participation in Conferences/Seminars/Symposia/Workshop:

1. Presented an Oral Presentation at the 28th Raman Memorial Conference (RMC 2022) held on "Studies on lead-free BZT-BCT ferroelectric using Raman spectroscopy**" Swati K. Gaikwad**, S. P. Kharat, R. C. Kambale, and Y.D. Kolekar during 17th -18th February 2022 at the Department of physics, Savitribai Phule Pune University, Pune-7
2. Presented a Poster in ***60th DAE-Solid State Physics Symposium (DAE-SSPS-2015)*** on "Effect of Zr^{4+} Substitution on Ferroelectric and Dielectric Properties of $BaTiO_3$ Ceramics", **S. K. Gaikwad**, V. G. Ghodekar, O. A. Ramdasi, S. P. Kharat, S. G. Kakade, R. C. Kambale and Y. D. Kolekar; Sponsored by Board of Research in Nuclear Sciences (BRNS), Dept. Of Atomic Energy, Government of India; held at Amity University, U.P., Noida - 201313; during December 21-25, 2015.
3. Presented a Poster at ***22nd Raman Memorial Conferences 2016*** on "Effect on Ca^{2+} substitution in Ba^{2+} site in $BaTiO_3$ ceramics"; **S. K. Gaikwad**, O. A. Ramdasi, S. P. Kharat, B. G. Baraskar, S. G. Kakade, R. C. Kambale, Y.D. Kolekar held at the Department of Physics, S.. P. Pune University, Pune-411007;during February 12-13, 2016.
4. Presented a Poster in the ***International conference on Functional Materials @ Nanoscale : Concerns & Challenges 2015 (ICFMNCC-2015)*** on "Effect on the Structural, Dielectric and

Ferroelectric properties due to the substitution of Zr^{4+} in $BaTiO_3$", **S. K. Gaikwad**, V. G. Ghodekar, S. G. Kakade, R. C. Kambale and Y. D. Kolekar; , paper presentation in the (***ICFMNCC-2015***) organized by Dept. of Physics, Chemistry and Electronics; Karmveer Bhaurao Patil Mahavidyalaya, Pandharpur; Dist. Solapur (M.S.) India; during March 9-11, 2015.

5. Attended and presented a poster paper titled "Influence of Zr^{4+} on the Structural, Dielectric and Ferroelectric Properties of $BaTiO_3$", **Swati K. Gaikwad,** V. G. Ghodekar, S. G. Kakade, R. C. Kambale and Y. D. Kolekar; presented in the ***Raman Memorial Conference-2015***, held during Feb. 14-15, 2015 at Department of Physics, S. P. Pune University, Ganeshkhind, Pune – 411 007.
6. Presented a Poster in ***22nd Raman Memorial Conference - 2016*** (RMC-2016) on "Ferroelectric and Dielectric Properties of BT based Lead Free Ceramics"; O.A.Ramdasi, **S.K.Gaikwad**, B.G.Baraskar, S.P.Kharat, S. G. Kakade, R. C. Kambale, Y. D. Kolekar held at Department of Physics, University of Pune, Pune- 411 007, during 12th -13th February 2016.
7. Presented a Poster in ***International Conference on Functional Eco-friendly Smart Emerging Materials (FESEM-2016)*** on "Ferroelectric and Piezoelectric Properties of Hf Modified $BaTiO_3$"; O.A.Ramdasi**,** **S.K.Gaikwad**, B.G.Baraskar, S.P.Kharat, S. G. Kakade, R. C. Kambale, Y. D. Kolekar, held at YASHADA, organized by Baburaoji Gholap College,Sangavi, Pune- 411 027, during 10th - 12th March 2016.
8. Oral presentation in ***22nd Raman Memorial Conference - 2016*** (RMC-2016) on, "Modified chemical synthesis route for magnetic properties of $CoFe_2O_4$ and $ZnFe_2O_4$ nanoparticles", S. P. Kharat, T. C. Darwade, **S. K. Gaikwad**, B. G. Baraskar, O. A Ramdasi, S. G. Kakade, R. C. Kambale, Y. D. Kolekar, held on 12-13 February 2016.
9. Presented a Oral Presentation ***in State Level Seminar on "RECENT TRENDS IN MATERIAL SCIENCE AND APPLIED PHYSICS"*** on "Ferroelectric and Dielectric Properties of BT Based Lead-Free Ceramics"; O.A.Ramdasi, **S.K.Gaikwad,** B.G.Baraskar, S.P.Kharat, S.G.Kakade, R. C. Kambale and Y. D. Kolekar held at Hutatma Rajguru Mahavidyalaya, Rajgurunagar - 410505, on 5th January 2016.

Workshops:

1. Attended a series of workshops for faculties and the research students to promote interdisciplinary research culture dated 25 March 2023, 31 March 2023, 1 April 2023 and 4 April 2023 conducted at AV hall, Fergusson College (Autonomous), Pune.
2. All state-level members attended a national seminar on "Implementation of multi and transdisciplinary education under NEP 2020" under UGC STRIDE component-I from 18th to 20th January 2023 at Amphitheater, Fergusson College (Autonomous), Pune.

3. Attended a workshop at Modern College from 22nd and 23rd December 2017 on Skills and open ended experimentation in optics.
4. Participated in Frontiers in Physics XIII from 17th and 18th Feb 2020 at Fergusson College (Autonomous), Pune.
5. Participated in Frontiers in Physics XII from 1st and 2nd Feb 2019 and Also celebrated golden jubilee of PG in Physics at Fergusson College (Autonomous), Pune.

A. BOS member:

1. Played an active role as a member of the Board of Studies in framing the syllabus for the Department of Physics at Fergusson College (Autonomous), Pune, for both B.Sc. and M.Sc. Physics programs. This involved aligning the curriculum with the principles of autonomy and the guidelines set forth by the National Education Policy (NEP). It was a rewarding experience to contribute to the development of the educational framework for the department under these evolving educational paradigms

B. Induction program

1. Completed an Induction program also called as an Orientation programme at IISER Pune from 12th November 2018 to 8 December 2018 in Physics by A grade.

C. Short term program or FDP

1. Completed an online short term program also called as Faculty Development Programme (FDP) on Nonomaterials Characterization Techniques and Result Analysis Methodology: Ideas Innovations and initiatives (Physical Science Five Days (30 contact hours) duration was conducted at the Shikshan Prasarak Sanstha's Sangamner Nagarpalika Arts, D. J. Malpani Commerce, and B. N. Sharda Science College, Sangamner from 27/07/2020 to 34/07/2o20 Under the scheme of Pandit Madan Mohan Malaviya National Mission on teachers and teaching

D. Refresher Course

1. Completed an online refresher course from Teaching Learning Centre, Ramanujan College University of Delhi in collaboration with K.L.E. Societys S.K. Arts College and H.S.K. Science Institute, Vidyanagar Hubbali, Karnataka under the aegis of Ministry Of Education Pandit Madan Mohan Malaviya National Mission On Teachers And Teaching Two - Week Refresher Course In "Physics" from 10- 24 April, 2022 and obtained A+ grade.
2. Completed an online refresher course from Teaching Learning Centre, Ramanujan College University of Delhi inter-Disciplinary Two-Week Refresher Course On “Managing Online Classes & Co- creating MOOCS 14.0” from 07 - 21 May, 2022 and obtained Grade A^+

3. Completed an online refresher course from Teaching Learning Centre, Ramanujan College University of Delhi inter-Disciplinary Two-Week Refresher Course On "Advanced research methodology" from 17 – 31st December 2023 and obtained Grade A^+.

Events Organized/Coordinated:

Sr. No.	Name of the Event	Name of organizing Institute/ College/ University	Nature of contribution	Dates
1	Summer school Program for interdisciplinary sciences	Department of Physics, Fergusson College, (Autonomous), Pune - 411004	Resource person	25-28 July 2022
2	Raman Memorial Conference (RMC-2017)	Department of Physics, Savitribai Phule Pune University, Pune-411007	Organizing Core committee member	February 2017

Course Content Developed (e-content)

- Solid state Physics: https://youtu.be/r2d14D6Tuoc