Dr. Shahaji P. Kharat, Ph.D. (Physics), SET, NET

Present position

- **Assistant Professor**

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Work Experience

- **Teaching: 5 years**

Personal Profile

Completed M.Sc. (Physics) from the Department of Physics, Savitribai Phule Pune University, Pune, and Ph.D. in Magnetoelectric materials. Teaching B.Sc. and M.Sc. Physics for the last 5 years.

Course(s) Taught (Only Titles)

1. PHY1102: Heat and thermodynamics
2. PHY1201: Introduction to Mathematical Physics
3. PHY2402: Measurement Techniques in Physics
4. PHY3502: Solid State Physics
5. PHY5302: Materials Synthesis Processing and Applications
6. PHY1103: Physics practical laboratory-I
7. PHY1203: Physics practical laboratory-II
8. PHY2303: Physics practical laboratory-III
9. PHY3506: Physics practical laboratory-I
10. PHY3507: Physics practical laboratory-II
11. PHY3508: Physics practical laboratory-III
12. PHY3606: Physics practical laboratory-IV
13. PHY3607: Physics practical laboratory-V
14. PHY3608: Physics practical laboratory-VI
15. PHY5306: Physics practical lab (Special lab)
16. PHY5407: Physics project M.Sc. -II

Field of Specialization/Areas of Interests

- Magnetism, Ferroelectric materials, Magnetoelectric materials

Education

- **Ph.D. (Physics):** from 2014 to 2023
  Title of the Thesis: Studies on Magnetoelectric Composite Materials for Sensing Applications
  Name of University / Institution: Department of Physics, Savitribai Phule Pune University, Pune.
  Year of Award: February 2023
- **Master of Science-** Physics:2013
  Savitribai Phule Pune University, Pune-411007
- **Bachelor of Science-** Physics:2011
  Annasaheb Magar College, Savitribai Phule Pune University, Pune-411028

Fellowship/Awards/ Certifications/Achievements/Recognitions

1. Received best oral presentation 3rd prize at Raman Memorial Conference -2022
2. Recipient of V. Subramanian Award 2013 in recognition of overall performance in post-graduation.
3. Recipient of a prestigious Malhotra Weikfield Foundation undergraduate and graduate-level fellowship by Hon'ble Dr. R. A. Mashelkar, CSIR, India.
4. Received a JRF position on a project entitled, "Development of novel multiferroic composite materials for sensing applications."
5. Received a basic scientific research (BSR) fellowship.

Member of College Committees/ Professional Bodies and Others

College Level	Professional Bodies	Others
● Departmental OBE co-ordinator for Physics	● Member of Indian Association of Physics Teachers, IAPT	
● Member of Student development board		
● F.Y.B.Sc. Physics practical Incharge		

Employment History

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

Responsibilities	● F. Y. B. Sc Physics theory incharge ● M. Sc. project incharge ● F. Y. B. Sc. Physics practical incharge

Research Publications in National and International Journals

1. 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.
2. Published a research paper, "Enhanced magnetostrictive properties of nanocrystalline Dy^{3+} substituted Fe-rich $Co_{0.8}Fe_{2.2}O_4$ for sensor applications", **S. P. Kharat**, R Swadipta, R.C. Kambale, Y.D. Kolekar, C.V. Ramana in Journal of Applied Physics 122 (16), 164101

3. Published a paper entitled, "Studies on structural and magnetic properties of Gd^{3+} substituted $CoFe_2O_4$ nanoparticles with emphasis on Mössbauer spectroscopy, **S. P. Kharat**, S. G. Kakade, R. C. Kambale, and Y. D. Kolekar, AIP Conf. Proc. 1665, 130058 (2015); DOI 10.1063/1.4918206, Conference date: 16–20 December 2014
4. 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
5. Published a paper entitled, "Ferroelectric and Piezoelectric Properties of $(Ba_{0.7}Ca_{0.3})(Ti_{1-x}Sn_x)O_3$ Lead-Free Ceramics", **Bharat G. Baraskar**, **S. P. Kharat**, S. G. Kakade, Satoshi Wada, R. C. Kambale and Y. D. Kolekar, in proceeding of the 2015 2nd International Symposium on Physics and Technology of Sensors, 8-10 March 2015 DOI: 10.1109/ISPTS.2015.7220071
6. Published a 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 C. V. Ramana in Journal Crystal growth and design, 31 July 2022, 2022, 22, 9, 5571–5581, doi: https://doi.org/10.1021/acs.cgd.2c00679
7. 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. Ramanain the Journal of Materials Science & Engineering B, doi:https://doi.org/10.1016/j.mseb.2023.116363
8. 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

Participation in Conferences/Seminars/Symposia/Workshop:

1. Attended and presented a poster paper titled *"**Structural and magnetic properties of molybdenum doped yttrium iron garnet**"*- **S. P. Kharat**, S. G. Kakade, S. Khanra, P. K. Kahol, K. C. Ghosh and Y. D. Kolekar; presented in the ***Raman Memorial Conference-2013***, held during Feb. 22-23, 2013 at Department of Physics, University of Pune, Ganeshkhind, Pune – 411007.
2. Attended and presented a poster paper titled "Structural and magnetic properties of pure and rare-earth-doped yttrium ortho-ferrite", **S. P. Kharat**, R. K. Gupta, P. Kahol, K. C. Ghosh and Y. D. Kolekar; presented in the ***National Conference on Functional Nanomaterials: Synthesis, Characterization, and Applications***, held during January 31 to February 02, 2013, at Department of Physics, University of Pune, Ganeshkhind, Pune – 411007.
3. Attended and presented a poster paper titled "Zero magnetic field regions" in Avishkar 2011, **S. P. Kharat**, R. P. Kharat, and B. S. Bendre, held at Annasaheb Magar College, Hadapsar, Pune - 411 028.
4. Attended an International Photovoltaic Solar Energy Conference (SOLAR ASIA - 2015) held from 30th July 2015 to 1st August 2015 at the Department of Physics, S. P. Pune University, Pune-411007.
5. Presented a paper titled "Magnetic properties and cation distribution of Gd^{3+} substituted $CoFe_2O_4$ magnetic nanoparticles", **S. P. Kharat**, B. G. Baraskar, B. C. Keswani, S. G. Kakade, R. C. Kambale, Y. D. Kolekar, in IC-MAGMA 2014 held at the Department of Physics, Pondicherry University, Pondicherry, during September 15-17, 2014.
6. Presented a paper entitled, "Mossbauer spectral studies of Er^{3+} doped cobalt ferrite prepared by sol-gel auto combustion method, " S . G. Kakade, R. N. Chikhale, **S. P. Kharat**, Y. D. Kolekar, in IUMRS-ICA 2013 held at IISc. Bangalore.

7. Presented a poster at Raman memorial conference on, "Cation distribution and magnetic properties of Gd substituted cobalt ferrite", **Shahaji P. Kharat**, Sandip G. Kakade, Y. D. Kolekar* Ferrite Material Division, Department of Physics, University of Pune-411007
8. Presented a poster titled, "Distribution And Magnetic Properties of Gd^{3+} Substituted $CoFe_2O_4$ Magnetic Nanoparticles", **S. P. Kharat**, B. G. Baraskar, S. G. Kakade, R. C. Kambale, Y. D. Kolekar, paper has been accepted in DAE SSPS 2014 and proceedings of the symposium will be published by American Institute of Physics, VIT, Vellore.
9. Presented a Poster at Raman Memorial Conference - 2015 on "Ferroelectric and Dielectric Properties of BT-based Lead-Free Ceramics" O. A. Ramdasi, B. G. Baraskar, **S. P. Kharat**, S. G. Kakade, R. C. Kambale, Y. D. Kolekar at Department of Physics, University of Pune, held on 13-14, February 2015.
10. Presented a Poster at an international conference on Functional Materials @ Nanoscale: Concerns & Challenges 2015 (ICFMNCC-2015) on "Modified Dielectric and Ferroelectric Properties of Sn^{4+} Substituted Barium Titanate based Ceramics", O. A. Ramdasi, B. G. Baraskar, **S. P. Kharat**, S. G. Kakade, R. C. Kambale, Y. D. Kolekar at K. B. P. College, Pandharpur, held on 9-11, March 2015.
11. Presented a paper in an oral presentation entitled, "Structural, Dielectric and Ferroelectric Properties of Sn4+ Modified $BaTiO_3$-$CaTiO_3$ Lead – Free Solid Solution", B. G. Baraskar, **S. P. Kharat**, S. G. Kakade, R. C. Kambale and Y. D. Kolekar in Raman Memorial Conference (2015).
12. Presented a paper in an oral presentation entitled, "Ferroelectric and Piezoelectric Properties of $(Ba_{0.7}Ca_{0.3})(Ti_{1-x}Sn_x)O_3$ Lead-Free Ceramics", Bharat G. Baraskar, **S. P. Kharat1**, S. G. Kakade1, Satoshi Wada, R. C. Kambale and Y. D. Kolekar, in the 2nd International Symposium on Physics and Technology of Sensors.
13. Presented a Poster at the 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 10^{th} - 12^{th} March 2016.
14. Presented a Poster at the 22^{nd} 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 12^{th} -13^{th} February 2016.
15. Presented a poster at Raman memorial conference on, "Cation distribution of $Co_{0.8}Fe_{2.2-x}Dy_xO_4$ using Mössbauer Spectroscopy" **S. P. Kharat**, S. G. Kakade, R. C. Kambale, and Y. D. Kolekar Ferrite Material Division, Department of Physics, University of Pune-411007, held on 13- 14 February 2015
16. Presented a paper ICTAM-AMF-10 on, "Investigation of Solubility Limit of Ca^{2+} Modified $Ba_{1-x}Ca_xTiO_3$ Lead-Free Ceramics", **S. P. Kharat**, S. K. Gaikwad, O. A. Ramdasi, B. G. Baraskar, R. C. Kambale, and Y. D. Kolekar, held at University of Delhi, during 7-11, November 2016.

Events Organized/Coordinated:

Sr. No.	Name of the Event	Name of organizing Institute/ College/ University	Nature of contribution	Dates
1	Raman Memorial Conference (RMC-2014)	Department of Physics, Savitribai Phule Pune University, Pune - 411007	Organizing Committee member	February 2014
2	Azadi ka Amrut Mohotsav -2022	Fergusson College (Autonomous), Pune - 411004	Departmental coordinator for Physics	9 to 15 August 2022