

Dr. Vijay Arjunrao Mane

Department of Physics

Deogiri College,

Dr. Babasaheb Ambedkar Marathwada University,

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Google Scholar: <https://scholar.google.com/citations?user=OfA5QTkAAAAJ&hl=en>

Scopus: Scopus ID: 57208908843 (<https://www.scopus.com/authid/detail.uri?authorId=57208908843>)

Citations:1560 **h-index:** 24 **i10-index:** 32



To nourish my scientific temperament, hone my practical finesse through hands-on experience in the laboratories, and deal with real-life ramifications in research, with an ulterior motive to push the envelope of academia and erudition.

Educational Qualification

Examination	Board/University	Institute	Passing Year	CGPA or %
Ph. D Completed (Physics)	Dr. Babasaheb Ambedkar Marathwada University, Chh. Sambhajinagar	Department of Physics, Dr. Babasaheb Ambedkar Marathwada University, Chh. Sambhajinagar	2025	-
M.Sc. (Physics)	Dr. Babasaheb Ambedkar Marathwada University, Chh. Sambhajinagar	Department of Physics, Dr. Babasaheb Ambedkar Marathwada University, Chh. Sambhajinagar	2017	87.3%
B.Sc.	Dr. Babasaheb Ambedkar Marathwada University	Balbhim College, Beed	2015	82.67%
H. S. C.	State Board	Balbhim College, Beed	2012	63.50%
S. S. C.	State Board	St. Xavier's School, Georai	2010	86.91%

Research Interest

- ❖ **Nanoscience and Nanotechnology:** Synthesis and characterization of nanomaterials, understanding their growth mechanism and tailoring their properties for desired applications.
- ❖ **Material science:** Crystallography, solid-state physics, electrochemistry, solid-state chemistry, phase transition and fundamentals of spectroscopy
- ❖ **Applications:** Photocatalytic, antimicrobial and supercapacitor applications

Skills

- **Instrumental:** -
Characterization Technique: **XRD, FT-IR, UV-Vis, Fluorescence spectroscopy**
- **Software:** -
Specialized Software Packages: **Origin Pro (Graphical analysis), Highscore Plus and fullprof suite (XRD analysis), VESTA (Structure Analysis), Drae.io (image formation), MS Office (Word, PowerPoint, Excel), etc**

PERSONAL SKILLS

Mother tongue: Marathi

Other languages: English, Hindi

Communication skills

Team work: I have worked in various types of teams from research teams in department. I attend work shop, conference, and lecture series in different research center. I am experienced at working in Physics department such as teaching practical to M. Sc. student.

Computer skills

Competent with most Microsoft Office programmers, software for research analysis – Origin 8, Fulprof, Match, and PhotoshopCS4, and MSCIT

Research Articles

- 1) **VA Mane**, DV Dake, ND Raskar, RB Sonpir, E Stathatos, BN Dole, “Magneto-optical properties of Fe-doped bismuth oxide nanorods for photocatalytic and antimicrobial applications “Results in Chemistry (2023) 6, 101083. <https://doi.org/10.1016/j.rechem.2023.101083> . **(IF: 4.2)**
- 2) **V.A. Mane**, D.V. Dake, N.D. Raskar, R.B. Sonpir, E. Stathatos, B.N. Dole, “Growth in defects and surface area for the photocatalytic performance of GO-based Fe-doped bismuth oxide mesoporous nanocomposite”, Ceramics International (2024). <https://doi.org/10.1016/j.ceramint.2024.01.019> **(IF: 5.6)**
- 3) **Vijay Mane**, Dnyaneshwar Dake, Nita Raskar, Ramprasad Sonpir, Elias Stathatos, Babasaheb Dole, “A review on Bi₂O₃ nanomaterial for photocatalytic and antibacterial applications”, Chemical Physics Impact 8, (2024), 100517. <https://doi.org/10.1016/j.chphi.2024.100517>. **(IF: 4.3)**
- 4) **Vijay Mane**, Dnyaneshwar Dake, Nita Raskar, Ramprasad Sonpir, Elias Stathatos, Babasaheb Dole, “Synergistic Enhancement of Photocatalytic and Antifungal Activities in Microwave-Assisted ZnO/Fe-Doped Bi₂O₃ Nanocomposites”, Physica status solidi (a) – applications and materials science (pss a) (2024) <https://doi.org/10.1002/pssa.202300954>. **(IF: 1.9)**
- 5) **V.A. Mane**, D.V. Dake, N.D. Raskar, R.B. Sonpir, K.P. Gattu, M.D. Shirsat ^c, B.N. Dole, “Harnessing the synergistic effects of graphene oxide-based Sn/Fe codoped Bi₂O₃ nanocomposites for superior supercapacitor performance”. Journal of Energy Storage, 96 (2024) 112636. <https://doi.org/10.1016/j.est.2024.112636>. **(IF: 9.8)**
- 6) **VA Mane**, DV Dake, ND Raskar, RB Sonpir, MD Shirsat, BN Dole, “Optimization, Kinetic Analysis, and Photocatalytic Degradation of Rhodamine B using Manganese doped Nanoscale Nickel Oxide Nanoparticles.” Ceramics International (2024). <https://doi.org/10.1016/j.ceramint.2024.07.250> **(IF: 5.6)**

- 7) **V.A. Mane** , D.V. Dake , N.D. Raskar , R.B. Sonpir , M. Vasundhara , B. N. Dole , “Nanointerface engineering of MXene based Fe doped Bi₂O₃ nano heterostructures for efficient energy storage and environmental remediation”, Journal of Energy Storage (2025). <https://doi.org/10.1016/j.est.2025.115425> (IF:9.8)
- 8) **Vijay A Mane**, Dnyaneshwar V Dake, Nita D Raskar, Ramprasad B Sonpir, Kartik M Chavan, Ketan P Gattu, Elias Stathatos, Babasaheb N Dole, “Multifunctional Fe-Doped Bi₂O₃/TiO₂ Heterojunctions for Environmental Remediation and Gas Sensing”, Surfaces and Interfaces (2025) <https://doi.org/10.1016/j.surfin.2025.105908>. (IF: 6.3)
- 9) **V.A. Mane**, D.V. Dake, N.D. Raskar, R.B. Sonpir, K.M. Chavan, S.S. Munde, P.R. Kayande, J.S. Pawar, S.B. Somvanshi, B.N. Dole, Nanomaterials for photoelectrochemical energy conversion: Advances and challenges, Solid State Communications 409 (2026) 116282. (IF: 2.4)
- 10) **Vijay A Mane**, Kartik M Chavan, Sushant S Munde, Dnyaneshwar V Dake, Nita D Raskar, Ramprasad B Sonpir, Pravin V Dhole, Ketan P Gattu, Sandeep B Somvanshi, Pavan R Kayande, Jagruti S Pawar, Babasaheb N Dole, “Machine learning-aided prediction and optimization of specific capacitance in functionalized GO-based Mn/Fe co-doped Bi₂O₃ nanocomposites”, Journal of Energy Storage 146 (2026) 120114. (IF:9.8)
- 11) **Vijay A Mane**, Dnyaneshwar V Dake, Nita D Raskar, Ramprasad B Sonpir, Kartik M Chavan, Sushant S Munde, Pavan R Kayande, Jagruti S Pawar, Sandeep B Somvanshi, Babasaheb N Dole, “Next-generation metal-organic framework-based photoelectrodes for sustainable hydrogen production via solar-driven water splitting”, Fuel 427 (2026) 139702. (IF: 7.1)
- 12) **Vijay A Mane**, Dnyaneshwar V Dake, Nita D Raskar, Ramprasad B Sonpir, Kartik M Chavan, Sushant S Munde, Pavan R Kayande, Jagruti S Pawar, Sandeep B Somvanshi, Babasaheb N Dole, “Metal–Organic Frameworks as Advanced Photoelectrodes for Photoelectrochemical Water Splitting: Design, Mechanisms, and Challenges”, Energy & Fuels 40 (2026). (IF: 5.3)
- 13) VA Mane, PS Bodkhe, SS Munde, KM Chavan, JS Pawar, PR Kayande, RB Sonpir, DV Dake, ND Raskar, BV Solanke, KP Gattu, SB Somvanshi, BN Dole, *Electro-chemical and photo-catalytic performances of V₂O₅-based nickel doped Bi₂O₃ nano-composites*. Ceramics International, 2026. (IF: 6.0)
- 14) Raut VK, **Mane VA**, Somvanshi SB, Birajdar CT. Tuning magneto-electric properties in Al-Gd co-doped nickel ferrite nanoparticles fabricated by sol-gel route. Ceramics International.;52(17) (2026), 32841-53. (IF: 5.6)
- 15) Suryawanshi, H.K., Yenorkar, S.M., Warale, K.N. Warale. **V. A. Mane**, “Development of In₂O₃-doped WO₃ thick film sensors for CH₄ monitoring applications”. *Ionics* (2026). <https://doi.org/10.1007/s11581-026-07166-y>. (IF:2.6)
- 16) HK Suryawanshi, SM Yenorkar, **VA Mane**, RB Sonpir, NM Ghumbare, AR Pardeshi, “Heterojunction-induced enhancement in hydrogen sulfide gas sensing using nickel oxide-doped tungsten oxide sensors”, Microchemical Journal (2026). (IF:5.1)
- 17) Munde SS, **Mane VA**, Pawar JS, Chavan KM, Dake DV, Raskar ND, et al. From theoretical promise to practical barriers: Transition metal oxides in hybrid supercapacitors. Solid State Communications. (2026);413:116433. (IF: 2.4)

- 18) Ashok V Humbe, Pallavi G Undre, Jitendra S Kounsalye, Ketan P Gattu, **Vijay A Mane**, Nita D Raskar, Ramprasad B Sonpir, Babasaheb N Dole, "Probing the spectroscopic effects of Indium (In^{3+})-doped Ni-Zn spinel ferrites and visible-light driven methylene blue degradation", *Journal of Nanoparticle Research* 28 (2026) 54. (IF:2.7)
- 19) SU Hiwale, KM Chavan, VA Mane, ND Raskar, RB Sonpir, DV Dake, BN Dole, "Enhanced Visible-Light Photocatalysis via TiO_2 -Based Ni-Doped ZnO Nanocomposites for Sustainable Dye Degradation", *physica status solidi (a)* 223 (2026) e202500742. (IF:1.9)
- 20) ND Raskar, DV Dake, **VA Mane**, RB Sonpir, KM Chavan, SS Munde, PR Kayande, BN Dole, "Elucidating Reactive Species in Mesoporous MnO_2 -Reduced Graphene Oxide-Based Ni-Doped Cobalt Oxide for Environmental Remediation via Scavenger Studies", *Solid State Communications* 409 (2026) 116331. (IF: 2.4)
- 21) JS Pawar, SS Munde, KM Chavan, PR Kayande, **VA Mane**, DV Dake, ND Raskar, RB Sonpir, BN Dole, Advances in bimetallic metal-organic framework (BMOF/rGO) composites for high-performance supercapacitors: a review, *Journal of Alloys and Compounds* (2026) 185906. (IF.6.3)
- 22) A.V. Humbe, P.G. Undre, **V.A. Mane**, E.S. İstifli, R.B. Sonpir, A. Kumar, R.M. Khobragade, B.N. Dole, Evaluating superparamagnetic $\text{Ni}_{0.65}\text{Zn}_{0.35}\text{Fe}_{2-x}\text{In}_x\text{O}_4$ ($0 \leq x \leq 0.24$) for Rietveld, magnetometry-Mössbauer, antimicrobial and molecular docking insights, *Ceramics International* (2025). (IF: 5.6)
- 23) K. Chavan, **V. Mane**, D. Dake, R. Sonpir, N. Raskar, S. Munde, P. Kayande, B.N. Dole, Nanomaterials for photocatalytic environmental remediation: synthesis, mechanism, and performance, *Environmental Technology Reviews* (2025) 1-36. (IF:)
- 24) R. B. Sonpir, D. V. Dake, N. D. Raskar, **V. A. Mane** et al. "Enhanced Photocatalytic and Gas Sensing Performance of Tungsten Carbide based Ni doped $\text{Co}_3\text{O}_4/\text{TiO}_2$ Nanocomposite." *ChemistrySelect* 10, no. 42 (2025): e04702. <https://doi.org/10.1002/slct.202504702>. (IF:2.1)
- 25) Chaitanya K Bavage, Swaranjali S Koparkar, **Vijay A Mane**, Ramprasad B Sonpir, Babasaheb N Dole, "Green-synthesized silica nanoparticles for enhanced latent fingerprint detection: A sustainable approach to forensic science". *MRS Advances* 10, 2081–2089 (2025). <https://doi.org/10.1557/s43580-025-01413-6>. (IF: 0.9)
- 26) BV Solanke, ND Raskar, DV Dake, **VA Mane**, RB Sonpir, GD Raylkar, KM Chavan, SS Munde, PR Kayande, BN Dole, "Low-variability, high-endurance memristive behavior in Tungsten-functionalized GO Based Cu doped NiO nanocomposites for next-generation memory devices", *Materials Chemistry and Physics*, (2025) <https://doi.org/10.1016/j.matchemphys.2025.131352>. (IF:4.7)
- 27) DV Dake, ND Raskar, **VA Mane**, RB Sonpir, K Asokan, MD Shirsat, M Vasundhara, VD Mote, BN Dole, "Defect Engineering in Bilayer N-Doped Tungsten-Modified GO/RGO Hybrid Composite: A Comparative Study with Tungsten Carbide for Supercapacitor Applications", *Journal of Molecular Structure*, (2025). <https://doi.org/10.1016/j.molstruc.2025.141617>. (IF: 4.7)
- 28) SS Munde, SS Kalkate, **VA Mane**, DV Dake, ND Raskar, RB Sonpir, KM Chavan, BN Dole, "Development and Characterization of Cr doped $\text{NiO}/\text{Fe}_2\text{O}_3$ Nanomaterials for High-Efficiency

- 29) ND Raskar, DV Dake, **VA Mane**, RB Sonpir, VD Mote, M Vasundhara, PC Zine, MD Shirsat, KP Gattu, BN Dole, “MXene/Tungsten-Functionalized Graphene Oxide Nanosheets as Conductive Platforms for FeNi-Co-Doped MnO₂ Nanocomposites: Toward High-Performance Supercapacitor Electrodes,” Solid State Sciences, 166 (2025) 107974, <https://doi.org/10.1016/j.solidstatesciences.2025.107974>. (IF: 3.3)
- 30) R.B. Sonpir, D.V. Dake, N.D. Raskar, **V.A. Mane**, K. Asokan, U. Deshpande, M. Vasundhara, B.N. Dole, “Magneto-chemical properties of Ti-doped Co₃O₄ nanosheets for photocatalytic activity applications”, Materials Today Communications 38 (2024) 10, 8076 <https://doi.org/10.1016/j.mtcomm.2024.108076>. (IF: 4.5)
- 31) N.D. Raskar, D.V. Dake, **V.A. Mane**, R.B. Sonpir, H.A. Khawal, V.D. Mote, M. Vasundhara, K. Asokan, K.P. Gattu, B. N. Dole. “Nanoengineered reduced graphene oxide-Fe doped α -MnO₂: A multifunctional smart material for energy storage and environmental remediation”, Journal of Energy Storage 86, (2024) 111206, <https://doi.org/10.1016/j.est.2024.111206>. (IF:9.8)
- 32) ND Raskar, DV Dake, **VA Mane**, RB Sonpir, M Vasundhara, K Asokan, U Deshpande, R Venkatesh, VD Mote, BN Dole, “Designing reduced graphene oxide decorated Ni doped δ -MnO₂ nanocomposites for supercapacitor applications” Materials Science in Semiconductor Processing, 178,(2024) 108451 <https://doi.org/10.1016/j.mssp.2024.108451> . (IF: 4.6)
- 33) RB Sonpir, DV Dake, ND Raskar, **VA Mane**, K Asokan, BN Dole,” Photocatalytic efficiency of GO-based Ti-doped Co₃O₄ nanosheets for mixed dyes and the effects of oxidizing and reducing reagents”, Ceramics International 50 (2024) 28746-28761. <https://doi.org/10.1016/j.ceramint.2024.05.184> (IF: 5.6)
- 34) HA Khawal, ND Raskar, DV Dake, **VA Mane**, RB Sonpir, VD Mote, K Asokan, BN Dole, Li³⁺ swift heavy ion irradiation with 50 MeV kinetic energy influencing distinct properties and antifungal activity of Mn/ZnO thin films, Journal of Materials Research (2024), <https://doi.org/10.1557/s43578-024-01505-3>. (IF: 2.7)
- 35) Ashok V Humbe, Pallavi G Undre, Jitendra S Kounsalye, Nita D Raskar, Vijay A Mane, Babasaheb N Dole, “Deciphering the characterization of Ni_{0.7-x}Zn_{0.3}Mg_xFe₂O₄ nano ferrites: spectroscopic evaluation of structural parameters via Debye-Scherrer, Williamson-Hall, size-strain, Halder-Wagner plot, and optical methods”. J Mater Sci: Mater Electron 35, 1589 (2024). <https://doi.org/10.1007/s10854-024-13333-6>. (I.F.:2.9)
- 36) Ramprasad Sonpir, Dnyaneshwar Dake, Nita Raskar, **Vijay Mane**, Babasaheb Dole, “Smart and advanced nanocomposites of rGO-based Ni-doped Co₃O₄/TiO₂ for next-level photocatalysis and gas sensing application”, Environmental Science and Pollution Research (2024), <https://doi.org/10.1007/s11356-024-35819-w>. (IF: 5.4)
- 37) KM Chavan, **VA Mane**, ND Raskar, DV Dake, RB Sonpir, BN Dole, “Nanostructured MnO₂-Based Zn-Doped Bi₂O₃ Nanocomposite for Improved Antimicrobial and Photocatalytic Applications”, ChemistrySelect (2024), <https://doi.org/10.1002/slct.202403806>. (IF: 2)

- 38) Ramprasad B Sonpir, Dnyaneshwar V Dake, Nita D Raskar, **Vijay A Mane**, Sanjana S Shinde, Shailaja S Ingole, Manisha S Tak, **Babasaheb N Dole**, “Effect of Enhancement in Surface Area of Sn-Doped Cobalt Oxide Nanoflakes for Supercapacitor Application”, *physica status solidi (a)* (2024), <https://doi.org/10.1002/pssa.202400502>. (IF: 1.9)
- 39) Ramprasad B.Sonpir, Dnyaneshwar Dake, Nita Raskar, **Vijay Mane**, Babasaheb Dole, “Effect of Bandgap on Photocatalytic Activity of GO Based Cr Doped Nio Nanocomposites”. *International Journal of Scientific Research in Science and Technology*(2024), 11, 88-93, <https://ijsrst.com/home/issue/view/article.php?id=IJSRST24111316>. (IF: 8.2)
- 40) DV Dake ND Raskar, **VA Mane**, RB Sonpir, E Stathatos, M Vasundhara and B.N. Dole, “ Intriguing physicochemical properties and impact of co-dopants on N- doped graphene oxide based ZnS nanowires for photocatalytic application” *Scientific Reports*, Springer-Nature, (2023) 13 (1), 7595 <https://doi.org/10.1038/s41598-023-33453-z>. (IF: 4.6)
- 41) DV Dake, ND Raskar, **VA Mane**, RB Sonpir, HA Khawal, U Deshpande, E Stathatos, BN Dole, Photocatalytic performance of graphene-based Cr-substituted β ZnS nanocomposites”, *Appl. Phys. A* **128**, 276 (2022). <https://doi.org/10.1007/s00339-022-05407-1>. (IF: 2.8)
- 42) DV Dake, RB Sonpir, **VA Mane**, ND Raskar, HA Khawal, U Deshpande, BN Dole, “Inferring the physical properties of La-substituted ZnO nanorods and nanoflowers for the photodegradation of Congo red azo dye”. *J Mater Sci: Mater Electron* **33**, 8880–8892 (2022). <https://doi.org/10.1007/s10854-021-06969-1>. (IF:2.9)
- 43) DV Dake, ND Raskar, **VA Mane**, RB Sonpir, E Stathatos, K Asokan, PD Babu, BN Dole “Exploring the role of defects on diverse properties of Cr-substituted ZnS nanostructures for photocatalytic applications”, *Applied Physics A*, 126 (2020). <https://doi.org/10.1007/s00339-020-03669-1> (IF: 2.9)
- 44) N D Raskar, **V A Mane**, D V Dake, H. A. Khawal and B N Dole. “Enhancement in Photocatalytic Activity of Ce Doped ZnO Nanoparticles”. *Research Journey*, International E-Research Journal (conference proceeding). (IF:)
- 45) Nita D. Raskar, Dnyaneshwar V. Dake, **Vijay A. Mane**, Elias Stathatos , Uday Deshpande, Babasaheb Dole “One step synthesis of vertically grown Mn-doped ZnO nanorods for photocatalytic application” *Journal of Materials Science: Materials in Electronics*, 18 May 2019. <https://doi.org/10.1007/s10854-019-01433-7>. (IF: 2.8)

Book Chapters

1. Nanomaterials for Antibacterial and Antifungal Activity
2. EDLC Supercapacitors
3. Effects of Swift Heavy Ion Beams on the Physical and Chemical Properties of Advanced Materials
4. Metal–Organic Frameworks for Gas Sensing Applications
5. Pseudocapacitors
6. Introduction: One-dimensional and two-dimensional nanomaterials
7. Synthesis of nanowires

Research Experience

Msc.Project : Synthesis and Characterization of Co doped Graphene oxide nanoparticles (2017)

Research Scholar: From 2017 to 2021

Ph.D. Studnet: From October 2021 to May 2025

JRF: From July 2022 to October 2023

SRF: From December 2023 to May 2025

WORK EXPERIENCE:

- i) Research Experience:
From 2017 to 2024 at Department of Physics, Dr. B.A.M. University, Aurangabad, Maharashtra-431004
- ii) Teaching Experience:
June 2017 to May 2025: MSc practical's teaching
July 2019 to Feb 2023 at Deogiri College, Chh. Sambhajanagar
July 2022 to May 2024 at Department of Physics, Dr. Babasaheb Ambedkar Marathwada University, Chh. Sambhajanagar.
July 2025-April 2026: at Deogiri College, Chh. Sambhajanagar

Achievement

- Best poster presentation Award in ICONN-2022 conference
- Published 10 research article as first author in Scopus indexed journal.
- SARTHI fellowship holder (SRF)
- 3 Patents (Indian)

Referees REFERENCE

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