Dr. Suren Patwardhan

Ph D (IIT Bombay)

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K J Somaiya College of Engineering, Vidyavihar, Mumbai 400077

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Current Position

Assistant Professor and Head, Department of Science and Humanities, K J Somaiya College of Engineering

Education

2015-2021 | **Indian Institute of Technology Bombay**
Ph D Energy Science & Engineering

1996-1998 | **University of Mumbai**
M. Sc. Physics (I class with distinction)

Work Experience (Teaching & Other)

Aug 2002 – till date | **Assistant Professor - Physics**
Department of Science and Humanities
- K J Somaiya College of Engineering

July 2000 – July 2002 | **Lecturer - Physics**
Department of Physics
- Vidyavardhini's College of Engineering & Technology

Oct 1998 – July 2000 | **Research/Technical Assistant**
Department of Physics
- University of Mumbai

Leadership and Other Administrative Work Experience

- Head of the Science and Humanities Department (Since July 2021)
  I/c Head of the Department, July – Dec 2012
  Associate Head, July 2009 – June 2012 and Jan 2013 – Dec 2013
- Member, Steering Committee for Somaiya-Shimatzu Centre, Somaiya Vidyavihar University (Since Dec 2022)
- Coordinator for Integrated Bachelor of Science-Master of Science Program (iBS-MS) and Subject Coordinator for Physics,iBS-MS (Since Jan 2022)
- Convener, Prevention of Unfair Means Committee, Somaiya Vidyavihar University (Since Jan 2019)
- Convener, Expert Committee for Integrated BS-MS Program
- Member, Core Committee, Examination Cell, K J Somaiya College of Engineering (Since Dec 2018)
- Internal Member, Academic Advisory Board, K J Somaiya College of Engineering (Under Mumbai University) (June 2019 – Aug 2020)
- I/c, Document Verification, Engineering Admissions (2005 – 2012)
- I/c, Applied Physics Laboratory, K J Somaiya College of Engineering (2003 – 2009)

Teaching Experience

Teaching (total): 23 Years

- Courses taught:
- UG:
  - Applied Physics (BE)
  - Engineering Physics (BTech)
  - Engineering Materials and Components (BE)
  - Electromagnetic wave theory (BE)
  - Physics for Biological Sciences (B Sc Biotechnology)
  - Telecommunications (BSc IT)
  - Discrete Mathematics (BSc IT)
  - Environmental Studies (BE)
- PG:
  - Solar Energy (ME Energy)
  - Solar Photovoltaics (MTech Energy)

Workshops/Webinar/Conferences Organized

AY 2022-23:

1. Member, Organizing Committee for Plasma Exhibition, in collaboration with Institute for Plasma Research, Gujrat and S K Somaiya College
2. Guest lecture on Computational Chemistry
3. Nobel Prize Lecture Series 2022-23 - Chemistry with SIRAC, SVU, 08 Dec 2022
4. Nobel Prize Lecture Series 2022-23 - Physics with SIRAC, SVU, 22 Nov 2022

AY 2021-22:

1. Guest lecture on "Quantum Computing" by Dr. Nischal Dwivedi, PDF, IIT Bombay, 13 Apr 2022
2. Science Day Celebration, 28 Feb - 3 March 2022
3. International webinar on "Challenges, Innovations and Adaptations of Covid-19: Science and Society Perspectives", 29-30 Oct 2021

Honors and Invited Talks

- Workshop facilitator at the ICTIEE-2023 Conference on Reforms in Engineering Education on the topic "Implementation of aspects of NEP-2020 through Closed-Loop Education System: Model KJSCE" at Vidyavardhaka College, Mysuru Organized by IUCEE from 4-8 Jan 2023
- Worked as Judge at the Science Project Competition organized by Lion's Club of Vidyavihar, 01 Oct 2022
- AICTE Fellowship July 2015 – June 2018
- Best Paper Award at International Conference on Advances in Energy Research, IIT Bombay, Dec 2017
- 38^{th} European Photovoltaic Specialist's Energy Conference, Lisbon, Portugal (converted to online), Sept 2021
- 5^{th} International Conference on Emerging Electronics, IIT Delhi, Nov 2020
- Indo-Universal Collaboration for Engineering Education Conference, Hyderabad, Jan 2020
- 61^{st} Electronic Materials Conference, Michigan, USA, June 2019
- Fundamentals of Quantum Theory and Electronic Structure of Atoms for M Tech (Electronics), KJSCE
- Stall and Volunteer at the IIT Bombay Tech Fest - 2016 and 2017
- Jury Member for "Somaiya Got Talent" Competition, March 2015
- Judge for Drama Competition at the Symphony Shield, Feb 2015
- Trainer for Staff from MITCON, PUNE for Vocational Training on Solar Energy, June 2013
- Invited Talk on "Radiation", 24 Sept 2004, Department of Electronics, KJSCE
- Invited Talk on "Solid State Physics", 16 Aug 2004, Department of Electronics and telecommunications, ISTE-KJSCE Chapter

Workshops/STTPs/SWAYAM-NPTEL/Skill-development Courses/Conferences Attended

1. Symposium on "NEP-2020", 26-30 Sept 2022, St. Francis Inst. of Management in association with Indian Council for Social Science Research
2. One-week STTP on "Computational Techniques for Physics and Engineering", 19-23 Sept 2022, SVNIT, Surat
3. 2-day Workshop on "Automation of Physics Experiments using Arduino", 15, 16 Sept 2022, VIIT Pune
4. One-week Workshop on TCAD, 1-5 Aug 2022, IIT Bombay
5. NPTEL/AICTE FDP on "Introduction to Quantum Computing: Quantum Algorithms and Qiskit", July-Aug 2022, IIT Madras in association with IBM Research, India
6. National Symposium on "Polymer Science and Technology", 5-6 May 2022, Department of Polymer Science, SVU
7. National Conference on "NEP-2020: Implementation in Maharashtra - Opportunities and Challenges", 30 March 2022, PERA and SVU
8. Annual Leadership Summit on "Transforming the IUCEE Way to NEP", 9-11 July 2021, IUCEE and TLC, KJSCE
9. 12-Week NPTEL Course on "Semiconductor Optoelectronics", Sept - Sec 2020
10. Online Training Program on "Online Teachnig", July - Sept 2020, IUCEE and KJSCE
11. Crash-course in "Energy", 23 July - 1 Aug 2020, Energy Club, IIT Bombay Webinar on "Challenges in Science Education and Research in the COVID-19 Scenario", 29 July 2020, UNGC
12. "Workshop on Lasers, Fibre Optics, Optical Communications, Fibre Sensors", 6-7 March 2020, National Academcy of Science and Indian Women Scientists' Association
13. 8-Week NPTEL Course on "Solar Photovoltaics: Principles, Technologies, Materials", Jan - March 2020
14. International Conference on "Transformation in Engineering Education", 5-8 Jan 2020, IUCEE and Anurag Group of Institutes
15. "KJSCE Conclave-2019", 12 July 2019, IQAC-KJSCE
16. Workshop on "IUCEE International Engineering Educator Pre-Certification", 18-20 Dec 2018, IUCEE
17. Training Course on "Physics of Semiconductors", 15-20 Aug 2017, IIT Kanpur
18. Training Course on "Learning Physics Through Simple Experiments", 20 Sept - 20 Nov 2016, IIT Kanpur
19. ISTE-STTP on "Engineering Physics", 8-18 Dec 2015, IIT Bombay and ISTE-KJSCE Chapter
20. INUP Hand-on Training Workshop on "Fabrication and Characterization of Crystalline Silicon Solar Cells", 17-22 Nov 2014, IIT Bombay
21. INUP Hand-on Training Workshop on "Nanofabrication Technologies", 26-28 May 2014, IIT Bombay
22. 1-Semester CEP PG-level Course on "Physics of Transistors", Department of Electrical Engineering, IIT Bombay
23. ISTE-STTP on "Tools and Techniques for Effecive Technical Writing", 13-17 May 2013, ISTE-KJSCE Chapter
24. Workshop on "Aakash for Education", 10-11 Nov 2012, IIT Bombay
25. Workshop on "Solar Photovoltaics: Fundamentals, Technologies and Applicarions", 12-22 Dec 2011, NCPRE-IIT Bombay
26. STTP on "Nanoscience and Nanotechnology", 18-22 Jan 2010, Shah and Anchor Engg College - ISTE Chapter
27. Workshop on "Engineering Electromagnetics" Practical Approach", 1 Sept 2007, ISTE-KJSCE Chapter
28. Refresher Course in "Electronics and Instrumentation", 26 Dec 2006 - 15 Jan 2007, WRIC and Department of Physics, University of Mumbai
29. ISTE-STTP on "Emerging Microelectronics and Telecommunication Engineering", 19-30 June 2006, Vidyavardhini's College of Engg
30. Seminar on "Lasers and Applications", 30-31 Jan 2006, Shah and Anchor Engg College - ISTE Chapter
31. National Seminar on "Photonics", 7 Jan 2006, Royal College of Arts, Science and Commerce
32. Colloquium on "Centenary of Einstein's Relativity", 3 Sept 2005, FCR College of Engg
33. Seminar on "Information Technology - Trends and Challenges", 30 Aug 2005, KJSCE
34. Seminar on "Finite Element Analysis and its Applications", 6 Aug 2004, KJSCE
35. CEP Course on "Elements of Microelectronics", Sept 2003, IIT Bombay

Publications and Reviewer

Reviewer

1. Reviewer for "Journal of Alloys and Compounds", Elsevier
2. Reviewer of "Journal of Engineering Education Transformations"

Journal Articles

1. **S. Patwardhan**, Sandeep Maurya, Akash Kumar, and K. R. Balasubramaniam, Tuning the properties of MoO_x layer for maximizing hole-selectivity and passivation of Si for carrier-selective Si solar cells (Submitted to **Progress in Photovoltaics**, first draft accepted, under revision)
2. A Kumar, S Maurya, **S. Patwardhan**, and K. R. Balasubramaniam, Opto-electronic properties of poly-crystalline La doped $BaSnO_3$ films deposited on quartz substrates *J.of Physics D: Applied Physics*, 54(18):185108, IOP, 2021
3. **S. Patwardhan**, A Sharma, SA Mani, and SR Chawade, Developing Analytical and Observational Approach in Undergraduate Learners, *Journal of Engineering Education Transformations*, 33, Spl. Issue:571-75, IUCEE, 2020
4. **S. Patwardhan**, and K. R. Balasubramaniam, Effect of ITO capping and its deposition parameters on electrical properties of MoO_3/Si carrier-selective contact solar cell, *INAE Letters*, 4(3):139-145, 2019
5. A. Kumar, S. Maurya, S. Chawla, **S. Patwardhan**, and K. R. Balasubramaniam, Effect of thickness on metal to semiconductor transition in La doped $BaSnO_3$ films deposited on high mismatch LSAT substrates, *Appl. Phys. Lett.*, 114(21):212103, 2019.

Conference Proceedings/Meetings/Book Chapters

1. Anand Bodhale, **Suren Patwardhanan**, Using Literary Simulation Methods in Teaching LIfe-Skills to Engineeiring Graduates: A multidisciplinary Approach in Engineering Curriculum, Book Chapter - An Insight on English Language Teaching, Biblioteka Pbl, 2023
2. Santosh Mani, **Suren Patwardhanan**,Samriti Khosla and Pradip Sarawade, Enhanced optical and dielectric properties of polymer dispersed liquid crystal for display applications, *Materials Today: Proceedings*, Elsevier, Nov 2022
3. Santosh Mani, **S. Patwardhan**, Krishnakant Mishra, Sameer Hadkar, Samriti Khosla, and Pradip Sarawade, Wavelength and temperature dependent refractive index of polymer dispersed nematic liquid crystal, *ICEEICT*, IEEE Explore, 1-4, Feb 2022
4. Santosh Mani, **S. Patwardhan**, Samriti Khosla, and Pradip Sarawade, "Investigation of Electrical, Acoustical and Optical Properties of Nanopowder Dispersed Cholesteric Liquid Crystal", *Book Chapter Recent Trends in Chem. Mat. Sciences*, Chapter 5 pages 27-32, B P International, 2022
5. Santosh Mani, **Suren Patwardhanan**,Samriti Khosla and Pradip Sarawade, Optical properties of thermotropic liquid crystal dispersed with conducting polymer, *Materials Today: Proceedings*, Elsevier, 65: 3453-3460, Jan 2022
6. Santosh Mani, **S. Patwardhan**, Sameer Hadkar, Krishnakant Mishra, and Pradip Sarawade, Effect of polymer concentration on optical and electrical properties of liquid crystals for photonic applications, *Materials Today: Proceedings*, Elsevier, 62: 7035-7039, Jan 2022
7. **S. Patwardhan**, Sandeep Maurya, Akash Kumar, and Balasubramaniam Kavaipatti, Amorphous Silicon-Free Heterojunction Crystalline Silicon Solar Cells Employing MoO_x as Hole-Selective and Passivating Contact, *38^{th} European Photovoltaic Conference and Exhibition*, Lisbon, Portugal, Sept 2021
8. **S. Patwardhan**, Sandeep Maurya, Akash Kumar, and Balasubramaniam Kavaipatti, Performance Evaluation of Hole-Selective and Passivating MoO_x layers on Si: A Comparative Study of ALD and Evaporation, *5^{th} International Conference on Emerging Electronics, IIT Delhi, India 26-28 Nov 2020, IEEE Explore*
9. **S. Patwardhan**, Arpan Dhara, Akash Kumar, Sandeep Maurya, Shaibal Sarkar, and Balasubramaniam Kavaipatti, Atomic layer deposited MoO_x for controlling O:Mo ratio to obtain passivation and hole selectivity in Si heterojunction solar cells, *61^{st} Electronic Materials Conference (EMC), University of Michigan 26-28 June, 2019*
10. Rekha Yadav, **Suren Patwardhan**, Shourie Ranjana J., M. Aslam, Balasubramaniam Kavaipatti, Aldrin Antony, and Dinesh Kabra, Tuning the band structure of nickel oxide for efficient hole extraction in perovskite solar cells, *4^{th} International Conference on Emerging Electronics, Bengaluru, India 16-19 Dec 2018*

11. **S. Patwardhan**, S. K. Maurya, and K. R. Balasubramaniam, Estimation of Voltage-depe Metal-oxide Based Carrier-selective Contact Silicon Solar Cell, *MRS Fall Meeting and Exhibit, Boston, Massachusetts, 25-30 Nov, 2018*
12. **S. Patwardhan**, Sandeep Maurya, Akash Kumar, and Balasubramaniam Kavaipatti, Amorphous Silicon-free Metal Oxides Based Carrier Selective Contacts to Crystalline Silicon Solar cells, *35^{th} European Photovoltaic Conference and Exhibition, Brussels, Belgium, 24-28 Sept 2018*
13. **S. Patwardhan**, and Balasubramaniam Kavaipatti, Effect of ITO capping and its deposition parameters on electrical properties of MoO_3-Si-TiO_2 carrier selective contact solar cell, *6^{th} International Conference on Advances in Energy Research (ICAER) 2017*

Website links

1. Google scholar: https://scholar.google.co.in/citations?hl=enauthuser=1&user=pBqT2LQAAAAJ
2. Linked In: http://www.linkedin.com/in/Dr-Suren-Patwardhan
3. Faculty profile: https://kjsce.somaiya.edu/en/view-member/160086?type=faculty