Paresh Govind Kale PhD

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Educational Details:

Ph.D., Indian Institute of Technology Bombay, 2013
M.Tech., Indian Institute of Technology Bombay, 2008

Research Interests:

- Nanomaterials for Energy storage and conversion
  - Material & structure – Nanowires, Porous Silicon, Quantum Dots, Thin film
  - Application – Solar Cell, Hydrogen storage, Battery, Sensors, Supercapacitor
- Renewable Energy Systems
  - Energy Policy
  - Energy Utilisation and Forecasting
- Soft computing techniques for Energy systems
  - Fault prediction and Fault protection
  - ANN, SVM, Image processing

Patents:

1. Composition for Generation of Hydrogen by Thermal Decomposition of Ammonia Borane (AB) using Silicon Nanoparticles as Catalyst
   (India Patent Application 2533/MUM/2011, Filed September 9, 2011)
   Granted: Patent No. 268706 on 14th Sept 2015

2. Fabrication of Quantum Dot Solar cell on spin coating Si Quantum dots embedded in Flowable Oxide
   (India Patent Application 1627/MUM/2011, Filed July 2, 2011)
   Granted: Patent No. 311147 on 24th April 2019

3. Enhancement of Hydrogen Storage in Thermally Reduced Graphene Oxide after Porous Silicon Nanoparticle, (India Patent Application TEMP/E-1/46842/2023-KOL, Filed June 15, 2023)

Awards / Fellowships / Sponsored Project Undertaken / Funds Received

Sponsoring Agency	Title of project	Amount of grant	Tenure/year	Co-investigators (if any)
SIRE-SERB	Metal Oxide coated one-dimensional (1D) porous silicon nanowires (pSiNWs) arrayed architecture for high capacity Li-ion batteries anode	9,31,771	3 months	-
DST Indo-Japan Cooperative Science Programme (IJCSP)-2021	Light Weight Metal Composite with Silicon for Portable Hydrogen Storage Reactors LiSi HyStoRe	6,02,000	2 years	Prof. Hiroki Miyaoka Hiroshima University, Japan
IE India	Synergetic effect of Si nanostructure-Ni composites for solid state hydrogen energy storage	1,00,500	1.5 years	
SERB	Vertical integration to Fabricate 2T and 4T GaAs/Si Tandem PV device (TOPCON)	58,91,050	3 years	Prof. Anandh (IIT Kanpur)
DST	DST-IITB Energy Storage Platform on Hydrogen	98,301,852 (1,34,83,800 for NIT Rourkela)	5 years	Prof. Pratibha Sharma (IIT Bombay) Prof. Mutthukumar (IIT Guwahati) Prof. Anandh (IIT Kanpur) Prof. Anilkumar (IIT Tirupati) Prof. Anabarasu (NIT Rourkela)
IE India	Electrical Characterization and modelling of Porous Silicon Nanowire based Lithium-ion Battery Electrode	1,08,000	1.5 years	
ITS-SERB	Travel support to attend EMRS 2019 Fall, Poland in Sept 2019	70,010	2019	
DST	Design and development of porous Silicon based biosensor for Chromium detection in and around of Sukinda Mines Valley, Odisha	29,09,600	3 years 2015-2019	Prof. P. Balasubramanian (NIT Rourkela)
R & D scheme of TEQIP-II, NIT Rourkela	Fabrication of third generation solar cell using the sputtering technique	2,50,000	1 year 2016	-
COE Renewable Energy Systems, NIT Rourkela	Fabrication of Solar Cell based on Si nanowires	50,000	1 year 2016	-

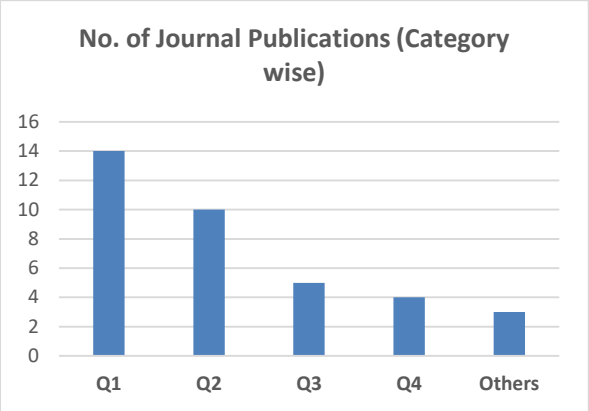
Journal Publications:

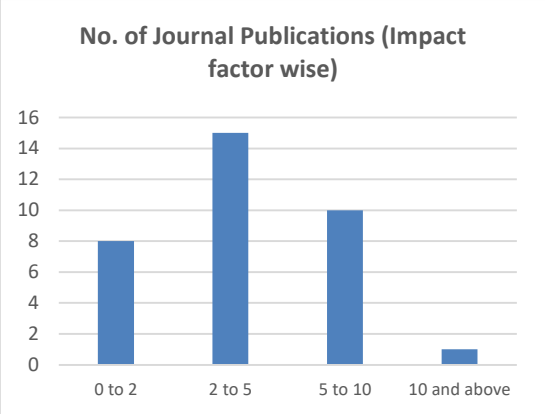
1. Sakti Prasanna Muduli, Rama Chandra Muduli, and Paresh Kale, Decoding Hydrogen Desorption Kinetics in Porous Silicon: An Electrical Circuit Modeling Approach, ACS Material and Interfaces,Under Review, **Q1**
2. Sakti Prasanna Muduli and Paresh Kale, Advanced Silicon Nanowire Fabrication and Annealing Temperature Optimization for Improving Solar Cell Efficiency, Journal of Materials Science: Materials in Electronics, Under Review, IF:2.8 **Q2**
3. Zhiwen Chen , Rama Chandra Muduli, Fangqin Guo, Takayuki Ichikawa, Ankur Jain, Hiroki Miyaoka, & Paresh Kale, Exploring the Cyclic Hydrogen Storage Characteristics of Lithium Hydride and Porous Silicon Alloy for Advanced Energy Storage Applications, ACS Applied Energy Materials, Under review, 2024, IF:11, **Q1**
4. Rama Chandra Muduli, Zhiwen Chen, Fangqin Guo, Takayuki Ichikawa, Ankur Jain, Hiroki Miyaoka, Paresh Kale, Investigation of Solid-state Hydrogen Storage Properties and Thermodynamic Tuning of Lithium Hydride by Alloying with Porous Silicon Nanowires, Under review, International Journal of Hydrogen Energy, 2024, IF:7.2 **Q1**
5. Paresh Kale, Sakti Prasanna Muduli, Rama Chandra Muduli, Gergő Vecsei, Laura Juhász, Bence Parditka, Tamás Fodor, Csaba Cserháti, Zoltán Erdélyi, Interface Engineering of Metal-coated Si-nanostructure Thin Films for High-capacity Li-ion Battery Anode, Journal of Applied Physics D, Under Review, IF:3.8 **Q1**
6. Rama Chandra Muduli and Paresh Kale, Sorption Properties of Ball-Milled Porous Silicon for Hydrogen Storage up to 80 Bar, Under review, Applied Energy, 2024, IF:11.2 **Q1**
7. Rama Chandra Muduli, Neeraj Kumar Nishad, Dinesh Dashbabu, E. Anil Kumar, and Paresh Kale, Synergistic Integration of Nickel, Porous Silicon, and Thermally Reduced Graphene Oxide for Solid State Hydrogen Energy Storage, Energy Storage (Wiley), Under review, 2024, IF:3.8 **Q3**
8. Niraj Kumar Nishad and Paresh Kale, Hydrogen Storage Enhancement Near Ambient Temperature in Reduced Graphene Oxide to 6.53 wt.% on Porous Silicon Nanoparticles Decoration as Stabilizer, Under review, 2024
9. Sakti Prasanna Muduli and Paresh Kale, Effect of Diffusion Doping-induced Defects on Shunt Resistance Affecting Si-Nanowire Solar Cell Performance, Journal of Materials Science: Materials in Electronics, Accept for publication, IF:2.8 **Q2**
10. Rama Chandra Muduli and Paresh Kale, Investigating Reversible Hydrogen Storage and Performance of Porous Si by Kinetic Study and Pressure Composition Isotherms at up to 20 bar, International Journal of Hydrogen Energy, 59, 447-456, 2024, IF:7.2 Q1, https://doi.org/10.1016/j.ijhydene.2024.01.156
11. Rama Chandra Muduli, Zhiwen Chen, Keita Shizato, Fangqin Guo, Takayuki Ichikawa, Ankur Jain, Hiroki Miyaoka and Paresh Kale, Thermodynamic Improvisation of Lithium Hydrides for Hydrogen Absorption and Desorption by Incorporation of Porous Silicon, International Journal of Hydrogen Energy, 50, 1094-1102, 2024, IF:7.2 **Q1,** 10.1016/j.ijhydene.2023.09.015
12. Sakti Prasanna Muduli, Md Asif Khan, and Paresh Kale, "Structural optimization of Silicon-Nanowires for ultimate efficiency improvement via tuning optical properties", Transactions on Electrical and Electronics Materials, 24(6), 489-501, 2023, IF:1.9 **Q3**, 10.1007/s42341-023-00474-4
13. Sakti Prasanna Muduli, Md Asif Khan, and Paresh Kale Interdependence of morphological attributes and electrical characteristics of Porous Silicon-Nanowires, Journal of Materials Science: Materials in Electronics, 34(28), 1977, 2023, IF:2.8 **Q2,** doi.org/10.1007/s10854-023-11314-9
14. Rama Chandra Muduli and Paresh Kale, Synergetic Effect of Porous Silicon – Nickel Composite on its Solid-state Hydrogen Energy Storage Properties, International Journal of Hydrogen Energy, Accepted for publication, 48, 35185-35196, 2023, 10.1016/j.ijhydene.2023.05.268 IF:7.2 **Q1**

15. Mihir Sahoo, Sakti Prasanna Muduli, and Paresh Kale, Tailoring Electrical Characteristics of Si nanowires and Etched Si by MACE Temperature Variation, Journal of Materials Science: Materials in Electronics, 34 (16), 1275, 2023, 10.1007/s10854-023-10709-y IF:2.7 **Q2**
16. Vinayak Hiremath, Rama Chandra Muduli, and Paresh Kale, Investigation of the Stability and Insulating Properties of Mineral Oil-Based Surface Modified Silicon Nanofluid, IEEE Transactions on Dielectrics and Electrical Insulation, 30(30), 1040-1047, 2023, 10.1109/TDEI.2023.3242231 IF:3.1 **Q1**
17. Shivam Maurya, Rama Chandra Muduli, and Paresh Kale, Physical Forces Responsible for Agglomeration of Silicon Nanowires Arrays Synthesized by Metal-Assisted Chemical Etching, Russian Journal of Physical Chemistry A, 97(9), 1990-2000, 2023, IF:0.7 **Q4**
18. Shivam Maurya, Sakti Prasanna Muduli, Suman Nayak, and Paresh Kale, Optimization of Controlling Parameters of Porous Silicon Synthesis using Taguchi Design for Energy Applications, Russian Journal of Physical Chemistry A, 97(4),749-755, 2023, 10.1134/S0036024423040295 IF:0.7 **Q4**
19. Sakti Prasanna Muduli, and Paresh Kale, State-of-the-art Passivation Strategies of c-Si for Photovoltaic Applications: A Review, Materials Science in Semiconductor Processing, 154, 107202, 2023, doi.org/10.1016/j.mssp.2022.107202, IF:7.2 **Q1**
20. Rama Chandra Muduli and Paresh Kale, Silicon and Silicon Nanostructures for Solid-State Hydrogen Storage: A Review, International Journal of Hydrogen Energy, 48, 1401-1439, 2023, 10.1016/j.ijhydene.2022.10.055 IF:7.2 **Q1**
21. Sakti Prasanna Muduli, and Paresh Kale, Free-standing Nanowire Layer-Transfer Parametric Optimization of Multi-Response Process by Grey Taguchi Design, Materials Science and Technology, 2022, doi.org/10.1080/02670836.2022.212920 IF:2.06 **Q2**
22. Rama Chandra Muduli and Paresh Kale, Chemically Modified Surface of Silicon Nanostructures to Enhance Hydrogen Uptake Capabilities, International Journal of Hydrogen Energy, 2022, https://doi.org/10.1016/j.ijhydene.2022.06.030 IF:7.2 **Q1**
23. Paresh Kale, Mihir Sahoo,Removal of Ag Remanence and Improvement in Structural Attributes of Silicon Nanowires Array via Sintering, Scientific Reports, 11,1-14, 2021, https://doi.org/10.1038/s41598-021-03654-5, IF:4.38 **Q1**
24. Tejaswini Sahoo, Paresh Kale, Work Function-Based Metal-Oxide Semiconductor Hydrogen Sensor and its Functionality: A Review, Advance Materials Interface, 8(23), 2100649, 2021, https://doi.org/10.1002/admi.202100649, IF:6.15 **Q1**
25. Mihir Sahoo, Paresh Kale, Role of secondary etching of Silicon nanowires towards quantum confinement effect, Superlattices and Microstructures, Vol 156, pp 106949, 2021, https://doi.org/10.1016/j.spmi.2021.106949, IF: 2.66 **Q2**
26. Mihir Sahoo, Paresh Kale, Control of Silicon Nanowires Crystallinity using Metal Assisted Chemical Etching of Silicon and Porous Silicon Substrate, Materials International (Advanced energy storage, conversion and application materials), Vol 2, pp 0391-401, 2020, https://doi.org/10.33263/Materials23.391401
27. Niraj Anand, Paresh Kale, "Optimization of TOPCon structured solar cell using AFORS-HET", Transactions on Electrical and Electronic Materials, 2020, https://doi.org/10.1007/s42341-020-00220-0, pages160–166 (2021) IF:1.6 **Q3**
28. Suman Nayak, Paresh Kale & Balasubramanian P, "Inhibition assays of horseradish peroxidase by hexavalent chromium and other heavy metals", 22 (8), International Journal of Environmental Analytical Chemistry, https://doi.org/10.1080/03067319.2020.1776864, 2020, IF:2.83 **Q3**
29. Mihir Sahoo, Paresh Kale, "Transfer of vertically aligned Si nanowires array using sacrificial porous silicon layer", Thin solid films, Vol 698, pp 137866, 2020, https://doi.org/10.1016/j.tsf.2020.137866 IF:2.18, **Q2**
30. Suman Nayak, Rangabhashiyam S, Balasubramanian P & Paresh Kale, " A review of chromite mining in Sukinda Valley of India: impact and potential remediation measures", International Journal of

Phytoremediation, Vol 20, Issue 8, pp 804-818, 2020, https://doi.org/10.1080/15226514.2020.1717432 IF: 3.2 **Q2**

31. Mihir Sahoo, Paresh Kale, " Micro-Raman study of growth parameter restraint for silicon nanowire synthesis using MACE", Superlattices and Microstructures, Vol 135 (1), pp 106-289, 2019, , https://doi.org/10.1016/j.spmi.2019.106289 **Q2**
32. Mihir Sahoo, Paresh Kale, "Restructured Porous silicon for Solar Photovoltaics: A review", Microporous and Mesoporous Materials, Vol 289, pp 109619, 2019, IF:5.45, https://doi.org/10.1016/j.micromeso.2019.109619 IF:2.66 **Q1**
33. Rushikesh Fopase, Suman Nayak, Monalisha Mohanta, Paresh Kale, Balasubramanian Paramasivan, "Inhibition assays of free and immobilized urease for detecting hexavalent chromium in water samples", 3Biotech, Vol 9 (124), 2019, , https://doi.org/10.1007/s13205-019-1661-4 IF:2.406
34. Mihir Kumar Sahoo, Paresh Kale, "Integration of Silicon Nanowires in Solar Cell Structure for Efficiency Enhancement: A review", Journal of Materiomics, Vol 5, pp 34-48, 2019, , https://doi.org/10.1016/j.jmat.2018.11.007 **Q1** IF: 6.42
35. R.K. Tarai, P.G. Kale, "Solar PV Policy Framework of Indian States: Overview, Pitfalls, Challenges, and Improvements", Renewable Energy Focus, Vol 26, pp 46-57, 2018, , https://doi.org/10.1016/j.ref.2018.07.001 **Q2** IF:4.18
36. Nisha Singh, Mihir Kumar Sahoo, Paresh Kale, "Effect of MACE parameters on Length of Porous Silicon Nanowires (PSiNWs)", Journal of Crystal Growth, Vol. 496-497, pp. 10-14, 2018, , https://doi.org/10.1016/j.jcrysgro.2018.05.019 IF:1.79 **Q2**
37. Puja Biswas, Abhinav Karn, Paresh Kale, P. Balasubramanian, "Biosensor for detection of dissolved chromium in potable water: A review", Biosensor and Bioelectronics, Vol 94, pp. 589-604, 2017, , https://doi.org/10.1016/j.bios.2017.03.043 IF:10.62 **Q1**
38. Aly, N., R.K. Tarai, P.G. Kale and P. Balasubramanian, "Modeling microalgal biofuel production and carbon dioxide sequestration potential in fixed and trackable photobioreactor in the Odisha state of India", Current Science, 113 (2); 272-283, 2017, IF:1.1 **Q2**
39. Tarai R.K. and Kale P , Validation of Predictive Models to Estimate Annual PV Production: A case study of Odisha, International Journal of Smart Grid and Clean Energy,Vol 5, No. 3, pp 160-167, 2016, , 10.12720/sgce.5.3.160-167 IF:1.0 **Q4**
40. Swayan Jeet Mishra and Paresh G. Kale, "BizCard – An Android Application to Automate the Process of Information Retrieval from Business Cards", IRACST – Engineering Science and Technology: An International Journal (ESTIJ), ISSN: 2250-3498 Vol.6, No.2, pp 60-68, Mar-Apr 2016, , ISSN: 2250-3498 IF:0.654
41. Rakesh Tarai, Paresh Kale, "Development of Rasterized Map using PVGIS for Assessment of Solar PV Energy Potential of Odisha", International Journal of Renewable Energy Research-IJRER, 2016, Vol 6, No 1, pp 61-73, IF:3.06 **Q3**
42. Paresh Kale, C. S. Solanki, "Silicon Quantum Dot Solar Cell using Top-Down Approach", International Nano Letters, 2015, Vol 5, pp 61–65, https://doi.org/10.1007/s40089-014-0137-0 IF:3.7 **Q4**
43. Paresh Kale, Pratibha Sharma, C. S. Solanki, "Synthesis and Characterization of Si Nanoparticles Obtained on Sonication of Porous Silicon Multilayer Films", Journal of Nano research, 17, 2012, pp 13-25., IF: 0.21, https://doi.org/10.4028/www.scientific.net/JNanoR.17.13 **Q3**
44. Aneesh Gangal, Raju Edla, Paresh Kale, Pratibha Sharma, "Study of kinetics and thermal decomposition of ammonia borane in presence of silicon nanoparticles", International Journal of Hydrogen Energy, 37 (8), 2011, pp 6741-6748., https://doi.org/10.1016/j.ijhydene.2012.01.017 IF:7.2 **Q1**
45. Paresh Kale, Aneesh Gangal, Raju Edla, Pratibha Sharma, "Investigation of hydrogen storage behavior of silicon nanoparticles, International Journal of Hydrogen Energy", 37 (4), 2011, pp 3741-3747., https://doi.org/10.1016/j.ijhydene.2011.04.054 IF:7.2 **Q1**





Book Chapters:

1. Detection of Physical Impairments on Solar Panel using YOLOv5, Ashutosh Kumar Sahoo, Swagatika Behera, Shivam Maurya, Paresh Kale, International Conference on Machine Vision and Augmented Intelligence – MAI 2022, NIT Jamshedpur, Jamshedpur, India, March 2022, 10.1007/978-981-99-0189-0_1, pp. 1-12, 2023, Lecture Notes in Electrical Engineering (LNEE, volume 1007)

2. Image Processing Techniques on Porous Silicon to Estimate Porosity and Pore Size, Meenakshi Panigrahy, Shivam Maurya, and Paresh Kale, International Conference on Machine Vision and Augmented Intelligence – MAI 2022, NIT Jamshedpur, Jamshedpur, India, March 2022, 10.1007/978-981-99-0189-0_2, pp. 13-22, 2023, Lecture Notes in Electrical Engineering (LNEE, volume 1007)

3. Solar PV System Fault Classification using Machine Learning Techniques, Chisola Nyala, Vinayaka K Hiremath, and Paresh Kale, International Conference on Machine Vision and Augmented Intelligence – MAI 2022, NIT Jamshedpur, Jamshedpur, India, March 2022, 10.1007/978-981-99-0189-0_3, pp. 23-35, 2023, Lecture Notes in Electrical Engineering (LNEE, volume 1007)

4. Inhibition assays of Urease for Detecting Trivalent Chromium in Drinking Water, Rushikesh Fopase, Suman Nayak, Monalisha Mohanta, Paresh Kale, P. Balasubramanian, Green Buildings and Sustainable Engineering - Proceedings of GBSE 2018, Green Buildings and Sustainable Engineering. Springer Transactions in Civil and Environmental Engineering, DOI https://doi.org/10.1007/978-981-13-1202-1_27, pp 313-323, 2018

5. Influence of Wind Speed on Solar PV Plant Power Production - Prediction Model Using Decision Based Artificial Neural Network, Roshan Mohanty and Paresh Kale, http://cict.abes.ac.in/, Advances in Intelligent Systems and Computing – proceedings of CICT2019, Vol 1086, pp 3-16, 2020, DOI 10.1007/978-981-15-1275-9_1

Conferences:

1. Decoding Hydrogen Desorption Kinetics in Porous Silicon: An Electrical Circuit Modeling Approach, Sakti Prasanna Muduli, Rama Chandra Muduli, Paresh Kale, Porous Semiconductors – Science and Technology (PSST), Brno, Czech Republic, 28th Apr- 2nd May 2024
2. Exploring the Cyclic Hydrogen Storage Characteristics of Lithium Hydride and Porous Silicon Alloy for Advanced Energy Storage Applications, Zhiwen Chen, Rama Chandra Muduli , Fangqin Guo, Takayuki Ichikawa, Ankur Jain, Hiroki Miyaoka, & Paresh Kale, Adavcanced Nano Materials (ANM2024), Aveiro, Portugal, 24th - 26th July 2024

3. Investigation of Solid-state Hydrogen Storage Properties and Thermodynamic Tuning of Lithium Hydride by Alloying with Porous Silicon Nanowires, Rama Chandra Muduli, Zhiwen Chen, Fangqin Guo, Takayuki Ichikawa, Ankur Jain, Hiroki Miyaoka, & Paresh Kale, Adavcanced Nano Materials (ANM2024), Aveiro, Portugal, 24th - 26th July 2024
4. Interface Engineering of Metal-coated Si-nanostructured Thin Films for High-capacity Li-ion Battery Anode, Paresh Kale, Sakti Prasanna Muduli, Rama Chandra Muduli, Gergő Vecsei, Laura Juhász, Bence Parditka, Tamás Fodor, Csaba Cserháti, Zoltán Erdélyi, IMESD – 2023, Indian Institute of Technology Roorkee, Uttarakhand

5. Sorption Properties of Ball-milled Porous Silicon For Hydrogen Storage up to 80 Bar, Rama Mudulli and Paresh Kale, 14th International Conferecne on Hydrogen Production (UCH2P-2023), Doha (Qatar), Dec 2023
6. Evaluation of Synergistic Integration of Nickel, Porous Silicon, and Thermally Reduced Graphene Oxide for Hydrogen Storage, Rama Mudulli, Neeraj Ku. Nishad, Dinesh Dashbabu, E. Anil Kumar, and Paresh Kale, 14th International Conferecne on Hydrogen Production (UCH2P-2023), Doha (Qatar), Dec 2023
7. Solid-state Hydrogen Energy Storage Properties in Porous Silicon, Rama Chandra MUduli, Nandlal Gupta, Pratibha Sharma, and Paresh Kale,E-MRS 2023, Spring Meeting held in Strasbourg (France) from May 29 to June 2.
8. Tailoring electrical characteristics of Si nanowires and etched Si by MACE temperature, Sakti Mudulli Mihir Kumar Sahoo, Paresh Kale, ISSMD-2022, KIIT (DU), Bhubaneswar, Dec 2022
9. Chemically Modified Surface of Silicon Nanostructures to Enhance Hydrogen Uptake Capabilities, Rama Mudulli and Paresh Kale, International Conference on Renewable Energy (ICRE- 2022), Rajasthan Univ. Jaipur, India, March 2022
10. Wetting behaviour of Silicon Nanowires Array fabricated by Metal assisted Chemical Etching, Rama Mudulli, Mihir Sahoo, Paresh Kale, 3rd International Conference on Processing and Characterization (ICPCM 2021), Rourkela, India, December 2021, https://doi.org/10.1016/j.matpr.2022.04.635
11. Estimation of Partial Shading and Soiling Percentage for a Solar Panel Using an Artificial Neural Network Model, Roshan Mohanty, Mihir Kumar Sahoo, Paresh Kale, 9th IEEE POWER INDIA International Conference PIICON 2020, 28th Feb – 01 Mar 2020, Sonipat, Haryana, doi: 10.1109/PIICON49524.2020.9112892
12. PV System Fault Classification Using SVM Accelerated by Dimension Reduction Using PCA, Rahul Mandal, Nikhil Sahu, Niraj Anand, Paresh Kale, 9th IEEE POWER INDIA International Conference PIICON 2020, 28th Feb – 01 Mar 2020 Sonipat, Haryana, 10.1109/PIICON49524.2020.9112896
13. Assessment of Different Multiclass SVM Strategies for Fault Classification in a PV System, Rahul Mondal and Paresh Kale, ICAER 2019, Mumbai, December 10th to 12th 2019
14. Transfer of Vertically Aligned Silicon Nanowire Arrays using Sacrificial Porous Silicon Layer, Mihir Sahoo and Paresh Kale, E-MRS 2019 (Fall meeting), Warsaw, Poland, September 16th to 19th Sept 2019
15. Analytical Model to Predict the Effect of Dust on Performance of a Solar PV Panel, Chintu Seth, Kaushal Singh, Shubhobrata Rudra, Paresh Kale, International Conference on Sustainability Management of Advanced Renewable Technologies, (ICSMART 2019), Sponsored by IEEE, Chennai, India, 2019, https://avit.ac.in/icsmart/index.html
16. Modeling Effect of Dust Particles on Performance Parameters of the Solar PV Module, Kaushal Singh, Chintu Seth, Paresh Kale, 5th International Conference on Electrical Energy Systems (ICEES 2019), Sponsored by IEEE, SSN College of Engineering, Rajiv Gandhi Salai (OMR), Kalavakkam, Chennai, Tamil Nadu, India, 21 FEB-22 FEB 2019, http://www.icees2019.in/icees2019.html

17. Development of a Decision-Based Neural Network for a Day-ahead prediction of Solar PV Plant Power output, Rahul Kumar Mandal and Kale P., IEEE sponsored Fourth International Conference On Computational Intelligence and Communication Technology (CICT 2018), ABES Engineering College, Ghaziabad, 10-11 February 2018
18. Synthesis of Graphene-wrapped Silicon Nanoparticles by Ultra-sonication, P G Kale, Mihir Kumar Sahoo, Nishit Kumar Sadual and S K Behera, NCPCM 2017, IOP Conf. Series: Materials Science and Engineering, 338 (2018) 012034 doi:10.1088/1757-899X/338/1/012034
19. Effect of Sputtering and Annealing Parameters on Properties of Silicon Quantum Dot Matrix, Mihir Kumar Sahoo, JP Kar, Paresh G Kale, 33rd European Photovoltaic Solar Energy Conference and Exhibition (EU PVSEC), The Netherlands, 25-29 September 2017,pp 111 – 115, 10.4229/EUPVSEC20172017-1CV.3.41
20. Development of the Simplified Predictive Model for the Estimation of Annual PV Energy Production: A Case Study for Odisha, Vikash Chandola, Tarai R.K. and Kale P., IEEE sponsored Third-International Conference On Computational Intelligence And Communication Technology (CICT 2017), ABES Engineering College, Ghaziabad, 10-11 February 2017, 10.1109/CIACT.2017.7977337
21. Investigation of Temperature Dependent Current-Voltage Characteristics of all-Si Quantum Dot Solar Cell, 2nd International Conference on Solar Energy Photovoltaic (ICSEP 2016), KIIT University, Bhubaneswar, 17th to 19th December 2016, Materials Today: Proceedings 4(14), pp. 12554-12557, 2017
22. Effect of spin-coated i-layer properties on electrical and optical characteristics of p-i-n structured all-Silicon Quantum Dot Solar Cell, 2nd International Conference on Solar Energy Photovoltaic (ICSEP 2016), KIIT University, Bhubaneswar, 17th to 19th December 2016, Materials Today: Proceedings 4(14), pp. 12550-12553, 2017
23. A Study on the PV potential analysis for grid connected PV system in NIT Rourkela, Rakesh Tarai, Mihir Kumar Sahoo, Vishal Minz and Paresh Kale, 7th IEEE POWER INDIA International Conference PIICON 2016, Govt. Engineering College BikanerRajasthan November 25-27, 2016, 10.1109/POWERI.2016.8077149
24. Validation of Predictive Models to Estimate Annual PV Production: A case study of Odisha, Tarai R.K. and Kale P., ICGET 2016, Kuala lampur Malaysia, 25th July to 27th July 2016
25. Signal Conditioning Circuit For Porous Silicon Biosensor To Detect Chromium In Potable Water, Swadin Kumar, Paresh Kale, P. Balasubramanian, Paper 13,2nd International Conference on Advances in Steel, Power and Construction Technology (ICASPCT-2016) , 17-19 March, 2016, Raigarh, India
26. Embedded System for Mine Process Monitoring in a Network Constrained Environment Using Wireless Communication Bridge, HS Pradhan, SB Mohanty, SM Yerme, PG Kale, DP Acharya , International Conference on Microwave, Optical and Communication Engineering ICMOCE 2015, IIT Bhubaneshwar, 10.1109/ICMOCE.2015.7489729
27. Synthesis of Si nanoparticles from freestanding porous silicon (PS) film using ultrasonication, Paresh Kale, C. S. Solanki, 35th IEEE Photovoltaic Specialists Conference, PVSC 2010, Honolulu, pp 003692-003697, 10.1109/PVSC.2010.5617016
28. Generation of Nano-Sized Si Particle with Porous Silicon (PS) Film using Ultrasonication, Paresh Kale, C. S. Solanki, NCETPEGU 2008, IIT Kanpur
29. Preparation of Porous Silicon Nanostructures for Solar Photovoltaic Applications, Ashish Panchal, Paresh Kale, C. S. Solanki, ICAER 2007, IIT Bombay
30. Green House Automation Using Fuzzy Controller, Paresh Kale, Sharvari Bendarkar, PICA 2004, Nagpur
31. Discrimination between inrush over excitation and normal conditions for intelligent digital differential

protection of transformer, R. S Kalbhor, Paresh Kale, ICPS 2004, Katmandu, Nepal

Other academic activities

1. **No. of students supervised:**

	Ongoing	Completed
PhD	**4**	**1**
M.Tech.	**0**	**20**
B.Tech.	**4**	**18**

2. **Invited Lectures:**
   - A talk on "Thin film deposition systems for semiconductor devices", as part of Developing skills and knowledge for Civil and Electrical Engineering Researchers through access to cutting edge technology under STUTI program, May 2022, at NIT Rourkela
   - A talk on "Silicon Nanostructures for solar cells and hydrogen storage", on 14th March 2022 as a part of the workshop "2-Week Advanced Training Program on Utilization of Nano-materials and Instrumental Techniques for Energy Applications" organised by Gyanvihar Univ., Jaipur Rajasthan
   - A talk on "Role of Electrical engineer in hydrogen economy", on 2nd October 2021 organised by Dept. of Electrical and Electronics Engineering, Shiksha 'O' Anusandhan Bhubaneshwar, Odisha India
   - A webinar on "Hydrogen energy for future" during FDP on recent advances in power electronics and power systems, conducted by Muthoot Institute of Technology and Science, Kerala on 16th June 2021
   - A talk on 'Porous Silicon re-visited for energy storage and conversion applications' on 25th December 2019 during International workshop on materials for energy conversion and storage at IIT Tirupati, Tirupati, Andhra Pradesh
   - A talk on 'Research trends in Solar photovoltaic fabrication technology' on 15th Dec 2019 during 14th Technical Paper meeting at The Institution of Engineers (India), Rourkela Local Centre, Rourkela, Odisha.
   - A talk on 'Silicon and its derivatives for hydrogen storage - Recent progress and opportunities' on 9th December 2019, during International Workshop on Hydrogen Storage, ICAER 2019 at IIT Bombay, Mumbai, Maharashtra
   - A talk on 'Recent advances if research and development of solar cells' on 19th October 2016, at O P Jindal University, Raigarh, Chattisgarh
   - A talk on 'Solar Cell Physics and its Manufacturing' on 1st Dec 2015, at O P Jindal University Raigarh Chattisgarh, a 6 day (30th November 2015 to 5th December 2015) Training Programme on 'Recent Development in Renewable Energy Systems' sponsored by CGCOST, Raipur and ISTE, New Delhi
   - A talk on "Basic Photography" by Girimitra Mandal, Mumbai, 24th April 2016
   - A talk on "Introduction to Macro Photography", Vivid 2015, NIT Rourkela

3. **Reviewer:**
   - Physica Status Solidi A: Applications and Materials Science
   - IEEE Sensors
   - Nano Micro Small
   - Solar Energy Materials and Solar Cells
   - Analytica
   - Renewable Energy

- Journal of Cleaner Production
- Arabian Journal of Chemistry
- International Journal of Renewable Energy research
- Biosensor and Bioelectronics
- Silicon
- Ceramics International
- The Chemical Record

4. **Guest Faculty:**
    - Visiting faculty , online lectures of MBA program for Jaro Education during January 2014 to April 2014

5. Members of Professional Bodies

- Life Member: Electron Microscopy Society of India (EMSI) - LM-1834
- Life Member: Indian Society of Technical Education (ISTE) – LM 422251
- Member: Institution of Engineers (India) – M-152718-5
- Life Member, Asia-Pacific Chemical, Biological& Environmental Engineering Society (APCBEES) – 201963
- Solar Energy Society of India (SESI) – Life member -4953

Scholarships and Awards:

- SIRE fellowship 2022 by SERB, India.
- Travel grant to attend EMRS 2019 Fall, Poland in Sept 2019 from SERB, India.
- Best paper "Validation of Predictive Models to Estimate Annual PV Production: A case study of Odisha," Tarai R.K. and Kale P., ICGET, 2016, Kuala lampur Malaysia, 25th July to 27th July 2016
- Best poster runner-up prize for the poster titled *"Generation of Nano-Sized Si Particle with Porous Silicon (PS) Film using Ultrasonication"* at NCETPEGU 2008, IIT Kanpur.
- Best poster first prize for the poster titled *"Green House Automation Using Fuzzy Controller"*, at PICA 2006 at Nagpur.
- Received scholarship from Akhil Bharatiya Chittpavan Sangh, Ratnagiri', for the years 2000-03, 2006-2008.
- Awarded by "Sindhudurga Malvani Mitramandal" in 2005 for special achievement in academics.
- Received scholarship from 'Maharashtra State Electricity Board (MSEB)' for the four years 2000-03.
- Awarded with "Late. Smt. Chhabria Award" in 2003, a cash prize for obtaining highest mark in the final year of bachelor's degree.
- Awarded with 'chairman scholarship' for year 1999-00, 2000-01 for academic excellence.
- Was 'Chairman Award' winner for obtaining highest marks in first year (99-00)