


## Biodata

Name	Dr. Sudhir S. Arbuj	
Designation	Scientist B and Academic Co-ordinator	
Educational qualification	M.Sc from University of Pune, Pune. Ph.D from University of Pune, Pune.	
Research area	Nanomaterials (Synthesis of QDs, 1D, 2D and hierarchical nanostructures), Photocatalysis (Water splitting, Volatile Organic Compounds (VOCs) and Dye degradation), Hybrid Solar Cells (Using organic semiconductors and Inorganic nanoparticles), DSSC, Material synthesis (Mixed metal oxides and sulfides using microwave, combustion, sol-gel, Solvo/hydrothermal synthesis techniques), Hydrogen storage materials (Metal Organic Frameworks), Electrodes for Lithium ion batteries and Gas sensors	
Recognised Awards/Honors/Fellow	Young Associate of Maharashtra Academy of Sciences (MASc), Pune.	
Projects	<p>Ongoing:</p> <ol style="list-style-type: none"><li>1. Studies on the Effect of annealing on magnetic performance of NiFe laminates for pulsed Magnets used in Accelerators, (PN/SP/81), Sponsored by BRNS, Outlay: Rs. 32.02 Lakhs, DoS: 10.01.2020; DoC:09.01.2022</li><li>2. Development of printable silver thick film ink for RFID tags on environment friendly, flexible substrate for smart applications, (PN/SP/73), Sponsored by MeitY, Outlay: Rs. 108.84 Lakhs, DoS: 29.11.18; DoC:28.11.21</li><li>3. Development of Nanostructured <math>MnFe_2O_4</math> (PN/SP/34), Sponsored by MOIL, Nagpur, (PN/SP/66) Outlay: Rs. 24.77Lakhs, DoS: 01.02.2018; DoC:31.01.2020</li></ol> <p>Completed:</p> <ol style="list-style-type: none"><li>4. Transition Metal Doped Hollow Glass Microspheres for <math>H_2</math> storage applications (PN/CC/P05), Sponsored by MeitY, Outlay: Rs. 35.00 Lakhs, DoS: 4/2014; DoC:3/2017</li><li>5. Hybrid Solar Cells Based on Organic Polymers and Inorganic Nanoparticles, (PN/SP/34), Sponsored by MeitY, Outlay: Rs. 100.00 Lakhs, DoS: 15.06. 2010; DoC:14.06.12</li></ol>	
Publications/Patents	1. Facile template free approach for the large-scale solid phase	

(Past 5 years)

- synthesis of nanocrystalline  $XIn_2S_4$  ( $X = Cd/Zn$ ) and its photocatalytic performance for  $H_2$  evolution, S. Naik, S. Apte, S. Garaje, Y. Sethi, M. Shinde, **Sudhir Arbuji**, B. Kale, R. Sonawane, *New J. Chem.*, 2020,**44**, 9634-9646.
- Highly crystalline ordered Cu-doped  $TiO_2$  nanostructure by paper template method: Hydrogene production and dye degradation under natural sunlight, G. Kale, **Sudhir Arbuji**, U. Chothe, S. Khore, L. Nikam and B. Kale, *J. Compos. Sci.* **2020**, *4*, 48
  - Solvothermally Synthesized Nickel Doped Tin Dioxide based Thick Films for  $H_2$  and  $NH_3$  Gas sensing, S. Rane, M. Shinde, Sudhir Arbuji, N. Joshi, S. Rane, S. Gosavi, *Materials Today: Proceedings*, **2020**, *23*, 154-164.
  - Palladium loaded on ZnO nanoparticles: Synthesis, characterization and application as heterogeneous catalyst for Suzuki–Miyaura cross-coupling reactions under ambient and ligand-free conditions, D. B. Bankar, R. R. Hawaldar, **Sudhir S. Arbuji**, S. T. Shinde, J. R. Gadde, D. S. Rakshe, D. P. Amalnerkar, K. G. Kanade, *Materials Chemistry and Physics*, **2020**, *243*, 122561
  - $ZnCl_2$  loaded  $TiO_2$  nanomaterial: an efficient green catalyst to one-pot solvent-free synthesis of propargylamines, D. B. Bankar, R. R. Hawaldar, **Sudhir S. Arbuji**, M. H. Moulavi, S. T. Shinde, S. P. Takle, M. D. Shinde, D. P. Amalnerkar and K. G. Kanade, *RSC Adv.*, **2019**, *9*, 32735-32743
  - Two dimensional hexagonal  $SnS_2$  nanostructures for photocatalytic hydrogen generation and dye degradation, S. R. Damkale, **Sudhir S Arbuji**, G. G. Umarji, R. P. Panmand, S. Khore, R. Sonawane, S. B. Rane and B. B. Kale, *Sustainable Energy Fuels*, **2019**, *3*, 3406-3414.
  - ‘Nanocrystalline Cu–ZnO as an Green Catalyst for One Pot Synthesis of 4,4-((phenyl)methylene)bis(3-methyl-1-phenyl-1H-pyrazol-5-ol) Derivatives, S. Shinde, , B. Karale, D. Bankar, **Sudhir Arbuji**, M. Moulavi, D. Amalnerkar, T. Kim, and K. Kanade, *J. Nanosci. Nanotech.*, **2019**, *19*, 4623-4631
  - ‘Synthesis of silver loaded ZnO nanorods and their enhanced photocatalytic activity and photoconductivity study, P. V. Pimpliskar, S. C. Motekar, G. G. Umarji, W. Lee and **Sudhir Arbuji**, *Photochem. Photobiol. Sci.*, **2019**, *18*, 1503-1511, 10.1039/c9pp00099b (corresponding author)
  - ‘Enhanced performance of PTB7-Th:PCBM based active layers in ternary organic solar cells, G. Lakhotiya, N. Belsare, **Sudhir Arbuji**, B. Kale and A. Rana, *RSC Adv.*, **2019**, *9*, 7457-7463
  - ‘Paper Templated Synthesis of Nanostructured Cu-ZnO and its Enhanced Photocatalytic Activity Under Sunlight.’ G. Kale, **Sudhir Arbuji**, U. Kawade, S. Kadam, L. Nikam, B. Kale, *J. Mater. Sci.: Mater. Electron.*,

<https://doi.org/10.1007/s10854-019-01020-w> **2019**.

11. 'Sol-Gel Assisted Isotropic Morphological Progression in Nanostructured MoO<sub>3</sub> and Allied Investigations on Photocatalytic Dye-Degradation, N. Qureshi, M. Shinde, **Sudhir Arbuj**, S. Rane, A. Bhalerao, H. Kim, T. Kim, D. Amalnerkar, *J. Nanosci. Nanotech.*,19(6), **2019**, 3479-3486.
12. 'Hierarchical nanostructures of nitrogen-doped molybdenum sulphide for supercapacitors, C. Kanade, **Sudhir Arbuj**, K. Kanade, K. S. Kim, G. Y. Yeom, T. Kim, B. Kale, *RSC Adv.*, **2018**, **8**, 39749-39755
13. 'Template-free hydrothermal synthesis of beaded nanochain bundles of ZnO and their application as photoanode in dye-sensitized solar cells, R. Ballal, M. Shinde, Y. Waghadkar, **Sudhir Arbuj**, S. Rane, R. Chauhan, *Appl. Phys. A* (**2018**) 124: 203
14. 'Synthesis of porous nitrogen doped zinc oxide nanostructures using a novel paper mediated template method and their photocatalytic study for dye degradation under natural sunlight, G. Kale, **Sudhir Arbuj**, U. Kawade, S. Rane, J. Ambekar and B. Kale, *Mater. Chem. Front.*, **2018**, **2**, 163-170.
15. 'Hydrothermally Synthesized Zinc Sulphide Microspheres for Solar Light-Driven Photocatalytic Properties, Y. Waghadkar, **Sudhir Arbuj**, M. Shinde, R. Ballal, S. B. Rane, S. Gosavi, H. Fouad, R. Chauhan, *Journal of Electronic Material*, 47, 5 (**2018**) 2687-2693.
16. Optical fiber based humidity sensor using Ag decorated ZnO nanorods, Shweta Jagtap, Sapana Rane, **Sudhir Arbuj**, Sunit Rane, Suresh Gosavi, *Microelectronic Engineering*, **2018**, 187-188, 1-5.
17. Swift tuning from spherical molybdenum microspheres to hierarchical molybdenum disulfide nanostructures by switching from solvothermal to hydrothermal synthesis route, N. Qureshi, **Sudhir Arbuj**, M. Shinde, S. Rane, M. Kulkarni, D. Amalnerkar, H. Lee, *Nano Convergence* **2017**, 4, 25.
18. ZnSe/ZnO Nano-Heterostructures for Enhanced Solar Light Hydrogen Generation, A. F. Shaikh, **Sudhir S. Arbuj**, M. S. Tamboli, S. D. Naik, S. B. Rane, B. B. Kale, *ChemistrySelect*, **2017**, 2 (28), 9174-9180.
19. 'Nanostructured N-doped orthorhombic Nb<sub>2</sub>O<sub>5</sub> as an efficient stable photocatalyst for hydrogen generation under visible light, A. Kulkarni, **Sudhir Arbuj**, S. Naik, A. Ghule, B. B. Kale, *Dalton Trans.*, **2017**, **46**, 14859-14868
20. 'Hydrogen, ethanol and ammonia gas sensing properties of nanostructured titanium dioxide thick films, S. Rane, D. Kajale, **Sudhir S. Arbuj**, S. Rane, S. Gosavi, *J Mater Sci: Mater Electron*, **2017**, **28**, 9011-9016.
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- their enhanced photocatalytic activity, A. Roy, Sudhir Arbuj, Y. Waghadkar, M. Shinde, G. Umarji, S. Rane, G. Umarji, S. Rane, K. Patil, S. Gosavi and R. Chauhan, *J. Solid State Electrochemistry*, **2017**, *21*, 9-17
22. 'Nanosized ZnO Under Solvent Free Condition: A Smart and Ecofriendly Catalyst to Microwave Assisted Synthesis of 3, 4-dihydropyrimidin-2(1H)- ones/Thiones, S. Shinde, K. Kanade, B. Karale, D. Amalnerkar, N. Thorat, **Sudhir Arbuj** and S. Kunde. *Current Smart Materials*, **2016**, *1*, 68.
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  24. 'Synthesis of Hierarchical ZnO Nanostructure and Its Photocatalytic Performance Study' D. G. Kumbhar, V. U. Pandit, S. D. Deshmukh, J. D. Ambekar, **Sudhir S. Arbuj**, and S. B. Rane *J. Nanoeng. Nanomanuf.* **2015**, *5*, 227-231. (*Corresponding author*).
  25. 'Synthesis, Characterization and Photocatalytic Activity of Tungsten Oxide Nanostructures' K. A. Nevase, **Sudhir S. Arbuj**, V. U. Pandit, J. D. Ambekar, and S. B. Rane, *J. Nanoeng. Nanomanuf.* **2015**, *5*, 221-226. (*Corresponding author*).
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  27. 'Template-free synthesis of Fe<sub>3</sub>O<sub>4</sub> nanorod bundles and their highly efficient peroxidase mimetic activity for the degradation of organic dye pollutants with H<sub>2</sub>O<sub>2</sub>, Diganta Bhuyan, **Sudhir S. Arbuj** and Lakshi Saikia, *New J. Chem*, **2015**, *39*, 7759-7762.
  28. 'Hydrogen sensing characteristics of Pt-SnO<sub>2</sub> nanostructured composite thin films, Sapana Rane, Suresh Gosavi, **Sudhir Arbuj**, Sunit Rane, *J Mater Sci: Mater Electron* *26* (2015), 3707-3716.
  29. 'Tuning Magnetic Behavior of Nanoscale Cobalt Sulfide and Its Nanocomposite with an Engineering Thermoplastic' N. Rumale, **Sudhir Arbuj**, G. Umarji, M. Shinde, U. Mulik, P. Joy, D. Amalnerkar, *Journal of Electronic Materials*, *2015*, *44*(7), 2308-2311.
  30. 'Solar light driven dye degradation using novel organo-inorganic (6,13-pentacenequinone/TiO<sub>2</sub>) nanocomposite' V. U. Pandit, **Sudhir S. Arbuj**, Y. B. Pandit, S. D. Naik, S. B. Rane, U. P. Mulik, S. W. Gosavi and B. B. Kale, *RSC Advances*, **2015**, *5*, 10326-10331. (*Corresponding author*).
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