

Somaiya Vidyavihar University

Name: Balwant Kumar Singh		E-mail: balwantkumar@somaiya.edu	
Contact No: 8879075240			
Department/Section: Electronic Engineering			
Institute / School : K J Somaiya School of Engineering			
DOJ Somaiya: 04-09-2025	Career Experience: 4.5 Yrs	Industry Experience: 2 Yrs	Teaching Experience: 2 months
Present Academic Designation: Assistant Professor		Present Administrative Designation: Nil	

Area of research/specialization and Courses Delivered					
Research domain/interests/areas					
1. Microfabrication and Thin Films 2. On-chip Micro-supercapacitor and Supercapacitor 3. Sodium ion Battery 4. Nanomaterials for energy storage and conversion					
Courses Delivered					
1. Digital Integrated Circuit Design 2. Basic Electrical Engineering Lab 3. Quantum Computing Lab 4. Computer Organization and Architecture Lab					

Recognition as a teacher by any University	UG: Yes	PG: Yes	Ph.D : Yes
Details of Recognitions: Approved UG and PG faculty by Somaiya Vidyavihar University			

Education					
Examination	Name of the Degree	University/Board	Institute/College	Year	CPI/SPI/ %Marks
Ph.D	Ph.D (Materials Science)	IIT Bombay	IIT Bombay	2021	8.25
PG	M.Tech (Energy Science & Technology)	Jadavpur University	Jadavpur University	2014	80.28
UG	B.E (Electronics & Communication Engineering	Rajiv Gandhi Proudyogiki Vishwavidyalaya	Radharaman Institute of Technology & Science	2011	77.81
GATE	Electronics & Communication Engineering	-	-	2011, 2013, 2014	Qualified

Notable Experience Details					
Sr. No	Name of the organization	Designation	Date of Joining	Date of Leaving	Experience (Years)
1.	Nexus Power	Senior Research Associate- R&D	26-12-2023	31-07-2025	1.5
2.	Nexus Power	Research	22-05-2023	25-12-2023	0.5

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		Associate- R&D			
3.	University of Texas at El Paso, Texas	Postdoctoral Fellow	16-01-2022	17-01-2023	1
4.	IIT Bombay	Postdoctoral Fellow	26-08-2021	10-01-2022	0.4
5.	IIT Bombay	Research Associate	01-04-2021	25-08-2021	0.4

Research Accomplishments and Projects

No of students pursuing Ph.D as on date: 0		No of students completed Ph.D as on date: 0
No of students completed PG thesis / Project work as on date: 0		No of students / groups completed UG projects as on date: 0
Publications Total: 20	Number of Peer review Journal papers: 20	Number of Conference papers: 0

Details of Publications:

International Journals

- Balwant Kr Singh**, Debabrata Das, Cristina Gonzalez, C V Ramana, "Germanium Functionalized 3-D Microporous, Nanostructured Nickel-Nickel Oxides for Application in Asymmetric Supercapacitors," *Energy Technology*, 11,10, 2300360 (2023), <https://doi.org/10.1002/ente.202300360>.
- Balwant Kr Singh**, Rajiv O. Dusane, Smrutiranjana Parida, "Possibility of large-scale patterning of printed circuit board to prepared copper oxide nanowires all-solid-state micro-supercapacitor with high specific capacity," *Materials Science and Engineering B*, 273, 115436 (2021), <https://doi.org/10.1016/j.mseb.2021.115436>.
- Balwant Kr Singh**, Aasiya Shaikh, Rajiv O Dusane, Smrutiranjana Parida, "Copper oxide nanosheets and nanowires grown by one-step linear sweep voltammetry for supercapacitor application," *Journal of Energy Storage*, 31, 101631 (2020), <https://doi.org/10.1016/j.est.2020.101631>.
- Balwant Kr Singh**, Aasiya Shaikh, Rajiv O Dusane, Smrutiranjana Parida, "Nanoporous gold- Nitrogen-doped carbon nano-onions all-solid-state micro-supercapacitor," *Nano-Structures & Nano-Objects*, 17, 239-247 (2019), <https://doi.org/10.1016/j.nanoso.2019.01.011>.
- Balwant Kr Singh**, Aasiya Shaikh, Subramanya Badranyana, Debananda Mohapatra, Rajiv O Dusane, Smrutiranjana Parida, "Nanoporous gold-copper oxide based all-solid-state micro- supercapacitors," *RSC Advances*, 6, 100467-100475 (2016), <https://doi.org/10.1039/C6RA19744B>.
- Balwant Kr Singh**, Debabrata Das, Navid Attarzadeh, Srija N. Chintalapalle, C.V. Ramana, "Enhanced Electrochemical Performance of 3-D Microporous Nickel/Nickel Oxide Nanoflakes for Application in Supercapacitors," *Nano Select*, 4, 2, 145-159 (2023), <https://doi.org/10.1002/nano.202200180>.
- Rahul Kumar, **Balwant Kumar Singh**, Ankur Soam, Smrutiranjana Parida, Veena Sahajwalla and Parag Bhargava, "In situ carbon-supported titanium dioxide (ICS-TiO₂) as an electrode material for high performance supercapacitors," *Nanoscale Advances*, 2, 2376-2386 (2020), <https://doi.org/10.1039/D0NA00014K>.
- K. Orisekeh, **B. Singh**, S. Parida, W. Soboyejo, A. Bello, A. Onwualu, V. Anye, G. Ihekwe, G. Kalu-Uka, Y. Olanrewaju, M. Kigozi, "Processing of α -Fe₂O₃ Nanoparticles on Activated Carbon Cloth as Binder-Free Electrode Material for Supercapacitor Energy Storage," *Journal of Energy Storage*, 33, 102042 (2020), <https://doi.org/10.1016/j.est.2020.102042>.
- Rahul Kumar, **Balwant Kumar Singh**, Ankur Soam, Smrutiranjana Parida, Parag Bhargava, "In-situ carbon coated manganese oxide nanorods (IISC-MnO₂NRS) as electrode material for supercapacitor," *Diamond*

and Related Materials, 94,110-117 (2019), <https://doi.org/10.1016/j.diamond.2019.03.003>.

10. Aasiya Shaikh, **Balwant Kr Singh**, Smrutiranjana Parida, "Natural oil derived carbon nano- onions as sensitive electrocatalyst for nitrite determination," *Materials Chemistry and Physics*, 235, 121744 (2019), <https://doi.org/10.1016/j.matchemphys.2019.121744>.
11. Aasiya Shaikh, **Balwant Kr Singh**, Debananda Mohapatra, Smrutiranjana Parida, "Nitrogen-doped Carbon Nano-Onions as a Metal-Free Electrocatalyst," *Electrocatalysis*, 10-3, 222-231 (2019), <https://doi.org/10.1007/s12678-019-00514-9>.
12. Rajan Lakra, C Mahender, **Balwant Kr Singh**, Rahul Kumar, Sandeep Kumar, Prasanta Kumar Sahoo, Dhirendranath Thatoi, Ankur Soam," ZnFe₂O₄ Nanoparticles Supported on Graphene Nanosheets for High-Performance Supercapacitor," *Journal of Electronic Materials*, 52, 2676–2684 (2023), <https://doi.org/10.1007/s11664-023-10230-2>.
13. Aasiya Shaikh, **Balwant Kr Singh**, Kartikay Purnendu, Prapunj Kumari, P Ram Sankar, Girdhar Mundra, Sivasambu Bohm, "Utilization of the nickel hydroxide derived from a spent electroless nickel plating bath for energy storage applications," *RSC Sustain.*, 1, 294-302 (2023), <https://doi.org/10.1039/D2SU00036A>
14. Ankur Soam, Rahul Kumar, Prasanta Kumar Sahoo, C Mahender, **Balwant Kumar**, Nitin Arya, Mamraj Singh, Smrutiranjana Parida, Rajiv O Dusane, "Synthesis of Nickel Ferrite Nanoparticles Supported on Graphene Nanosheets as Composite Electrodes for High Performance Supercapacitor," *Chemistry Select*, 4-34, 9952-9958 (2019), <https://doi.org/10.1002/slct.201901117>.
15. Biswajit Ghosh, **Balwant Kr Singh**, Pushan Banerjee, Subrata Das, "Moisture contained CBD Cu(Al)/CdS bilayer films as the precursor for cation exchange and transformation into Cu_xS-CdS nanocomposites through air annealing," *Optik*, 172, 988-994 (2018), <https://doi.org/10.1016/j.ijleo.2018.07.117>.
16. Debananda Mohapatra, Smrutiranjana Parida, **Balwant Kr Singh**, D.S. Sutar, "Importance of microstructure and interface in designing metal oxide nanocomposites for supercapacitor electrodes," *Journal of Electroanalytical Chemistry*, 803, 30-39 (2017), <https://doi.org/10.1016/j.jelechem.2017.09.013>.
17. Debananda Mohapatra, Smrutiranjana Parida, Subramanya Badravyana, **Balwant Kr Singh**, "High performance flexible asymmetric CNO-ZnO//ZnO supercapacitor with an operating voltage of 1.8 V in aqueous medium," *Applied Materials Today*, 7, 212-221 (2017), <https://doi.org/10.1016/j.apmt.2017.03.006>.
18. Biswajit Ghosh, **Balwant Kr Singh**, Pushan Banerjee, Subrata Das, "Nucleation and growth of CBD-CdS thin films on ultrathin aluminium layers and annealing induced doping," *Optik*, 127, 4413-4417 (2016), <https://doi.org/10.1016/j.ijleo.2016.01.099>.
19. Biswajit Ghosh, Kamlesh Kumar, **Balwant Kr Singh**, Pushan Banerjee, Subrata Das, "Growth of CdS thin films on indium coated glass substrates via chemical bath deposition and subsequent air annealing," *Applied Surface Science*, 320, 309-314 (2014), <https://doi.org/10.1016/j.apsusc.2014.09.034>.
20. Ankur Soam, Rahul Kumar, **Balwant Kr Singh**, Deepash Shekhar Saini, "A Comprehensive Review on Synthesis of Nanocomposites for Supercapacitor," *Journal of Inorganic and Organometallic Polymers and Materials*, 1-29, (2025), <https://doi.org/10.1007/s10904-025-03861-x>

National Journals

Nil

Conferences Presentations

1. **Balwant Kr Singh**, Debabrata Das, C.V. Ramana "Electrodeposition of Nickel Oxides Nano Thin Films on 3-D Porous Nickel for Ultracapacitor Application," presentation delivered at *The Minerals, Metals & Materials Society (TMS) 2023 Annual Meeting & Exhibition*, San Diego, California, USA, March 19–23 (2023).
2. Navid Attarzadeh, Debabrata Das, **Balwant Kr Singh**, Susheng Tan, C.V. Ramana, "Phase-aligned Growth of Nickel Phosphosulfide Nanostructured Arrays: A Promising Electrocatalyst for Efficient Hydrogen

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Evolution Reaction,” presentation delivered at <i>The Minerals, Metals & Materials Society (TMS) 2023 Annual Meeting & Exhibition</i> , San Diego, California, USA, March 19–23 (2023).		
3. Balwant Kr Singh , Aasiya Shaikh, Rajiv O Dusane, Smrutiranjana Parida, “Interdigital nanoporous gold (NPG)-Manganese dioxide (MnO ₂) based Micro-supercapacitor,” poster presentation delivered at the <i>international conference on supercapacitor and energy storage (ICSEA-2019)</i> , CEMT Thrissur, Kerala, India, March 8-10 (2019).		
4. Balwant Kr Singh , Smrutiranjana Parida, Rajiv O Dusane, “Interdigital nanoporous gold (NPG)-Copper oxide (CuO) Micro-supercapacitor,” poster presentation delivered at the <i>International Conference on Electrochemistry Science and Technology (ICONEST)</i> , IISc Bangalore, India, August 10-12, (2017).		
Books/Book Chapters Nil		
Patents/Copy Rights Nil		
No of Research / consultancy / projects completed:0	No of Research / consultancy / projects on-going:0	No of Research / consultancy / projects on applied as on date:0
Details of Research / consultancy / projects: Nil		
IPR/ Copyrights Nil		

FDPs/Seminars/Workshops/Training Programs Attended/ Organized/ Delivered
Attended Nil
Organized Nil
Delivered Nil

Notable Key Scholastic Achievements
1. Qualified GATE in Electronics & Communication Engineering in the 2011, 2013, and 2014
2. University GOLD medal in M.Tech Energy science & Technology 2014, Jadavpur university
3. All India Council for Technical Education (AICTE) scholarship in M.Tech (2012-2014)
4. Awarded Institute PG Passing Out Color by Gymkhana, Indian Institute of Technology Bombay

Notable Positions and Responsibility
1. Sports councilor of Hostel 13, IIT Bombay for an academic year (2017-2018).
2. Volunteer for SERB, DST school on Plasma Processing of Materials, IIT Bombay, India, June 03-22 (2019).
3. Volunteer for training students for a 1-day solar lamp assembly Guinness World Record event conducted at IIT Bombay, Powai on 2 nd October 2018
4. Member of Organizer committee in national conference Materials research society of India symposium (MRSI) with 300+ delegates, IIT Bombay, India (2017).

Date: 26/ 09 / 2025

Signature of Faculty Member