



Dr. Sompalli Kishore Babu

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LinkedIn: <https://www.linkedin.com/in/kishore-babu-s-3999101a8/>

Google Scholar: <https://scholar.google.com/citations?hl=en&authuser=2&user=brG9QKEAAAA>

ResearchGate: <https://www.researchgate.net/profile/Sompalli-Babu>

Professional Summary

Highly motivated researcher with a deep passion for advancing battery technology. Experienced in renewable energy materials research, specializing in supercapacitors and Li-ion batteries. Possesses expertise in electrochemical techniques, cell fabrication, testing, and strong analytical skills. Thrives in both independent and collaborative work environments.

Research Interest

Exploring novel materials to address the challenges and opportunities in electrochemical energy storage, with a specific focus on Li-ion, Na-ion, Zn-ion, and All-solid-state batteries,

Education

Ph. D in **Physics** June 2019 to July 2023
SRM Institute of Science and Technology, Kattankulathur.
India.

Thesis title: - *“Investigation on Metal-Organic Framework Derived Metal-Oxide Composites for Energy Storage Applications”*

Master of Science in **Physics** June 2017 to May 2019
SRM Institute of Science and Technology, Kattankulathur.
India.

Bachelor of Science in **Physics** June 2014 to May 2017
University of Madras, Chennai, India.

Work Experience

- Work and knowledge exposure include Supercapacitors, Li and Zn-ion batteries.
- Conducted innovative synthesis processes, characterization, electrochemical studies, and cell fabrication of electrode materials for energy storage (Supercapacitors and Li-ion batteries)
- Conducted comprehensive synthesis of diverse materials, including Li-rich NMC, LTO and Sn-doped TiO₂ to improve the performance of Li-ion batteries.
- Developed MOF-derived nanomaterials for supercapacitors and batteries.
- Experience in the synthesis of solid-state electrolyte materials such as LLTO and Al & Ga substituted LLZO for All-solid-state batteries.
- Electrochemical characterization, data analysis and research article report writing.

Teaching Experience

- Teaching assistant in General Physics Lab for B. Tech. and M. Sc 2019 - 2021
SRM Institute of Science and Technology, Chennai, India
- Training of B. Tech and M. Sc Project students
SRM Institute of Science and Technology Chennai, India 2019 - 2023

Leadership Qualities

- Co-Guided M.Sc. and M.Tech., project students along with faculty
- Number of Master's students guided: 4
- Mentor for bachelor's students - helped academically/non-academically.
- Can handle independent research lab

List of Publications

1. **S Kishore Babu**, M Jayachandran, P Vivek, Himadri Tanaya Das, T Vijayakumar, B Gunasekaran, "Performance of porous NiCo_2O_4 nanofile arrays derived from the metal-organic framework as anode material for rechargeable Li-ion batteries", Journal of Alloys and Compounds, 966 (2023) 171555. <https://doi.org/10.1016/j.jallcom.2023.171555>.
2. **S Kishore Babu**, B Gunasekaran "Ultrathin $\alpha\text{-Ni(OH)}_2$ nanosheets coated on MOF-derived Fe_2O_3 nanorods as a potential electrode for solid-state hybrid supercapattery device" Electrochimica Acta, 447 (2023) 142146. <https://doi.org/10.1016/j.electacta.2023.142146>
3. **S Kishore Babu**, B Gunasekaran, M Sridharan, T Vijayakumar "Decorating MnO_2 nanosheets on MOF-derived Co_3O_4 as a battery-type electrode for hybrid supercapacitors" RSC Advances, 12 (2022) 28818-28830. <https://doi.org/10.1039/D2RA05603H>
4. **S Kishore Babu**, J John Donald Raj, T Vijayakumar, B Gunasekaran "Experimental and DFT studies on spinel NiMn_2O_4 flower derived from bimetallic MOF as an efficient electrode for next-generation supercapacitor" Colloids and Surfaces A: Physicochemical and Engineering Aspects, 655 (2022) 130244. <https://doi.org/10.1016/j.colsurfa.2022.130244>
5. **S Kishore Babu**, M Jayachandran, T Maiyalagan, T Vijayakumar, B Gunasekaran "Metal-organic framework (MOF-5) incorporated on NiCo_2O_4 as electrode material for supercapacitor application" Materials Letters, 302 (2021) 130338. <https://doi.org/10.1016/j.matlet.2021.130338>
6. M Jayachandran, **S Kishore Babu**, T Maiyalagan, N Rajadurai, T Vijayakumar "Activated carbon derived from bamboo-leaf with effect of various aqueous electrolytes as electrode material for supercapacitor applications" Materials Letters, 301 (2021) 130335.
7. M Jayachandran, **S Kishore Babu**, T Maiyalagan, M R Kannan, Y Sheeba Sherlin, T Vijayakumar "Effect of various aqueous electrolytes on the electrochemical performance of porous NiO nanocrystals as electrode material for supercapacitor applications" Materials Letters, 302 (2021) 130415. <https://doi.org/10.1016/j.matlet.2021.130415>.
8. Desai Prasanth H, Kumarasen L, Kavibharathy K, Sajan Raj S L, Saraswathi R, **S Kishore Babu**, Baskaran Rangasamy, Kumaran Vediappan "Alpha- Ni(OH)_2 Nanoflakes Incorporated on MOF

derived ZnO hybrid Faradaic arrays for High-performance Asymmetric Supercapacitor ” Materials Science and Engineering: B, 298 (2023) 116813. <https://doi.org/10.1016/j.mseb.2023.116813>.

9. **S Kishore Babu**, M Jayachandran and B. Gunasekaran, *Safety and Electrochemical Performance of Lithium Manganese-rich NMC (Li_{1.2}Ni_{0.1}Mn_{0.6}Co_{0.1}O₂) Cathode Material for Li-ion batteries (Manuscript under preparation)*.
10. **S. Kishore Babu**, P. Vivek, B. Gunasekaran “Kinetic properties and electrochemical performance of MnO₂ nanorods as cathode material for aqueous Zn-ion battery” (Manuscript under preparation).

List of Book Chapters

1. **S. K. Babu**, J. John Donald Raj, D.V. Shastri, S. Rajkumar, K.D. Arunachalam, *Ch.13 - Nanoceramics in the energy storage industry*, in: S. Mallakpour, C.M. Hussain (Eds.) Industrial Applications of Nanoceramics, Elsevier, 2024, pp. 267-277.
2. J.J. Donald Raj, **S. K. Babu**, S. Rajkumar, D. Vrushabhadas Shastri, K.D. Arunachalam, *Ch.18 - Nanoceramics in the electronics and electrical industry*, in: S. Mallakpour, C.M. Hussain (Eds.) Industrial Applications of Nanoceramics, Elsevier, 2024, pp. 347-353.
3. S. Rajkumar, D. Vrushabhadas Shastri, J.J. Donald Raj, **S. K. Babu**, K.D. Arunachalam, *Ch.20 - Photonic applications of nanoceramics*, in: S. Mallakpour, C.M. Hussain (Eds.) Industrial Applications of Nanoceramics, Elsevier, 2024, pp. 387-394.
4. D.V. Shastri, S. Rajkumar, J.J. Donald Raj, **S. K. Babu**, K.D. Arunachalam, *Ch.24 - Green and sustainable future and conclusion*, in: S. Mallakpour, C.M. Hussain (Eds.) Industrial Applications of Nanoceramics, Elsevier, 2024, pp. 443-448.

Few selected Conferences and Workshops

- National conference on 21st National Convection of Electrochemists (NCE-21), VIT, Chennai.
- Participated in workshop on “IPR & Patents and Design Filing”, RGNIIPM Nagpur, CGPDTM, Ministry of Commerce & Industry - Govt. of India (2022).
- Presented a poster entitled “Metal-organic framework (MOF-5) incorporated on NiCo₂O₄ as electrode material for supercapacitor application” at the 6th International Conference of Nanoscience and Technology (ICONN-2021) organized by the Department of Physics and Nanotechnology, SRM IST.
- Participated in “International Workshop on Energy Storage Technologies for E-Mobility (IWESTE-2021), organized by the Department of Chemistry, SRM IST.
- Participated in 2 days workshop on “Scanning electron Microscopy: Technique and its Application” part of Azadi ka Amrit Mahotsav Organized by Northeast Centre for Biological Sciences and Healthcare Engineering (NECBH), Indian Institute of Technology Guwahati, Assam.
- Presented poster at the “International Conference On Advanced Materials And Mechanical Characterization” (2- 4 Dec 2021), organized by the Department of Physics and Nanotechnology and Department of Mechanical Engineering, SRM Institute of Science and Technology.
- Author Workshop on “How to Write and Publish Scientific Articles a Manuscripts”, 12th April 2020, SRMIST, Kattankulathur.
- Participated in SUMMER NANO-IMMERSION PROGRAM, held online during 22 – 26, June 2020 organized by Nanotechnology Research Centre (NRC) and Department of Physics & Nanotechnology, SRM IST, Kattankulathur, Chennai – 603203, India.
- Attended a three-day certificate course on Crystallography and XRD analysis by the Department of Mechanical Engineering, SRMIST (2-4 March 2020).
- Participated in International Conference on Advances in New Materials (ICAN), 8th & 9th Nov 2019, University of Madras.

Technical Skills

- Supercapacitor, Li-ion and Zn-ion battery and electrode material synthesis
- Supercapacitor and Li-ion battery testing
- Hands-on experience in 4-port and 8-port glove box operations
- Electrode preparation, Swagelok and Coin cell fabrications
- Slurry preparation and coating process
- Differential capacity analysis (dQ/dV) and Differential voltage analysis (dV/dQ)
- Experimental design, analysis, and data interpretation.

Analytical Skills

- Electrochemical workstations - Bio-Logic (SP-200, SP-300 & BCS-400), OrigaLys and Neware Battery Tester.
- X-ray Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FT-IR), X-ray Photoelectron Spectroscopy (XPS), Thermogravimetric Analysis (TGA), Transmission Electron Microscopy (TEM) and Scanning Electron Microscopy (SEM).

Personal Details

Date of Birth : 06.01.1996
Citizenship : Indian
Languages : English (Proficient), Telugu (Native) and Tamil (Fluent).
Permanent Address : S/o Mr. S. Venkatesh
157/A, Velur village, Pichattoor mandal,
Tirupati district, Andhra Pradesh, India, Pin - 517587.

Declaration

I hereby declare that the information furnished above is true to the best of my knowledge and belief.

Place: Chennai
Date: 04-02-2024

Your's sincerely,
S. Kishore Babu

Reference details

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