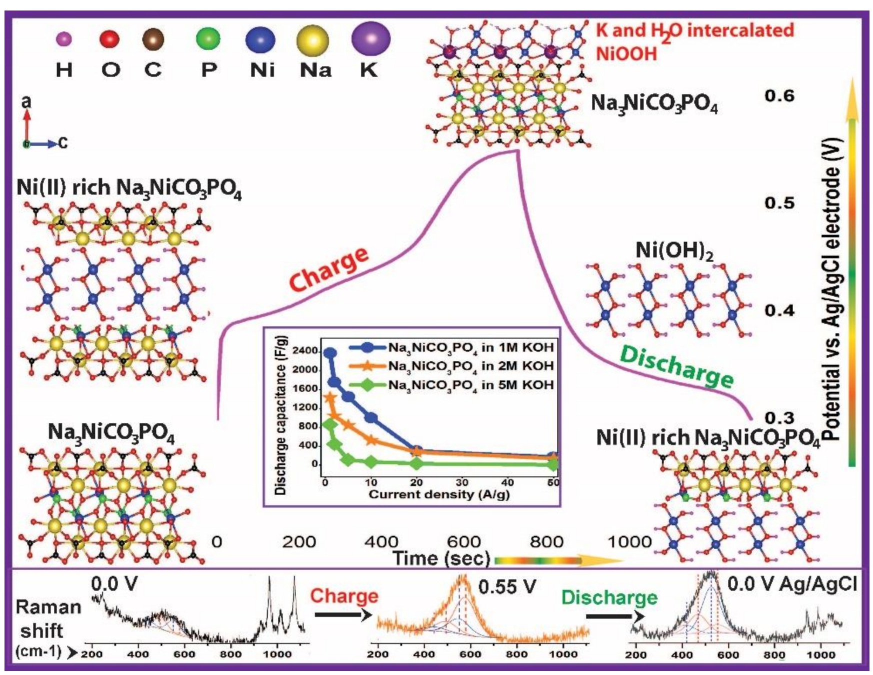
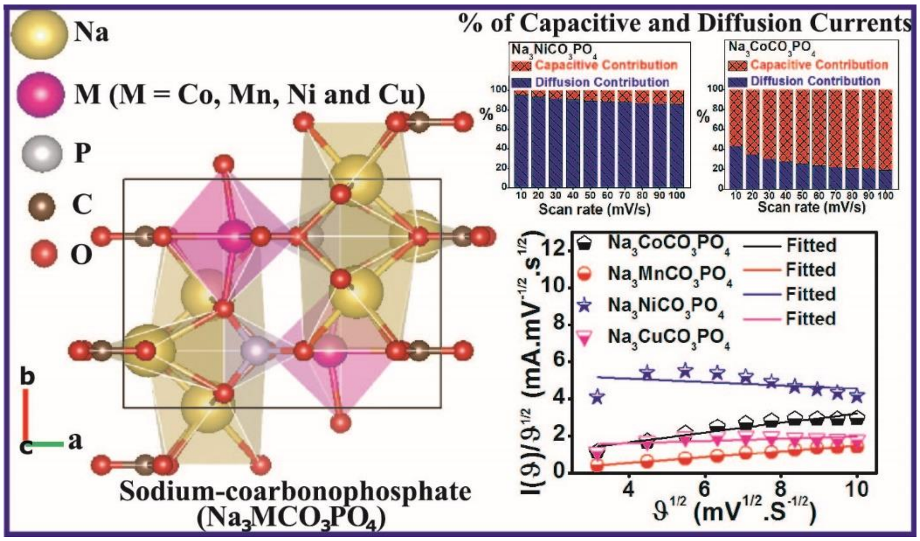
Website Information
Department of Physics
Dayananda Sagar University

Faculty details:

Item	Details
Faculty Name:	Dr. Yogesh Kalegowda
Room No:	A-213
Designation:	Assistant Professor
E-Mail	yogesh-phy@dsu.edu.in
Research Area:	Syncrotron Soft X-ray Spectroscopy and Spectro-microscopy Energy Storage and Conversion Materials Energy Storage Devices Artificial Intelligence and Machine Learning
Publications (Past 5 years)	1. B.S. Nishchith, Yogesh Kalegowda*, S. Ashoka, L. Shreenivasa, Ganesan Sriram, Mahaveer D. Kurkuri, Kanalli Vinayak Ajeya, Ho-Young Jung, Electrochemical kinetic study and performance evaluation of surface-modified mesoporous sodium carbonophosphates nanostructures for pseudocapacitor applications, Journal of Alloys and Compounds, 939, 2023, 168711. 2. P. Sagar, K. Yogesh, Asad Syed, Najat Marraiki, Abdallah M. Elgorban, Nouf S. S. Zaghloul, S. Ashoka, Studies on the effect of crystalline Fe_2O_3 on OER performance of amorphous NiOOH electrodeposited on stainless steel substrate, Chemical Papers 76 (11), 2022, 7195-7203. 3. Srinivasa, N., Shreenivasa, L., Ashoka, S., & Yogesh, K, Studies on Co_3O_4-NiO nanocomposites for potential electrocatalyst for alkaline water electrolysis. Applied Physics A: Materials Science & Processing, 128(2), 2022, 158. 4. Shreenivasa, L., Ashoka, S., Yogesh, K., Syed, A., Marraiki, N., & Adarakatti, P. S., Glycine-nitrate derived cobalt-doped $BiPO_4$: An efficient OER catalyst for alkaline electrochemical cells. Solid State Sciences, 124, 2022, 106803. 5. Nishchith, B.S., Ashoka, S., Bhat, M.P., Kurkuri, M.D., Acharya, S., Kumar, R. and Kalegowda, Y*., Reversible surface reconstruction of $Na_3NiCO_3PO_4$: A battery type electrode for pseudocapacitor applications. Journal of Power Sources, 520, 2022, 230903.

	6. Shreenivasa, L., Yogeeshwari, R.T., Viswanatha, R., Yogesh, K. and Ashoka, S., Sucrose-assisted rapid synthesis of multifunctional $CrVO_4$ nanoparticles: a new high-performance cathode material for lithium ion batteries. Ionics, 27(1), 2021, 39-48. 7. Shreenivasa, L., Viswanatha, R., Ganesan, S., Kalegowda, Y., Kurkuri, M.D. and Ashoka, S., Scalable chemical approach to prepare crystalline $Mn_2V_2O_7$ nanoparticles: introducing a new long-term cycling cathode material for lithium-ion battery. Journal of Materials Science: Materials in Electronics, 31(22), 2020, 19638-19646. 8. Shreenivasa, L., Yogesh, K., Prashanth, S.A., Viswanatha, R. and Ashoka, S., Enhancement of cycling stability and capacity of lithium secondary battery by engineering highly porous AlV_3O_9. Journal of Materials Science, 55(4), 2020, 1648-1658. 9. Shreenivasa, L., Yogeeshwari, R.T., Viswanatha, R., Sriram, G., Kalegowda, Y., Kurkuri, M.D. and Ashoka, S., An introduction of new nanostructured $Zn_{0.29}V_2O_5$ cathode material for lithium ion battery: a detailed studies on synthesis, characterization and lithium uptake. Materials Research Express, 6(11), 2019, 115035. 10. Shreenivasa, L., Prashanth, S.A., Eranjaneya, H., Viswanatha, R., Yogesh, K., Nagaraju, G. and Ashoka, S., Engineering of highly conductive and mesoporous ZrV_2O_7: a cathode material for lithium secondary batteries. Journal of Solid State Electrochemistry, 23(4), 2019, 1201-1209. 11. Lakkepally, S., Kalegowda, Y., Ramarao, V., Hanumantharayappa, E. and Siddaramanna, A., Room temperature synthesis of amorphous $Bi_4V_2O_{11}$ as cathode material for Li secondary batteries. Materials Research Express, 5(11), 2018, 115501. 12. Lakkepally, S., Kalegowda, Y., Ganganagappa, N. and Siddaramanna, A., A new and effective approach for $Fe_2V_4O_{13}$ nanoparticles synthesis: Evaluation of electrochemical performance as cathode for lithium secondary batteries. Journal of Alloys and Compounds, 737, 2018, 665-671. 13. Varhade, S., Bhat, Z.M., Thimmappa, R., Devendrachari, M.C., Kottaichamy, A.R., Gautam, M., Shafi, S.P., Kalegowda, Y. and Thotiyl, M.O., A hybrid hydrazine redox flow battery with a reversible electron acceptor. Physical Chemistry Chemical Physics, 20(33), 2018, 21724-21731.
Sponsored Projects (Past and Ongoing)	Graphene oxide (GO) and reduced graphene oxide (rGO) based nanomaterials for photothermal supercapacitor applications (DST-SERB project-Ongoing)

Profile Links: Scopus and Orcid	https://orcid.org/0000-0001-6956-9164 AAV-7055-2021 (Web of Science) https://scholar.google.com/citations?hl=en&authuser=1&user=ri4QDysAAAAJ
Research Activities (Write about your best research results max of 2-3 pages including diagrams)	**Reversible Surface Reconstruction of $Na_3NiCO_3PO_4$: A Battery Type Electrode for Pseudocapacitor Application (**https://doi.org/10.1016/j.jpowsour.2021.230903) This work establishes fundamental understanding on the pseudocapacitance mechanism associated with surface self-reconstruction of mixed polyanionic compounds. The reconstruction-derived self-limiting dense $Ni(OH)_2$ layers at the surface and its oxidation to NiOOH at anodic potentials can be attributed to the observed high performance pseudocapacitive behavior. The surface reconstructed $Na_3NiCO_3PO_4$ electrode exhibits high specific capacitance (2378.2 and 169.5 F g^{-1} at 1 and 50 A g^{-1}, respectively) and long cycle life (15000 at 50 A g^{-1}) in 1 M KOH electrolyte. The assembled symmetric pseudocapacitor delivers a highest energy density of 146.0 Wh kg^{-1} and power density of 1600 W kg^{-1} at 1 Ag^{-1}.  **Electrochemical Kinetic Study and Performance Evaluation of Surface-modified Mesoporous Sodium Carbonophosphates Nanostructures for Pseudocapacitor Applications**

	(https://doi.org/10.1016/j.jallcom.2023.168711) • The pseudocapacitive behavior of the surface modified $Na_3MCO_3PO_4$ (M=Ni, Co, Mn and Cu) nanostructures is tested. • The $Na_3MCO_3PO_4$ (M=Co and Mn) undergo deep reconstruction in 1 M KOH to form $M(OH)_2/M_3O_4$ nanocomposite. • The capacitive and diffusion currents contribution are clearly Identified. • The deep reconstructed $Co(OH)_2/Co_3O_4$ symmetric supercapacitor delivers a high energy and power densities. 
Group Members (PhD Students and Projects)	BS Nishchith, Prasanna DG, Narasimha SA
Open Positions: If any	Project Assistant-1 Qualification: M.Sc. Physics