

Dr. Ranjithkumar Raju

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EDUCATION

Doctor of Philosophy (Physics) 2017-2021 Kalasalingam Academy of Research and Education, Krishnankoil, TN, India.

Thesis work: Investigations on metal oxide and metal hydroxide nanoparticles loaded carbon nanotube and graphitic carbon nitride based nanocomposites for energy storage application.

Research Guide: Dr. M. Krishna Kumar, Dr. N. Nallamuthu.

Master of Science (Physics) 2014 –2016

National College, Bharathidasan University, Trichy, TN, India.

Bachelor of Science (Physics) 2010 – 2013

P.M.P arts and science college, Periyar University, Salem, TN, India.

AREAS OF RESEARCH INTEREST

Binary metal oxides, metal oxides, metal hydroxides and metals alloy incorporated with carbon derivatives by changing the size of the nanoparticles and adopting various novel synthesis methods. The applications are,

- Supercapacitors
- Batteries
- Electrocatalysis

RESEARCH EXPERTISE

- **Material synthesis:** N-doped porous carbon spheres (~400nm), Hetero atoms doped Hollow carbon spheres (~180nm), Graphene, Graphitic Carbon Nitride, metal alloys (10nm) Functionalized carbon material, metal oxide and hydroxide, binary and ternary nanocomposites, carbon-based nanocomposites.
- **Electrochemical methods:** Electrochemical synthesis, electrochemical deposition, Linear Sweep Voltammetry (LSV), Cyclic voltammetry (CV), Chronopotentiometry (GCD) and AC impedance analysis.
- **Instrument Handling:** UV-vis Spectrophotometer (JASCO-V630), XRD (Bruker (D8 advance ECO XRD systems with SSD160 1D Detector)), SEM/EDAX (Model:

ZEISS-EVO 18), FTIR (Shimadzu (IR Tracer-100) spectrophotometer), CHI Workstation (CHI6008E), NOVA Autolab (Metro ohm), TGA.

Publications (SCI IF- *SCI Impact Factor)

1. **R. Ranjithkumar**, S.E. Arasi, P. Devendran, N. Nallamuthu, A. Arivarasan, P. Lakshmanan, S. Sudhahar, M.K. Kumar, Investigations on structural, morphological and electrochemical properties of Co(OH)_2 nanosheets embedded carbon nanotubes for supercapacitor applications, *Diam. Relat. Mater.* 110 (2020) 108120. (SCI IF: 4.1)
2. **R. Ranjithkumar**, S.E. Arasi, P. Devendran, N. Nallamuthu, P. Lakshmanan, S. Sudhahar, A. Arivarasan, M.K. Kumar, Investigations and fabrication of Ni(OH)_2 encapsulated carbon nanotubes nanocomposites based asymmetrical hybrid electrochemical supercapacitor, *J. Energy Storage.* 32 (2020) 101934. (SCI IF: 9.4)
3. **R. Ranjithkumar**, P. Lakshmanan, P. Devendran, N. Nallamuthu, S. Sudhahar, M.K. Kumar, Investigations on effect of graphitic carbon nitride loading on the properties and electrochemical performance of g- $\text{C}_3\text{N}_4/\text{TiO}_2$ nanocomposites for energy storage device applications, *Mater. Sci. Semicond. Process.* 121 (2021) 105328. (SCI IF: 4.1)
4. **R. Ranjithkumar**, S.Ezhil Arasi, N. Nallamuthu, P. Devendran, P. Lakshmanan, A. Arivarasan, M.Krishna kumar, Investigation and fabrication of asymmetrical supercapacitor using nanostructured Mn_3O_4 immobilized carbon nanotube composite, *Superlattices Microstructure.* 138 (2020) 106380. (SCI IF: 3.2)
5. **R. Ranjithkumar**, S. Ezhil Arasi, S. Sudhahar, N. Nallamuthu, P. Devendran, P. Lakshmanan, M. Krishna Kumar, Enhanced electrochemical studies of ZnO/CNT nanocomposite for supercapacitor devices. *Physica B: Condensed Matter*, 568 (2019) 51–59. (IF: 2.436)
6. **R. Ranjithkumar**, P. Lakshmanan, N. Palanisami, P. Devendran, N. Nallamuthu, S. Sudhahar, M.K. Kumar, Facile, Morphology-Controlled and Mass Production of 0D $\text{Ag}/2\text{D-g-C}_3\text{N}_4/3\text{D-TiO}_2$ Nano-composite Materials: Effect of Silver Morphology and Loading on the Electrochemical Performance, *Electron. Mater. Lett.* 19 (2023) 172–183. (SCI IF: 2.4)
7. M.S.P. Sudhakaran, **R. Ranjithkumar**, J.H. Youk, Polypyrrole-derived N-doped CNT nanocomposites decorated with CoNi alloy nanoparticles for high-performance supercapacitor electrodes, *Appl. Surf. Sci.* 619 (2023) 156796. (SCI IF: 6.7)
8. G. Vignesh, **R. Ranjithkumar**, P. Devendran, N. Nallamuthu, S. Sudhahar, M. Krishna Kumar, Nitrogen doped reduced graphene oxide/ ZnCo_2O_4 nanocomposite electrode for hybrid supercapacitor application, *Mater. Sci. Eng. B.* 290 (2023) 116328. (SCI IF: 3.6)
9. M. Murugesan, N. Nallamuthu, **R. Ranjithkumar**, M. Krishnakumar, P. Devendran, K. Ramesh, Synthesis and Electrochemical Investigation of Hetero Bimetallic Complexes CoMn_2O_4 Micro Rods for Novel Supercapacitor Electrode, *Electron. Mater. Lett.* 19 (2023) 108–118. (SCI IF: 2.4)
10. G. Vignesh, **R. Ranjithkumar**, P. Devendran, N. Nallaperumal, S. Sudhahar, M.K. Kumar, Structural, Spectral, and Electrochemical Investigations of a Nitrogen-Doped N-rGO/ MgCo_2O_4 Nanocomposite for Supercapacitor Applications, *ChemistrySelect.* 8 (2023). (SCI IF: 2.1)

11. M. Jeevaraj, **R. Ranjithkumar**, P. Devendran, N. Nallamuthu, S. Sudhahar, Stoke shifted photoluminescence in Guanidinium lead halides for light emitting applications, Chemical Physics Letters 800 (2022) 139693. (SCI IF: 2.8)
12. G. Vignesh, **R. Ranjithkumar**, P. Devendran, N. Nallamuthu, P. Lakshmanan, S. Sudhahar, M. Krishna Kumar, Investigations on Electrochemical Performance of Hausmannite Manganese Oxide Nanoparticles in KOH and Na₂SO₄ Electrolytes for Energy Storage Applications, Nano. (2021) 2150144. (SCI IF: 1.2)
13. S. Ezhil Arasi, **R. Ranjithkumar**, P. Devendran, M. Krishnakumar, A. Arivarasan, Investigation on electrochemical behaviour of manganese vanadate nanopebbles as potential electrode material for supercapacitors, J. Alloys Compd. 857 (2021) 157628. (SCI IF: 6.2)
14. C. Sambathkumar, **R. Ranjithkumar**, S.Ezhil Arasi, A. Manikandan, N. Nallamuthu, M.K. Kumar, A. Arivarasan, P. Devendran, High-performance nickel sulfide modified electrode material from single-source precursor for energy storage application, J. Mater. Sci. Mater. Electron. 32 (2021) 20058–20070. (SCI IF: 2.8)
15. S. Ezhil Arasi, **R. Ranjithkumar**, P. Devendran, M. Krishnakumar, A. Arivarasan, Studies on electrochemical mechanism of nanostructured cobalt vanadate electrode material for pseudocapacitors, J. Energy Storage. 41 (2021) 102986. (SCI IF: 9.4)
16. S. Ezhil Arasi, P. Devendran, **R. Ranjithkumar**, S. Arunandiyan A. Ayyaswamy, Electrochemical property analysis of zinc vanadate nanostructure for efficient supercapacitors, Mat. Sci. Semicon. Proc. 106 (2020) 104785. (SCI IF: 4.1)
17. S. Ezhil Arasi, **R. Ranjithkumar**, P. Devendran, M. Krishnakumar, A. Arivarasan, Electrochemical evaluation of binary Ni₂V₂O₇ nanorods as pseudocapacitor electrode material, Ceramics International. 46 (2020) 22709–22717. (SCI IF: 5.2)
18. S. EzhilArasi, **R. Ranjithkumar**, P. Devendran, M. Krishnakumar, A. Arivarasan, Enhanced electrochemical performance of copper vanadate nanorods as an electrode material for pseudocapacitor application, J. Mater. Sci. Mater. Electron. 31 (2020) 7012–7021. (SCI IF: 2.8)

On Peer-Review

1. **R. Ranjithkumar**, MSP Sudhakaran, Ji HoYouk, A brief review of novel N-doped hollow carbon sphere nanocomposites for energy storage and conversion (submitted).
2. **R. Ranjithkumar**, MSP Sudhakaran, Ji HoYouk, Next-Generation coin symmetric supercapacitor: NiCo metal-alloy enhanced 3D mesoporous N-doped hollow carbon spheres (submitted).
3. **R. Ranjithkumar**, Ji HoYouk, NiCo alloy incorporated on novel Hierarchical N doped porous carbon structure for potassium -ion capacitor (submitted).
4. **R. Ranjithkumar**, P. Lakshmanan, P. Devendran, N. Nallamuthu, S. Sudhahar, M.K. Kumar, Facile Fabrication of 3D- α -Fe₂O₃ @2-D-gC₃N₄ Heterojunction Composite Materials: Effect of Iron Oxide Loading on the Electrochemical Performance (under communication in journal).

Awards/Best presentation

1. Secured best poster presentation for International Poster Presentation Competition (IPPC) 2020 organized by NYAB (Bangladesh), INYAS (India), SLAYS (Sri Lanka) and TYSA (Thailand) held in September-October 2020.
2. Secured best oral presentation for International Virtual Conference on Recent Trends in Energy Materials (INCRTEM-2020) on 9-11 Sep 2020 Organized by Alagappa University.
3. Secured 2nd Prize for M.Sc. Physics (2014-2016), Prof. Nagarajan Endowment Prize and Sri Diljith C. Shah Endowment Prize in National College, Tiruchirappalli.

Personal Information's

Date of Birth : 05.05.1993
Father's Name : V. Raju
Gender : Male
Permanent Address : 1/592, Konampatti Kottavor, Thippampatty (PO), Karimangalam (Tk), Dharmapuri (Dt), Tamilnadu, India (PIN: 635 202)
Marital Status : Married
Mother Tongue : Tamil
Nationality : Indian
Languages Known : Tamil and English

References

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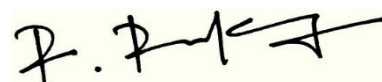
Prof. Ji Ho Youk

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Declaration

I hereby declare that the above details furnished by me are true to the best of my knowledge and belief.

Yours sincerely,



R. RANJITHKUMAR