CURRICULUM VITAE

Dr.M. MALARVIZHI, M.Sc., M. Phil., B. Ed., Ph.D.,

Assistant Professor,
Department of Physics,
K.S.Rangasamy College of Technology,
Tiruchengode,
TamilNadu, INDIA
Email: malarinresearch@gmail.com
Skype:malargobi@outlook.com
Mobile:+91-9095792265
+91-9952453781
+91-9842770787

Professional Experience (Research and Teaching):14 Years

Educational Qualifications

2016-2021: Ph.D. in Physics , Chikkaiah Naicker College, Bharathiar University, Tamil Nadu, **INDIA**.
Thesis title: Synthesis, characterization and electrochemical evaluation of biomass derived activated carbon and metal ferrites for high -performance supercapacitor application.

2011-2012: B.Ed. Physics (First class with Distinction - 73 %), Vidya Vikas College of Education, Tiruchengode, Tamilnadu Teacher's Educational University, Tamilnadu, **INDIA**.

2006-2007: M.Phil.Physics (First Class 67%),MaduraiKamarajUniversity,Madurai,TamilNadu,**INDIA**

2003-2005: M.Sc.Physics (First class with D^+ grade 8.00GPA),Seethalakshmi Ramasamy college, Bharathidasan University, Tiruchirapalli, Tamil Nadu, **INDIA**.

2000-2003: B.Sc.Physics (First class with Distinction -83 %), Vellalar College for Women, Erode, Bharathiar University, Coimbatore

Research Experience

JULY 2016-JULY 2021 Ph.D. Research Scholar (Full Time)

ACHIEVED:

- ✓ Published 5 International Publications with good impact factor (Inorganic Chemistry Communications-**IF-2.495, Ionics- IF-2.817.**
- ✓ Developed different biomass derived activated carbon nanomaterials and metal ferrites using different methods for energy storage applications
- ✓ Optimized various parameters for making supercapacitor prototypes.
- ✓ Fabrication of Teflon Swagelok® cell using activated carbon material developed in ARCI, Hyderabad.
- ✓ Won **best paper award** in International conference on Advanced Materials Chemistry at the Interfaces of Energy, Environment and Medicine (AMCI) organized by Department of Chemistry, Manonmaniam Sundaranar University, Tirunelveli held on 30-31 January 2020.

May 2005 – Feb' 2006 Research Fellow (M.Phil)

Research Title: Optical properties of Silver Thinfilms

ACHIEVED:

- ✓ Studied the role of Silver thinfilms in their optical properties
- ✓ Especially analysed the absorbtion and transmission properties of silver thinfilms
- ✓ Calculated the bandgap value of silver thinfilm

Teaching Experience

September 2021-Till Date Assistant Professor of Physics, K.S.Rangasamy College of Technology, Tiruchengode, Namakkal (Dt), TamilNadu, **INDIA**

ACHIEVED:

- ✓ Attained 8 Months teaching experience as an assistant professor of Physics
- ✓ Handling Applied Physics theory paper for I Year B.E Mechanical Engineering, and Mechatronics,
- ✓ Conducted Applied Physics Laboratory for B.Tech (AI&DS), B.Tech (IT),B.E (CSE), B,E (Textile)
- ✓ Submitted revision of Book chapter "**Graphene Oxide in Enhancing Energy Storage Devices**" from the publisher **Taylor and Francis**
- ✓ Submitted research funding Proposal for **SERB-Startup Research Grant** and Status is under Evaluation.
- ✓ Did additional work as a **organizing committee member** in Career conclave 2022 organized by Career Guidance Academy, KSRCT
- ✓ Took a charge as a **convenor of Institute Innovation council**, KSRCT

May 2006-October 2015 Assistant Professor of Physics, Vivekanandha College of Arts and Sciences for Women, Tiruchengode, Namakkal (Dt), Tamil Nadu, **INDIA**.

ACHIEVED:

- ✓ Attainrd 9 years teaching experience as an assistant professor
- ✓ Handled all papers especially Solid state physics,Optics,Mechanics,Quantum Mechanics, Nano Science for B.Sc, M.Sc and M.Phil students
- ✓ Guided 25 students for M.Sc., Projects
- ✓ Guided three students for M.Phil dissertation
- ✓ Published one physics article while guiding M.Phil
- ✓ Provided 100% pass result during my service
- ✓ Organized 2 National and one International physics conferences as committee member
- ✓ Worked as an assistant head of the department for the academic year 2014-2015
- ✓ Availed M.Phil guideship approval from periyar University ,Salem, Tanil Nadu, INDIA

Research Credits

No. of students Guided		No. of Paper Published/Presented				No. of Seminars/Workshops Participated
M.Sc	M.Phil	Journal Publication	Paper Presented in Conference			
			International Level	National Level	State Level	
25	03	07	06	06	01	20

Areas of Interest:

- Electrochemical energy storage and conversion
- Supercapacitors
- Lithium Ion Batteries (LIB's)/ Lithium Ion capacitors (LIC's)
- Fabrication of nanostructured materials
- Nano-Electronics

Research Highlights

Detailed Research Accomplishments: Current Research Activities

Electrical Energy Storage (EES) Applications:
Supercapacitors & Lithium Ion Capacitor

- Development of different microporous, mesoporous and flexible biowaste-based activated carbon materials and metal ferrites for supercapacitor applications
- Synthesis Techniques
  - Chemical Activation
    - KOH
    - $ZnCl_2$
  - Physical Activation
    - CO_2
- Combustion, Sol-gel, Hydrothermal, Solvo-thermal and Thermal Decomposition

Electrochemical Characterization For Supercapacitors

- Electrochemical performance of supercapacitor is evaluated by using
  - Cyclic voltammetry
  - Galvanostatic charge discharge
  - Electrochemical Impedance Spectroscopy (EIS) measurement.
- Experimental demonstration of lab-scale proto-type using Swagelok cells.
- Handling and fabrication of cells (Swagelok cells)

Ph.D Project

Objectives:

The core objectives of the work are

- Synthesized activated porous carbon from bio-waste-based groundnut shell by chemical activation method and ternary transition metal ferrites AFe_2O_4 (A= Co, Ni) based on two different preparation techniques.
- Focused on achieving good textural, structural, morphological properties of as-prepared materials for high electrochemical performance.
- Developed electrodes with high surface area, porosity, and electrical conductivity for designing EDLC, pseudo, and hybrid supercapacitor
- Designed the electrical double layer capacitor (EDLC), pseudocapacitor, and hybrid capacitor.
- Attained high energy density, power density, and long-term stability of the electrodes through electrochemical studies for high-performance energy storage applications.

Industrial Exposure:

- Visited centre for Nanomaterials, International Advanced Research Centre for Powder Metallurgy and New Materials **(ARCI)**,Hyderabad, India and studied the preparation of activated carbon and electrochemical evaluation using electrochemical work station**.(July 2018)**

Future Research and Perspective

✧ ***Materials for Energy Storage:***

Main Tasks: To develop efficient and cost-effective electrode materials for **High Rate Performance Supercapacitors and Lithium Ion Capacitor (LIC)**

Instruments knowledge and handled:

- X-Ray Diffraction (XRD)
- Brunauer–Emmett–Teller (BET)
- Scanning Electron Microscope (SEM)
- Raman spectrometer
- High Temperature Furnace 1200°C (Tubular & Box)
- Electrochemical Workstation
    - Single channel Potentiostat / Galvanostat (Biologic & Solartron)
    - Multichannel potentiostat / galvanostat -24 Channels (PARSTAT MC)

Software Skills:

- Origin
- Image J
- EC-Lab
- MS office, Excel, Power Point

Awards and Honors

- At present 2021-2022, Doing additional work as a **organizing committee member** in **Career Guidance Academy** of K.S.Rangasamy college of Technolgy, Tiruchengode, Namkkal, TamilNadu, India.
- At present 2021-2022, Took a charge as a chief I year student **convenor of Institute Innovation council**, K.S.Rangasamy college of Technolgy, Tiruchengode, Namkkal, TamilNadu, India**.**
- Participated in **dance** as one of the members of Vijayalakshmi Navaneetha Krishnan Madam dance group for welcoming NAAC commit tee members in **Madurai Kamaraj University** in the academic year **2005-2006**
- Won **second place** in **Shot-put** from **PG** group at the annual college meet held on August **2004.**
- Won **first place** in **Shot-put** from **PG** group at the college annual meet held on August **2003**.
- Awarded as among the top **10% out of the 33 candidates** in **National Graduate Physics Examination 2003** conducted by **Indian Association of Physics Teachers, PUNE.**
- Have been elected as committee **member in student's election council** in Vellalar College for Women, Erode for the year **2002**.
- Awarded **second prize** in Seminar Competition Conducted by the physics association in **III B.Sc** for the year **2002-2003.**
- Awarded the **second prize for proficiency** in part -III **Allied Chemistry** in **II B.Sc** for the year **2001-2002.**
- Awarded for effective participation in the **self-development workshop** held from **2.1.2003 to 4.1.2003** conducted by Sri Consultants, Coimbatore in Vellalar College for Women.
- Awarded the **first prize** in the **Quiz competition** conducted by the career Guidance association of Vellalar College for Women during **2002-2003.**
- Awarded the **II prize** in the **Bharathanatiyam competition** conducted by the Fine Arts Association of Vellalar College for Women during **2002-2003.**

- Awarded the **participation prize** in the **Quiz competition** conducted by the **Air-Coimbatore** during 2002-2003.
- Awarded **second prize** in **Moral Science** conducted by **St.Aloysius Girls Higher Secondary School**, Dharapuram during **1999-2000**.
- Awarded the **participation prize** as a student of **XI-I-B** in **St.Aloysius Girls Higher Secondary School, Dharapuram in the Quiz and Essay** competition in Inter School Competition conducted by Krishna Computer Systems held on **10th December 1998**.
- Got **first prize** in an **Essay** competition as a student of **X Std** in **St.Francis High School, Periyakodiveri,** during **1997-1998**.
- Awarded **first and second prizes** in '**THIRUKURAL COMPETITION**' when I was in **X Std** in **St. Francis High School,** Periyakodiveri, during **1996-1997.**
- Awarded **Winner** places in **sub-Junior Kho-Kho, Junior Kabbadi, Junior Tenikoite, Senior Kabbadi, Senior Kho-Kho, Junior Shot-put,** and **Discus and Senior Shot-put.**

List of Publications: Total Impact Factor > 11.834(2021), Average IF > 2.367, Total Number of Citations >37(2021)

Papers Published/Accepted and Communicated in the Journals

(✶-Corresponding author)

S. No.	Journal Papers/Book Chapter	Times Cited	Impact Factors (IF)
1.	**Malarvizhi M,** Meyvel S, Sandhiya M, Sathish M, Dakshana M, Sathya P, Thillaikkarasi D, Karthikeyan S, Design and fabrication of cobalt and nickel ferrites based flexible electrodes for high-performance energy storage applications. **Inorganic Chemistry Communications**, **123, 108344 (2021)**	**5**	**2.495**
2.	**Malarvizhi MuthuBalasubramanian,** Meyvel Subramani, Dakshana Murugan, Sathya Ponnusamy, Groundnutshell–derived porous carbon-based supercapacitor with high areal mass loading using carbon cloth as current collector. **Ionics, 26, 6297–6308(2020)**	**9**	**2.817**
3.	**M. Malarvizhi,** S. Meyvel, S. Karthikeyan, D. Thillaikkarasi, M. Dakshana, G. Ravikumar, Biomass-derived Nanoporous Carbon-Based Electrodes for High-Performance Symmetric Supercapacitor. **Journal of Environmental Nanotechnology, 8, 33 - 37 (2019)**	**-**	**-**
4.	**Malarvizhi M,** Meyvel S, Sathya P, Role Of Graphene Oxide (Go) in Enhancing Performance Of Energy Storage Devices, Graphene Oxide in Enhancing Energy Storage Devices, **Taylor and Francis(Book Chapter Under production -June 2022)**	-	**-**
5.	M.Dakshana, **S.Meyvel, M. Malarvizhi,** P. Sathya, R.Ramesh, S.Prabhu, and M.Silambarasan, Facile synthesis of $CuCo_2S_4$ nanoparticles as a faradaic electrode for high-performance supercapacitor applications, **Vacuum**, 174, 109218 **(2020)**	**19**	**3.627**
6.	M.Dakshana, S.Meyvel, **M. Malarvizhi,** P. Sathya, Electrochemical Investigation Of Hydrothermally Induced $MnCo_2S_4$ Nanoparticles As An Electrode Material For High-performance Supercapacitors, **Nanosystems physics chemistry mathematics, 11(2), 230-236 (2020)**	**3**	**-**
7.	M.Dakshana, **S.Meyvel, M. Malarvizhi,** P. Sathya, R.Ramesh, S.Prabhu, and M.Silambarasan, Facile Hydrothermal Synthesis of Zinc Cobalt Sulfide Nanosheets with Enhanced Electrochemical Performance as Supercapacitor Electrode Materials, **AIP CONFERENCE PROCEEDINGS** (International Conference on Multi-Functional Materials. **(2019)**	1	**0.40**
8.	K. Pushpalatha, M. Karthik, **M. Malarvizhi*** Synthesis and Characterisation of Thin Films using Tanner's Cassia, Nerium, Basil Leaf Extract Doped with Green Tea Extract Deposited by Single Dip Coating Method. **J. Environ. Nanotechnol.4(3),37-41 (2015)**	**-**	**-**

Conference proceedings

1	Design and Fabrication of flexible asymmetric hybrid supercapacitor using groundnut shell derived activated carbon and metal ferrite electrodes, **M.Malarvizhi**, S.Meyvel ,Proceedings of a three days Indo –Norwegian International Online Conference on **FARAON -2022** organized by **Institute of Energy Technology, University of Oslo, Norway and Madurai Kamaraj University, India** held on **02-04 February,2022.**
2	Effect of stirring Temperature on Structural and Morphological Characteristics of Spinel Co and Ni Ferrite Nanoparticles by Hydrothermal Route, **M. Malarvizhi**, M.Dakshana, S. Meyvel, proceedings of a two day International Conference on Innovations in Physical Sciences, Information Technology and Social Sciences held on **14th and 15th February 2020** at **Sri Vidya Mandir Arts & Science College, Uthangarai, Krishnagiri.**
3	Groundnut Shell derived Nanoporous carbon-based Supercapacitor with High Arial mass loading using carbon cloth as current collector, **M. Malarvizhi**, M.Dakshana, S. Meyvel, proceedings of Second International Conference on Advanced Materials Chemistry at the Interfaces of Energy, Environment and Medicine (AMCI) held on **30-31 January 2020** at **Manonmaniam Sundaranar University, Tirunelveli**.
4	Activated Microporous carbon derived from Groundnut Shell as Biomass precursor for High-performance supercapacitor Nanoparticles **M. Malarvizhi**, M.Dakshana, S. Meyvel, proceedings of India - UK Joint International Conference on Advanced Nanomaterials for Energy, Environment and Healthcare Applications held on **31st August & 1st September 2018** at **K.S.R. College of Arts and Science for Women, Tiruchengode, Namakkal.**
5	Comparative Study of Co and Ni substituted ZnO Nanoparticles: Synthesis, Structural, Optical, and Photocatalytic Activity P. SivaKarthik, **M. Malarvizhi**, Thangaraj, S. Meyvel, proceedings of BRNS & CSIR Sponsored International Conference on Energy, Environment and Advanced Materials for a Sustainable Future held on **23rd and 24th May 2017** at **Kongu Engineering College, Perundurai, Erode**.
6	High Sensitivity Humidity Sensor Based Copper (Cu) Doped SnO_2 Nanoparticles S. Meyvel, **M. Malarvizhi**, M.Dakshana, proceedings of International Conference on Advanced Materials for a Sustainable Future held on **26th and 27th Dec 2016** at **Ramakrishna College of Arts and Sciences, Coimbatore.**

Conference/ Seminars /Workshops /Webinar/FDP Attended

1) 5 Day National level **faculty Development Programme** on Methods of Material Synthesis organized by Department of Physics and Electronics under DBT STAR college Scheme**, Bhavan's Vivekanandha College of Science, Humanities and Commerce from 18th to 22nd January,2022.**
2) One day National webinar on Metal oxide Nano materials for Nanodevice Applications organized by Department of Physics in association with IQAC, **Kuvembu first Grade College and PG centre, Karnataka on 31st July 2020.**
3) Webinar on "Advanced Carbon Materials for Energy Storage" organized by PG and Research Department of Chemistry, **Chikkanna Government Arts College ,Tirupur on July 25,2020.**

4) Webinar on polymer - A century of advancement organized by PG and Research Department of Chemistry,**Chikkanna Government Arts College ,Tirupur on July 21,2020.**

5) Webinar on "Design and Fabrication of Supercapacitor as the next generation energy storage Device for electric vehicles" organized by Department of Mechanical Engineering, **SRM Institute of Science and Technology(Vadapalani Campus) on 01-June,2020.**

6) National Seminar on Advanced Materials (under UGC Autonomous Grant)organized by Postgraduate and Research Department of Physics, **Jamal Mohamed College, Tiruchirappalli** on **23rd January 2020**.

7) National workshop on Spectral, Electrochemical and Analytical Techniques organized by Department of Chemistry, **Periyar University, Salem** held on **8 & 9 February 2018**.

8) One day International seminar on Re-inventing Resources for Research organized by Department of Library, **Navarasam Arts and Science College** for Women, Arachalur, Erode held on **7th October 2017**.

9) One day Intensive workshop on Fundamentals of X-ray Diffraction organized by Department of Nanoscience and Technology (DST-FIST and UGC-SAP supported), **Bharathiar University, Coimbatore**, held on **31st August 2017**.

10) National Level Conference on Recent Trends in Material Science organized by Department of Physics, **Vivekanandha College of Arts and Sciences for Women, Elayampalayam, Namakkal**, held on **21st and 22nd February 2017**.

11) International Conference on Renewable Energy and Environment sponsored by SERB and organized by Department of Physics, **Sri Ramakrishna Mission Vidyalaya College of Arts and Science, Coimbatore** held on **15-16, December 2016**.

12) Attended the Faculty Development Programme organized by Department of Commerce and Management, **Vivekanandha College of Arts and Sciences for Women**, Tiruchengode on **23rd August 2014**.

13) Workshop on Physics Experiments Through computer interfacing organized by the Department of Physics, **Periyar University, Salem** during **December 9-10, 2010**.

14) National level seminar on Recent trends in physical sciences organized by the Department of Physics and Chemistry, **Vivekanandha College of Arts and Sciences for Women, Tiruchengode** on **22nd January 2010**

15) State-level workshop on Science Research Methodology organized by School of Physical Science, **Mahendra Arts and Science College, Kalipatti** on **30th and 31st August 2006**.

11) Seminar on Frontiers in Condensed Matter Physics (under the auspices of the UGC-DRS Programme, Phase II) held at School of Physics, **Madurai Kamaraj University, Madurai** on February 27 and 28, 2006.

Project Proposal Applied

- **Applied SERB-SRG** on Feb'2022 as **Principal Investigator** – **under evaluation process**

Personal Profile

Father's Name	: M.Muthubalasubramanian
Mother's Name	: V.P.Manimegalai
Date of Birth	: 27.04.1983
Age	: 38 years
Sex	: Female
Community	: BC
Caste	: Sozhia Vellalar
Nationality	: Indian
Marital status	: Married
Husband's Name	: M.Gobi Sankar
Children Names	: Daughter- G.M.Natchathra, Son- G.Kritik
Communication Address	: E-134, Kootapalli Colony, Tiruchengode, Namakkal(Dt), Tamilnadu, 637 214, India.
Mobile	: +91-9095792265, +91-9952453781
Email	: malarinresearch@gmail.com

Reference

Dr. Mani Karthik
Pr. Scientist E
Centre for Solar Energy Materials
International Advanced Research Centre for
Powder Metallurgy and New Materials **(ARCI)**
(Department of Science and Technology (DST),
Government of India)
Balapur, Hyderabad-500005, India
Office : +91-40-24452512
Mobile: +91-9959155218
Email: mkarthik@project.arci.res.in
karthik_annauni@yahoo.co.in
mkarthikchem@gmail.com

Dr.S .Meyvel
Assistant Professor
PG and Research Department of Physics
Chikkaiah Naicker College,
Erode, Tamil Nadu, India.
Ph.No.+91 90254-59171
Email: meyvelphd@gmail.com