



SHAKKTHIVEL P

Professor

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Academic Qualifications: M.Sc., Ph.D.

M.Sc., Ph.D., - Earned in Electrochemistry from Alagappa University, India (2001).

(PG- Highest credit holder in the University)

B.Sc., - Earned in Chemistry from Madurai Kamaraj University, India (1995)

Teaching Experience: 22 Years

Research Experience: 25 Years

Academic Experience

1. **Controller of Examination**- Alagappa University, Karaikudi, INDIA 21.12.2017 -2/10/2018
2. **Chief Warden** – Alagappa University Hostels, Karaikudi, Dec. 2016-Dec.2017

Additional Responsibilities

1. Carrier Guidance cell
2. Personality development cell
3. Board of studies member in NanoScience and Technology
4. Board of studies member in NanoScience and Technology Specialization in Chemistry
5. M.Phil and Ph.D., selection committee Member
6. Departmental Research Committee Member
7. Anti-ragging committee member
8. Departmental Purchase committee member

Areas of Research

Li-ion Batteries and Supercapacitor

Magnetic Nanoparticles & Targeted drug Delivery

Modified electrodes & Bio-molecule diagnosis

Research Supervision / Guidance

	Program of Study	Completed	Ongoing
Research	PhD	6	5
	M.Phil	10	--
Project	M.Tech	2	--
	M.Sc	30	--

Patents:

1. India Patent filed- 2021 (01)

Publications

International		National		Others
Journals	Conferences	Journals	Conferences	Books / Chapters / Monographs / Manuals
63	40	7	30	02

Cumulative Impact Factor (as per JCR) :	248.1
h-index	: 20
i10 index	: 41
Total Citations	: 1830

Recent Publications

1. Strategic Design of Lithium-Rich Hierarchical $\text{Li}_{1.2}\text{Mn}_{0.54}\text{Ni}_{0.13}\text{Co}_{0.13}\text{O}_2$ Microcubes as High-Capacity Cathodes for Lithium-Ion Batteries Srinivasan Alagar, Muthukumar Ganesan, Chelladurai Karuppiah, Chun-Chen Yang, Vivek Bagchi, and Shakkthivel Piraman ACS Applied Energy Materials 2023 6 (2), 622-635, DOI: 10.1021/acsaem.2c02372.
2. Label-free electrochemical detection of cancer biomarkers DNA and anti-p53 at tin oxide quantum dot-gold-DNA nanoparticle modified electrode, Bioelectrochemistry, Yesurajan Allwin Richard, Sebastinbaskar Aniu Lincy, Shakkthivel Piraman, Venkataraman Dharuman, Volume 150, 2023, 108371, ISSN 1567-5394, <https://doi.org/10.1016/j.bioelechem.2023.10837>
3. Synthesis of novel FeM (Co, Ni, Cu & Zn)/PDMS for magnetic actuators thin film fabrication by greener route, Nagamani Selvakumaran, Marimuthu Gowsalya, Karuppasamy Gurunathan, Piraman Shakkthivel, Journal of Magnetism and Magnetic Materials, Volume 52, 2022, 169139, doi.org/10.1016/j.jmmm.2022.169139. (IF- 3.1)
4. Metal-organic frameworks derived spinel NiCo_2O_4 /graphene nanosheets composite as a bi-functional cathode for high energy density Li-O₂ battery applications Raja Palani, Chelladurai Karuppiah, Chun-Chen Yang, Shakkthivel Piraman, International Journal of Hydrogen Energy, Volume 46, Issue 27, 2021, Pages 14288-14300, doi.org/10.1016/j.ijhydene.2021.01.194 (IF- 7.14)
5. Improving structural and thermal stability of $\text{LiNi}_{0.8}\text{Co}_{0.15}\text{Al}_{0.05}\text{O}_2$ by a fast-ionic-conductive LiAlSiO_4 surface coating for Li-ion batteries," Manojkumar Seenivasan, Chun-Chen Yang, She-huang Wu, Ying-Jeng Jame Li, Wen-Chen Chien, Shakkthivel Piraman, Shingjiang Jessie Lue, Electrochimica Acta, Volume 387, 2021, 138620, doi.org/10.1016/j.electacta.2021.138620 (IF- 7.3)
6. Graphene Nanosheet-Wrapped Mesoporous $\text{La}_{0.8}\text{Ce}_{0.2}\text{Fe}_{0.5}\text{Mn}_{0.5}\text{O}_3$ Perovskite Oxide Composite for Improved Oxygen Reaction Electro-Kinetics and Li-O₂ Battery Application Karuppiah C, Wei CN, Karikalan N, Wu ZH, Thirumalraj B, Hsu LF, Alagar S, Piraman S, Hung TF, Li YJ, Yang CC. Nanomaterials (Basel). (IF- 5.7) 2021 Apr 16;11(4):1025. doi:

7. Solid-State Ball-Milling of Co₃O₄ Nano/Microspheres and Carbon Black Endorsed LaMnO₃ Perovskite Catalyst for Bifunctional Oxygen Electrocatalysis. Karuppiah, C.; Thirumalraj, B.; Alagar, S.; Piraman, S.; Li, Y.-J.J.; Yang, C.-C. *Catalysts* (IF- 4.5) 2021, 11, 76. <https://doi.org/10.3390/catal11010076>
8. "Ultra-stable Mn_{1-x}Ni_xCO₃ nano/sub-microspheres positive electrodes for high-performance solid-state asymmetric supercapacitors" Srinivasan Alagar, Rajesh Madhuvilakku, Shakkthivel Piraman, *Scientific Reports* (IF- 5.0) 10, 8871 (2020). <https://doi.org/10.1038/s41598-020-64867-8>.
9. "Temperature Controlled Synthesis of Li- and Mn-Rich Li_{1.2}Mn_{0.54}Ni_{0.13}Co_{0.13}O₂ Hollow Nano/sub-microspheres Electrodes for High Performance Lithium Ion Battery" Srinivasan Alagar, Chelladurai Karuppiah, Rajesh Madhuvilakku, Shakkthivel Piraman, and Chun-Chen Yang *ACS Omega* (IF-2.87) 2019 4 (23), 20285-20296. DOI: 10.1021/acsomega.9b02766
10. "Nano-architected porous Mn₂O₃ spheres/cubes vs rGO for asymmetric supercapacitors applications in novel solid-state electrolyte" Srinivasan Alagar, Rajesh Madhuvilakku, Ramalakshmi Mariappan, Shakkthivel Piraman *Journal of Power Source* (IF-8.247), Nov. 2019 <https://doi.org/10.1016/j.jpowsour.2019.227181>
11. "Glassy carbon electrodes modified with reduced graphene oxide-MoS₂-poly (3, 4-ethylene dioxythiophene) nanocomposites for the non-enzymatic detection of nitrite in water and milk" Rajesh Madhuvilakku Srinivasan Alagar Ramalakshmi Mariappan Shakkthivel Piraman, *Analytica Chimica Acta*, (IF-5.977) 2019 DOI: 10.1016/j.aca.2019.09.043
12. "One-dimensional NiFe₂O₄ nanorods modified with sulfur-rich spherical carbon nanoparticles for simultaneous voltammetric determination of ascorbic acid, dopamine and uric acid Rajesh Madhuvilakku, Shakkthivel Piraman " *Microchimica Acta*, 2019 (IF- 5.47)) <https://doi.org/10.1007/s00604-019-3496-4>
13. "Synthesize of porous LiNi_{0.5}Mn_{1.5}O₄ microcubes for lithium-ion battery and supercapacitor applications, Srinivasan Alagar, Rajesh Madhuvilakku, Ramalakshmi Mariappan, Shakkthivel Piraman, *Journal of Materials Science: Materials in Electronics*, (IF- 2.32)2017, 1-9, DOI 10.1007/s10854-017-8019-7
14. "Green One-Pot Synthesis of flowers-like Fe₃O₄/rGO hybrid nanocomposites for effective electrochemical detection of Riboflavin and low-cost Supercapacitor Applications" Rajesh Madhuvilakku, Srinivasaan Alagar, Ramalakshmi Mariyappan and Shakkthivel Piraman, *Sensors and Actuators B chemical*, (IF-7.1) 2017, 253, 879-892.
15. "Facile biosurfactant assisted biocompatible Fe₂O₃ nanorods and nanospheres synthesis, magneto physicochemical characteristics and their enhanced biomolecules sensing ability" Shakkthivel Piraman, Sasikala Sundar, Ramalakshmi Mariappan, and Kim Min, *RSC Advances*, 2016,6, 77133-77142
16. "Novel CaCO₃-Polymer Nanocomposite Fillers for the improvement of Bagasse based Papers" Shakkthivel Piraman, Maruthaiya Karupaiah, Ramalakshmi Mariappan, Srinivasan Alagar, Kim Min, *TAPPI Journal* (Accepted June 2016)

17. "Nanospheres and nanoleaves of α -Fe₂O₃ architecturing for magnetic and biomolecule sensing applications" Shakkthivel Piraman, Sasikala Sundar, Ramalakshmi Mariappan, Young Yun Kim, Kim Min, *Sensors and Actuators B – Chemical*, B 234 (2016) 396-394.
18. "Improvement of Bagasse based Paper Properties using Definite Size Effect of CaCO₃ Nanofillers" Maruthaiya Karuppaiah, Sasikala Sundar, Ramalakshmi Mariappan, Rajesh Madhuvilakku, Manisankar Paramasivam, Shakkthivel Piraman
"International Journal of Scientific Research, 5, 3 (2016) 16-18.
19. "Greener saponin induced morphologically controlled various polymorphs of nanostructured iron oxide materials for biosensor applications" Sasikala Sundar and Shakkthivel Piraman, *RSC Advances*, 5 (2015) 74408-74415
20. "The electrochemical synthesis of Pt particles on ZrO₂-ERGO modified electrodes with high electrocatalytic performance for methanol oxidation" A.T.Ezhil Vilian, S M Chen and Shakkthivel Piraman, *New Journal of Chemistry*, 39 (2015) 953-961.
21. "A promising photoelectrochemical sensor based on a ZnO particle decorated N- doped reduced graphene oxide modified electrode for simultaneous determination of catechol and hydroquinone" A. T. Ezhil Vilian, Muniyandi Rajkumar, Shen-Ming Chen, Chi-Chang Hu and Shakkthivel Piraman, *RSC Adv.*, 4 (2014) 48522-48534.
22. "Effect of substrate temperature on indium tin oxide (ITO) thin films deposited by jet nebulizer spray pyrolysis and solar cell application" S.Maikannu, M. Kashif, N. Sethupathy. V.S. Vidhya Shakkthivel Piraman, A. Ayeshamariam, M. Bououdina, Naser M. Ahamed, M. Jayachandran. *Materials Science in Semiconductor Processing*, 27 (2014)562-568.
23. "Preparation and characterizations of ITO thin films with different Sn concentration by Jet Nebuliser technique" S. Marikkannu, A. Ayesha mariyam, V.S. Vidhya, N. Sethupathy and Shakkthivel Piraman, *Journal on Photonics and Spintronics*, vol. 3, 2 (2014) 8572-8580.
24. "Studies on Jet Nebulizer pyrolysed Indium Oxide Thin films" S. Marikkannu, M. Kashif, A. Ayesha Mariyam, N. Sethupathy, V.S. Vidhya, S. Piraman and M.Jeyachandran, *Journal of Ovonic Research*, Vol. 10, 4 (2014) 115-125.
25. "Mn₃O₄ Nanoparticle Synthesis Via Ionic Liquid –Assisted Route" Ramalakshmi Mariappan, Min Kim and Shakkthivel Piraman, *J Superconductivity and Novel Magnetism*, Vo.27 (2014)2595-2598.
26. "Electrochemical preparation of Yttrium hexacyanoferrate on reduced graphene oxide and its application to analgesic drug sensor" Balamurugan Devadas, Huai-Tse Yeh, Shen-Ming Chen and Shakkthivel Piraman, *Electroanalysis*, 26 (2014) 1712- 1720
27. "Synthesis and characterization of amine modified magnetite nanoparticles as carriers of Curcumin-anticancer drug" Sasikala Sundar, Ramalakshmi Mariappan and Shakkthivel Piraman, *Powder Technology*, 26 (2014) 321-328.
28. "A low temperature synthesis of activated carbon from the bio waste for the simultaneous electrochemical detection of hydroquinone and catechol" RajeshMadhu, Shen-Ming Chen, Selvakumar Palanisamy and Shakkthivel Piraman, *J of Electroanalytical Chemistry*, 727 (2014) 84-90.
29. "Electrochemical behavior of LiMn₂-X-YTiXFeYO₄ as cathode material for lithium ion

Batteries” Suganya J, Ramalakshmi M, Sasikala S and Shakkthivel P, J of Electroanalytical Chemistry, Vol.720-721, 15 (2014), 58-63.

30. “Transesterification of Palm Oil Catalyzed by Fresh water Bivalve Mollusk (Margaritifera Falcata) Shell as heterogeneous catalyst” Rajesh Madhuvillaku, Ramalakshmi Mariappan, Suganya Jeyapal, Sasikala Sundar , Shakkthivel Piraman, Industrial and Engineering Chemistry Research, Vol.49, No.52, (2013), 17407.
31. “Biodiesel Synthesis by TiO₂-ZnO mixed oxide nanocatalyst catalyzed Palm Oil transesterification process” Rajesh Madhuvillaku and Shakkthivel Piraman, Bioresource Technology” Vol.150, (2013) 55.
32. “Effect of temperature on indium tin oxide ITO thin flim deposited by Jet nebulizer spray pyrolysis” S. Marikkannu, N. Sethupathy, V.S. Vidhya and Shakkthivel Piraman, Journal of Applied Sciences Research, 9 (10) : 5541-5547, 2013.

Funded Research Projects

Completed Projects

S. No	Agency	Period		Project Title	Budget (Rs. In lakhs)
		From	To		
1	DST, New Delhi	2009	2012	Nanoparticle cathode.....Li-Ion cells	19.96
2	UGC, New Delhi	2010	2013	Novel Heterogeneous.... From vegetable Oils	8.41
3	AURF, Karaikudi	2009	2010	Synthesis of Magnetic..... Characterization	0.64
4	DST SERB, New Delhi	2015	2018	Novel conducting C layer embedded...-electric vehicle Applications	23.65
5	RUSA	2018	2020	Advanced Nanomaterials for Sustainable Energy and Sensor Applications	4.0

Ongoing Projects

S. No	Agency	Period		Project Title	Budget (Rs. In lakhs)
		From	To		
1	TANSC HE	2021	2024	Porous Nano materials for Sensors, Magnetic and Energy storage and Conversion Application	50.58
2	RUSA 2.0	2022	2023	Advanced Nano materials for Energy and Environmental Application.	10.00

3	RUSA 2.0 (EIR)	2023	2024	Developing Holistic Infrastructure of High voltage solid state li-ion battery for electric mobility application .	20.00
4	RUSA 2.0 (EIR)	2023	2024	A Compact Flow Capacitor Analysis Using Gel Electrolyte for future Energy Storage Devices.	12.00
5	RUSA 2.0 (EIR)	2023	2024	Novel MnO ₂ -S Mesoporous Hetero nanostructure for High Power Density Li-s Battery Development	2.00
6	RUSA 2.0 (EIR)	2023	2024	Nanostructured Cobalt free Transition Metal Oxide(NMA) Electrode.....for High Voltage Li-ion battery	2.00

Distinctive Achievements / Awards

1. Visiting Professor – Ming Chi University of Technology, Taiwan, 2018
2. Foreign research Professor Fellowship -2015-2016, Dongguk University, S Korea.
3. Brain Korea 21 fellowship – 2007
4. Taiwan National Science Council Post Doc.felloship-2006.
5. Taiwan National Science Council Visiting Scientist fellowship- 2005
6. Murdoch University Visiting Scientist fellowship – 2002

Events organized in leading roles

Number of Seminars / Conferences / Workshops / Events organized: 12

1. International virtual conference on Advanced Nanomaterials for Energy and Environmental Applications (ICANEE-2020), 16-18, September, 2020, Department on Nanoscience and Technology, Alagappa Universtiy, Karaikudi, INDIA.
2. National Seminar on “Nanomaterials for Specialized Applications” at Alagappa University, Karaikudi on 24-25, January 2017.
3. “Board of studies was organized with the **Italian Scientist and Professors** August 2013 at the Department of NanoScience and Technology, Alagappa University, Karaikudi, INDIA.
4. Seminar on Nanomaterials for Energy and BioSensor Applications presented by Professor “S.M.Chen Feb. 2013 at the Department of NanoScience and Technology, Alagappa University, Karaikudi, INDIA”
5. Special Seminar on “TEM Utility was organized December - 2012 at the Department of NanoScience and Technology, Alagappa University, Karaikudi, INDIA”
6. International Conference on Advancement of Nanoscience and Nanotechnology (ICOANN – 2010) March 1-3, 2010, Department of Nanoscience and Technology, Alagappa University, Karaikudi, INDIA.
7. “National Symposium on Importance of Nanoscience and Technology” (INST '09) March 14 & 15, 2009, Department of Nanoscience and Technology, Alagappa

University, Karaikudi, INDIA.

8. "International Colloquium on Emerging Biotechnologies in Agriculture, Animal health and Productivity" (ICEB 09) February 22-27, 2009, Department of NanoScience and Technology, Jointly organized with School of Biotechnology Alagappa University, Karaikudi, INDIA.
9. "National Seminar on Application Oriented Nanomaterials" (**NANOMAT-2005**) March 10-11, 2005, Department of Industrial Chemistry, Alagappa University, Karaikudi, INDIA.

Events Participated

Conferences / Seminars / Workshops: 58

1. **Twenty Second National Convention of Electrochemists (NCE-22) held on 26-27 Aug. 2022 at PSG Tech, Coimbatore.**

Paper Presented:

Facile 2d/2d Hierarchical MnNi-LDH/WS₂ Heterostructures for High Performance Supercapacitor Applications

Low Temperature Hydrothermal Synthesis of Spinel ZnCo₂O₄ Nanoflowers for Supercapacitor Applications

2. **Two days International Virtual Conference on Renewable Energy Science and Technology (ICREST-2020) held on 28-29 Sep. 2020 at Dept. of Energy Science, Alagappa University, Karaikudi.**

Paper Presented

"Lithium and Manganese rich porous Li_{1.2}Mn_{0.54}Ni_{0.13}Co_{0.13}O₂ microcubes high capacity cathodes for Li-ion batteries"

"Synthesis of Porous Co₃O₄-Mn₂O₃ composite spheres electrode for high performance supercapacitors"

"A facile hydrothermal synthesis of ZnCo₂O₄-BN composite microflowers for high-performance supercapacitor applications"

3. **International Conference on Nanomaterials driven advance in chemical and biosensors (NANOSE -2019) held on 27-29 Nov. 2019 at Dept of Biosensors and and Bioelectronics, Alagappa University, Karaikudi.**

Paper Presented

"Sonochemical Synthesis and Characterization of Strontium Cerate Nanoparticles Modified Glassy

Carbon Electrode for the Selective and Sensitive Electrochemical Detection of Dopamine”

- 4. International Conference on Advanced Materials for Sustainable Energy and Sensors – INCAMSES-2019 held on 16 & 17 September 2019 at department of Physics, Alagappa University, Karaikudi.**

Paper presented

“Synthesis and Electrochemical Performance of $\text{Li}_{1.2}\text{Mn}_{0.54}\text{Ni}_{0.13}\text{Co}_{0.13}\text{O}_2$ Microcubes and N-Doped Carbon Spheres for Aqueous Hybrid supercapacitor Applications”

“Highly Sensitive Electrochemical Detection of Dopamine Based on Strontium Molybdate Modified Glassy Carbon Electrode”

- 5. Third International Conference on Advanced Materials 2019 held on 9-11 August 2019 at Centre for Nanoscience and Nanotechnology, Mahatma Gandhi Universtiy, Kottayam, Kerala.**

Paper presented

“Hollow and Porous microspheres of CoMn_2O_4 as next generation electrode materials for high-performance lithium-ion batteries”

- 6. International Conference on “Frontier Areas in Chemical Technologies -2019” held on 25-26 July 2019 at department of Industrial Chemistry, Alagappa University, Karaikudi.**

Paper presented

“A Novel electrochemical dopamine sensor based on Hierarchical MoS_2 wrapped CuMn_2O_4 nanocomposite modified gold electrode”

“Hydrothermal synthesis of NiMn_2S_4 Nanosheets arrays for High-performance of supercapacitor applications”

- 7. International Conference on Applied Nanoscience and Nanotechnology (ICANN-2019), held on 18 & 19 March 2019 at Department of Nanoscience and Nanotechnology, Alagappa University, Karaikudi.**

Paper presented

“Graphene- Bi_2O_3 - WO_3 nanocomposites photo-catalyst for the degradation of rose bengal and methylene blue dyes”

“Precise Preparation of Porous Li-rich Hierarchical Cubes for $\text{Li}_{1.2}\text{Mn}_{0.54}\text{Ni}_{0.13}\text{Co}_{0.13}\text{O}_2$ HighPerformance Li ion Battery Applications”

“Development of L-Dopa Electrochemical Sensor based on Graphitic Carbon Nitrite decorated WO_3 Nanoparticles Modified Gold Electrode”

“Highly Sensitive Dopamine Sensor based on MnCu_2O_4 microspheres decorated with MoS_2 nanosheets”

“A Facile Binder Free Hydrothermal synthesis of NiMn_2S_4 Nano sheet arrays for High-Performance of Supercapacitor Applications”

“Synthesis of Carbon Spheres Supported NiMn_2O_4 Hollow Spheres Electrode for High Performance Supercapacitors”

“Fabrication of Electrochemical Theophylline Sensor based on Nickel Hexacyanoferrate / Curcumin hybrids modified Glassy Carbon Electrode”

8. 2018 Green Energy Battery conference and poster competition on Ming Chi University of Technology, New Taipei city, Taiwan & 5th Dec. 2018.

Paper presented

“Lithium rich Hierarchical $\text{Li}_{1.2}\text{Mn}_{0.54}\text{Ni}_{0.13}\text{Co}_{0.13}\text{O}_2$ Microbes as high capacity for Li-ion batteries”

9. The 2018 International Conference on Green Electrochemical Technologies, Tainan, Taiwan & 22-24 Nov. 2018

Paper presented

“Temperature controlled synthesis of Li and Mn rich $\text{Li}_{1.2}\text{Mn}_{0.54}\text{Ni}_{0.13}\text{Co}_{0.13}\text{O}_2$ Layered electrode for High performance Lithium Ion Battery Applications”

10. International Conference on Frontier Areas in Chemical Technologies - 2017 (FACTs-2017) held on 6-8 July, 2017 at Alagappa University

Paper presented

“Synthesis of Mn_2O_3 nanomaterials for high-performance asymmetric supercapacitor applications

11. International Conference on Renewable Energy Science and Technology (ICREST-2017) held on March 10 & 11 2017 at Alagappa University.

Paper Presented

“Design and Development of Glucose sensor based on a Novel Nanocomposite Electrode”

“Design and Development of Glucose sensor based on a Novel Nanocomposite Electrode”

“Synthesis of and characterization of $\text{LiNi}_{0.23}\text{Co}_{0.23}\text{Mn}_{0.54}\text{O}_2$ cathode materials for high performance Li-ion battery applications”

“Kinetically Controlled synthesis of Ni doped MnCO_3 nanospheres as High Performance Supercapacitor Applications”

12. National Conference on Advanced Materials: Processing and Characterization AMPC-2017 held on 27&28 Feb. 2017 at NIT Trichy,

Paper Presented

“One-Pot Synthesis of Dendrites-Like Fe_3O_4 -reduced Graphene Oxide nanocomposites for Supercapacitor Applications”

Electrochemical Performance of $\text{Li}_{1.2}\text{Mn}_{0.6}\text{Ni}_{0.2}\text{O}_2$ and N-GNS based full cell aqueous rechargeable Li- ion battery”

13. 11th International Symposium on Advances in Electrochemical Science and Technology, (iSAEST -11) held on Dec. 8-10, 2016 at Chennai, INDIA.

Paper Presented

“Porous nanorods-like $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ wrapped graphene nano-ribbon composite for high performance Li-Ion battery”

14. 5th international conference “Sustainable utilization of tropical plant biomass: Bioproducts, Biocatalyst and Biorefinary (SutB4) held on Nov 17&18, 2016, Coimbatore.

Paper Presented

“La/Sr titanate solid base heterogeneous catalyst catalyzed Palm Oil transesterification”

15. First Symposium on Advanced Functional Materials: Energy Conversion and Storage (FUNMAT-2016) held on May 26 - 28, 2016 at CSIR-CERI, Karaikudi, India

Paper presented

“Precise preparation of high performance $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$ nanocubes for energystorage applications”

16. The Korean Society of Industrial and Engineering Chemistry (KSIEC) held on 2-4, May 2016 at Yeosu, S korea.

Paper presented

“Conductive layer encapsulated LMO/xG Cathodes for high power Li-ion batteries”

17. International Conference on Frontier Areas in Chemical Technologies – 2016 (FACTS-2016) held on 21-23, March 2016, Alagappa Unviersity, INDIA.

Papers Presented

“Manganese dioxide Nanoparticles for Electrochemical Energy Storage and Conversion Applications”

“In situ Synthesis of Macroporous Fe₂O₃ Fiber Nanomaterials by Cellulose Fibers for Electrocatalytic Oxidation of Dopamine”

“Improvement of Bagasse based Paper Critical Properties using CaCO₃ Nanofillers”

Special Lecture on “Progress and Challenges in Next Generation Energy Storage Materials” at Department of Energy Engineering at UNIST, Ulsan, South Korea on Feb.18th 2016.

18. International Conference on Nanotechnology (NANO- 2015) held on 7-10December 2015 at KSR College , Thiruchengode, India

Paper Presented

“Synthesis and Characterization of Graphene Coated LiMn_{1.5}Ni_{0.5}-xBi_xO₄ Nanocomposites for Li-ion battery”

“Electrochemical Properties of Cu - Doped and Carbon Coated LiFePO₄ Cathode Materials for Li-Ion Batteries”

“Fabrication of Ru Doped SnO₂/Graphene Nanosheets Hybrid Nanocomposites Based Biosensor for the Selective Electrochemical Detection of Dopamine”

“Microwave-Assisted NiFe_{1.95}Mn_{0.05}O₄ Magnetic Nanoparticle Characterization For Supercapacitor Application”

19. International Conference on Recent Advancements in Materials (ICRAM-2015) heldon 16-17th October, 2015 at Anna University, Thiruchirappalli, India.

Paper Presented

“Fabrication of Ru doped SnO₂/Graphene nanosheets hybrid nanocomposites modified electrode non-enzymatic glucose sensor”

“Structural and Electrochemical Characteristics of graphene oxide coated LiNi_{0.45}Bi_{0.05}Mn_{1.5}O₄ cathode for lithium ion battery”

20. **National conference on Advanced Functional Materials held at SRM University, Chennai, during 8th & 9th May, 2015.**

Paper Presented

“Microwave Assisted NiMn₂O₄ nanoparticle Synthesis and Their Structural Properties”

21. **ALU Physics dept workshop – March 2014**

22. **International Workshop on “Frontier Areas in Chemical Technologies – 2014 (FACTs-2014)” held at Alagappa University, Karaikudi, during 21st & 22nd Feburary 2014.**

23. **International Conference on “Recent trends in Textile and Electrochemical Sciences(RATES -2013) in Alagappa University, Karaikudi, Tamil Nadu, on 21-23 March, 2013.**

Paper presented

“Synthesis and Characterization of Graphene Nanosheets”

“New combustion route synthesis of ZnO nanocatalyst and its characterization for Biodiesel Application”

“Transesterification of Palmolein oil to Biodiesel using Ba/Ti/Na Nanocomposite catalysts”

“Synthesis of CaO-La₂O₃ Metal Oxide Nanocatalyst for Bio-Diesel Application”

“Nanoflakes of Mn₃O₄ synthesis by Novel Precipitation Method and their Characterization”

“Development of Lithium Ion battery using a new cathode material”

“Anti-cancer drug Loading and release study of 3-APTES coated Fe₃O₄ Nanoparticles”

“Dual transition metal ions doped LiMn₂O₄ as cathode material for lithium ions batteries”

24. **National Conference on “Recent Application of Nanomaterials in Chemistry and Environmental research” in Kongu Engineering College, Perundurai, Tamil Nadu, on July 20 & 21, 2012.**

Paper presented

“Electrochemical and Thermal properties of Tungsten doped LiMn₂O₄ cathode materials”

“3-Aminopropyl triethoxysilane Coated Fe_3O_4 – Magnetite Nanoparticle Synthesis, Characterization and Its Binding Ability on Curcumin Anticancer Drug”

“Mixed metal oxide MgO - CaO Heterogeneous nanocatalyst Synthesis and Characterization for Biodiesel Application”

“Structural and Thermal behavior of LiMnFeO_4 cathode materials for Li-ion batteries”

25. **“220th ECS meeting & Electrochemical Energy Summit in Boston” held at Massachusetts, USA on Oct. 9-14, 2011.**

Paper presented

“Effect of Molybdenum on the Electrochemical and Thermal properties of LiMn_2O_4 cathode materials”

26. **National Conference on Recent trends in Synthesis (RTGS -2011), held at Alagappa University, Karaikudi on August 5-6, 2011.**

Papers presented

“Nanomagnetite 3-aminopropyl triethoxysilane coated Fe_3O_4 particle synthesis, characterization and its binding ability on curcumin anticancer drug”

“Electrochemical and Thermal properties of Molybdenum doped LiMn_2O_4 cathode materials”

27. **9th International symposium on “Advances in Electrochemical Science and Technology” held at Hotel Green Park, Chennai, December 2-4, 2010.**

28. **“International Seminar on Application of Confocal Microscopic Techniques in Animal Health Management” held at Alagappa University, Karaikudi March 29-30, 2010**

Paper Presented

“Application of Confocal Microscopy in Sensing the Magnetically Binded Drug Delivery”

29. **International Conference on “Materials for the Millennium” held at Cochin University of Science and Technology, Kochi, January 11-13, 2010.**

Paper Presented

“Magnetic Nanoparticle Synthesis through Sol-gel Technique and their Characteristics”

30. National workshop on “Theory and Practice of X-Ray Diffraction Techniques (TPXRDT-2009)” held at **Alagappa University, Karaikudi, July 13 – 17.**

31. International Colloquium on “Emerging Biotechnologies in Agriculture, Animal Health and Productivity” (ICEB ‘09) held at **Alagappa University, Karaikudi, February 22 -**

27, 2009.

32. "National Symposium of on Importance of Nanoscience and Technology (INST '09)" held at **Alagappa University, Karaikudi, March 14 -15, 2009.**

33. National Seminar on "The Role of Genomics and Bioinformatics in Animal Health and Management (NSGB '09)" held at **Alagappa University, Karaikudi, March 25-26, 2009.**

Paper presented

"Magnetic Nanoparticles for the Detection of Cancer"

34. National Seminar on "Recent Trends in Molecular Modelling and Drug Design" (NaSMoID '09) held at **Alagappa University, Karaikudi, March 18 -19, 2009.**

35. National Workshop on "Crystal Growth and Characterization" (NWCGC - 2009) held at **Alagappa University, Karaikudi, March 16, 2009.**

36. National Seminar on "Advancements in Bioelectronics and Biosensors" (NSABB '09) held at **Alagappa University, Karaikudi, March 19-20, 2009.**

37. National workshop on "Green Process Techniques for Industrial Application (GREPTIA 2009)" held at **Alagappa University, Karaikudi, March 20 -21, 2009.**

38. **International Conference on "Electrochemical Power Systems" (ICEPS 2008) held at Thiruvananthapuram, Kerela, November 26 - 28, 2008.**

Paper presented

"Development of Cuprous Chloride Cathode for Manganese Reserved Batteries"

39. **"14th International Congress on Catalysis (14th ICC-2008)" held at COEX Centre, Seoul, South Korea, July 13-18, 2008.**

Paper presented

"Sol-gel derived P_2O_5 - ZrO_2 - TiO_2 - SiO_2 Proton conducting glass for Fuel cell Application"

"Alloy catalyst for hydrolysis of chemical hydrides (e.g.sodium borohydride, ammonia-borane"

40. **"213th Electrochemical Society meeting" held at Phoenix, Arozona, United States of America May 2008.**

Paper presented

"Ti doped Lithium Nickelate cathode nanomaterial for Lithium ion cells"

"Characterization of Pulse Plating with Au for improving the Micro-DMFC current

collectors”

41. **“4th International Fuel Cell Expo 2008” held at Tokyo, Japan March 2008.**

42. **“European Fuel cells and Technology” held at Rome December 2007.**

Paper presented

“Improvement of micro-DMFC current collectors by Au pulse electroplating”

43. **“Carbon Saves the Earth (CSE 2007) – Carbon Materials for Energy Devices and Environmental Protection” held at Kyushu University in Kasuga city and BeppuwanRoyal Hotel in Beppu city, Japan, 5-7 Nov. 2007.**

Paper presented

“Commercialization efforts of hydrogen energy in Korea”

44. **“The Korean Institute of Chemical Engineers, Autumn meeting” held at KAIST, Daejeon, South, Korea, Oct.26&27, 2007.**

Paper presented

“Investigation of metal alloy and metal alloy suspension catalyst for hydrogen release from NaBH_4 for PEMFC application”

45. **“International Conference on Biophysical Organic and Inorganic Chemistry”, held at Bharath University, Chennai on Aug. 26-30, 2007.**

Paper presented

“Synthesis and Evaluation of $\text{LiCo}_{1-x}\text{Bi}_x\text{O}_2$ Nanoparticles as cathode materials for Lithium rechargeable batteries”

46. **“The 11th Korea-Japan Symposium on catalysis” held at Yonsei Unviesity, Seoul, South Korea, May 21-23, 2007.**

47. **“The Korean Electrochemical Society Meeting (spring)” held at Chonbuk National University, Jeonju, South Korea, April 12-13, 2007**

48. **“Instronics -2007” Symposia held at RMK Engineering College, Kavaraipettai, Chennai, Feb, 2007.**

49. **“National Conference on Nanomaterials & Applications” held at Amity Institute of Nanotechnology, Noida, May 27-28 2005.**

Papers presented

“Synthesis of $\text{LiCo}_{1-x}\text{Bi}_x\text{O}_2$ nanoparticle cathode materials for lithium rechargeable batteries”

50. **“National Conference on Application Oriented Nanomaterials (NANOMAT-2005)” held at Alagappa University, Karaikudi, March 10 – 11, 2005**

Paper presented

“Electrochemical behaviour of Nanoparticle size LiTiO_2 for Lithium secondary batteries”

51. **“Tenth National congress on Corrosion Control” at Madurai National corrosion Council of India (NCCI), September 6 – 8, 2000.**

Paper presented

“Evaluation of corrosion inhibition properties of 1, 2 N -diphosphonomethyl amino diethanoic acid in cooling water for mild steel”

52. **“National Seminar on environmental awareness, education and management for sustainable rural development” (NSERD) held at Sri Venkateswara University – Tirupati,(AP), Aug 24 – 26, 2000.**

Paper presented

“Drinking water resources Management in a rural habitation of Sivaganga district, Tamil Nadu, India”.

53. **“Ninth National convention of Electrochemists” held at SVRCET, Surat, SAEST, India, Nov 26 – 27, 1999.**

Paper presented

“Role of Poly (Maleic anhydride – co – Methacrylic Acid) as Antiscalant in CaCO_3 and CaSO_4 brines”

54. **National Seminar on recent trends in material science, Alagappa University, Karaikudi, May 3, 1999.**

Paper presented

“Corrosion inhibition properties of Andrographs paniculatta extract on mild steel in acidic media”

55. **“Sixth International Symposium on Advances in Electrochemical Science and Technology” held at Hotel Trident, Chennai SAEST, India, Nov 26 – 28, 1998.**

Papers presented

- i. "Inhibition of mild steel corrosion by extracts of Pongamia Glabra and Annona Squamosa in Acidic Media" and
 - ii. "Studies on the condensation products of cyclohexyl amine with anisaldehyde and furfuraldehyde as acidizing inhibitors"
56. National Seminar on Emerging Trends in Electrochemical, Textile and Polymer Industries held at **Alagappa University, Karaikudi, April 22 – 23, 1996.**
57. Symposium on Mathematical Applications in Chemistry, **Alagappa University, Karaikudi, April 7, 1996.**
58. "Workshop on stellar structure and evolution" held at **St. Berchman's college, Changanassery, Kerala, Inter University Centre for Astronomy and Astrophysics, Pune UGC, October 3 – 6, 2000.**

Other Training Programs

1. **ECS – India Section** Lecture Series on Advances in Lithium Batteries by **Professor Jean –Marie Tarascon** held at **Indian Institute of Science, Bangalore 560012** on July 25–29, 2011.
2. **Faculty Development Programme** in Entrepreneurship Development Sponsored by DST, India organized by ni-msme, Govt, of India, Hyderabad between 05-04-2011 and 19-04-2011.

Overseas Exposure / Visits

1. Australia
2. Japan
3. Malaysia
4. Singapore
5. South Korea
6. Taiwan
7. United States of America
8. United States of America

Membership in

Professional Bodies

1. National Association for Corrosion Engineers

2. Electrochemical Chemical Society
3. Society for Advancement in Electrochemical Sci. & Technology
4. European Desalination Society
5. Indian Science Congress Association

Advisory Board

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Academic Bodies (such as Board of Studies etc.,)

Career Guidance, Advice and Counselling students, Personality development, Important days celebration in the University, Popular lectures, Board of studies member, M.Phil and Ph.D., selection committee, Research Committee, Library Committee, Purchase committee, Anti-ragging committee, Question setting to other university, Doctoral committee to other university, Membership in Professional bodies, Ph.D evaluation member, Research paper reviewer,

Resource persons in various capacities

Number of Invited / Special Lectures delivered: 43

1. Invited talk on ***“Nano structured materials for energy storage”*** held on 18th November 2022, Department of Chemistry, SVN college, Madurai.
2. Session chair 3 in the International workshop on “Functional Materials for Sensor and Energy Application (FM-SEA)” Bioelectronics and Biosensors Alagappa university & MRSI, Trichy Chapter, during 10 & 11 November 2022 at Alagappa University.
3. Session chair 4 in the International workshop on “Functional Materials for Sensor and Energy Application (FM-SEA)” Bioelectronics and Biosensors Alagappa university & MRSI, Trichy Chapter, during 10 & 11 November 2022 at Alagappa University.
4. Special Lecture on ***“Nobel prize for Novel Energy Storage Devices”*** at the Act Next: Nobel Prize in Physics” held on 28th August 2020, Department of Physics, Alagappa University, Karaikudi.

5. Invited talk on "***Magnetic Nanoparticles for drug delivery Applications***" at the National Conference on Recent Trends in Biotechnology" (NCRTB-2020) held on 20-21 February 2020 at Bharathidasan University, Thiruchirappalli, INDIA.
6. VIT Doctoral Committee 3.2.2020 at the Department of Biotechnology, VIT, Vellore.
7. Resource Person Lecture on "***Nanomaterials for specialized applications***" One day International Conference on "New Vistas in Materials Science" held on 12 September 2019 at Dept of Chemistry, Seetha Lakshmi Achi College for Women, Pallathur.
8. Invited Talk on "***Hollow and Porous microspheres of CoMn_2O_4 as next generation electrode materials for high-performance lithium-ion batteries***" Third International Conference on Advanced Materials 2019, held on 9-11 August 2019 at Centre for Nanoscience and Nanotechnology, Mahatma Gandhi Universtiy, Kottayam, Kerala.
9. Invited Lectures on "***Magnetic nanostructures for specialized application***" One Day workshop on Magnetic Nanoparticles in Future Applications (MNFA-2019) held on 29 March 2019 at Mepco Schlenk Engineering College, Sivakasi.
10. Ph.D viva – voce, External Examiner on 8th October, 2017 at Dept. of Chemistry, Khadir Mohiden College, Athirapattinam.
11. Key Note Speaker; State level Seminar on "Nanotechnology concepts and applications in medicine and energy technology on 4th October, 2017 held at M. R. Govt. Arts college, Mannargudi.
12. External Examier, PhD viva voce – on 20.9.2017 at Karunya University, Coimbatore.
13. Chief Guest Lecture at "Chemistry Association" at "SeethaLakshmi Achi College for Women, Pallathur" on 1.9.2017
14. Resource Person Lecture on "Nanomedicine" at "In-service Training Programme for Secondary Grade Science Teachers", "SeethaLakshmi Achi College for Women, Pallathur" on 1.9.2017.
15. Ph.D viva – voce, External Examiner Dept. of Chemistry, On 20.9.2017 Karpagam University coimbatore.
16. External Expert Member of the interview panel to recruit RA/JRF/SRF, Bharathiar University, Coimbatore, 17th April 2017.

17. Session Chair at “International Conference on Renewable Energy Science and Technology (ICREST-2017)” held on March 10 & 11 2017 at Alagappa University.
18. Invited Talk on “Nanomaterials Design and Characterization for Next Generation Energy Storage Devices” National Conference on Advanced Materials: Processing and Characterization AMPC-2017 held on 27&28 Feb. 2017 at NIT Trichy, and Session Chair
19. Invited talk on “Novel Nanomaterials for Specialized Applications” in the National Workshop on “Materials Chemistry for Future Industrial Development (MATCH FIND – 2017) at Alagappa University, held on 6 & 7 January 2107.
20. Special Lecture on “Progress and Challenges in Next Generation Energy Storage Materials” at Department of Energy Engineering at **UNIST, Ulsan**, South Korea on Feb.18th 2016
21. Visiting as Foreign Research Professor at Department of Safety Engineering, **Dongguk University**, Gyeongju, Republic of Korea from 1.9.2015-31.8.2016.
22. External Examiner for the Public Viva-Voce to the candidate Mr. I.Arockiarajon 1st April 2015 at National College, Trichy, Bharathidasan University Affiliation.
23. External Examiner for the Public viva-voce to the candidate “Mr.S. Pitchaimuthu,” on 11th Dec. 2014 at ANJA College, Sivakasi, MK University Affiliation.
24. Special Lecture on “Application of Graphene in Energy Storage Devices” at Polymer Chemistry and Electronics Lab at **POSTECH, Pohang** South Korea on Nov.21st 2014.
25. Guest Lecture on “Nanotechnology” at “Creation of Scientific Awareness Among Rural Farmers, Self Help Group Members and Students” on 25th July 2014 at SeethaLakshmi Achi College for Women, Pallathur.
26. External Examiner of the public viva-voce for the candidate “Mr.G.K. Ayyadurai” on 25th February 2014 at Khadir Mohideen College, Adirampattinam.
27. Inaugural address “Recent developments on nanoscience in the inaugural function of Chemistry Association” at Seethalakshmi Achi College for Women, Pallathur, 09.10.2013.
28. Special address “Graphene Based Materials for Energy and Biomolecule Sensing, **National Taipei University of Technology**, June 2013.
29. Invited speaker – Graphene for Energy storage Devices- Interantional Exchange and Cooperation Programme of Taiwan and Chemical Sensors Association in Taiwan – at **Nationl Yunlin University** of Science and Techmology, Yunlin, Taiwan on 17.05.2013.
30. Biomedicine- at **VEL TECH University**, Chennai on 18th March 2013.
31. Special lecture delivered at Kundrakudi, in “Indiya Munettrathil Indraya Ilaingar in pangu” on 14 March 2012 conducted by **CSIR-CECRI**, NSS.
32. Invited Speaker: “Water-Soluble polymers for cooling water systems” at Fourth Conference On recent Advances in Polymer technology, at **Jalgaon, Maharastra** on 2-3/03/2012.

33. Guest lecture: "Electromagnetic waves Irradiation for Technological Applications" at National level Conference on "Application of Irradiation Techniques in Science, Engineering and Medicine Fields – 2012 at **Kamaraj College of Engineering and Technology, Viruthunagar** on 29/02/2012
34. Special Lecture: "Role of Magnetic Particles in Nanomedicine" at National Conference, on "Recent Scenario on Biological Innovations" **VVV College of Arts and Science, Viruthunagar** on 1/02/2012
35. Key note address: "Applications of Nanomaterials" at National Seminar on Recent Trends in Nano Technology, at **Kamaraj College Of Engineering and Technology, Viruthunagar** on 11/03/2011.
36. DOTE & TNSCTE Sponsored Staff Development Programme On "New Trend in Nano Science And Technology" held at Alagappa Engineering College, karaikudi, October 5, 2010.
Paper Presented

"Magnetic Nanomaterial for Drug Delivery Application"
37. Invited lecture delivered at Kundrakudi, in "Indiya Munetrathil Indrayallaingar in pangu" on 27 Jan 2011 conducted by CECRI, NSS
38. Short term training course "perspectives in Nanoscience and Nanobiotechnology (KU-PNSNB, 2010)" held at Karunya University, Coimbatore, 29th Nov-10th Dec, 2010.
Paper presented

"Surface Modified Magnetic Nanoparticles in the Field of Biotechnology"
39. DOTE & TNSCTE Sponsored Staff Development Programme On "New Trend in Nano Science And Technology" held at Alagappa Engineering College, karaikudi, October 5, 2010.
Paper Presented
 - a. "Magnetic Nanomaterial for Drug Delivery Application"
40. Synthesis of Biodiesel from Azadirachta Indica and Hevea Brasiliensis Through Homogeneous catalyst Transesterification Process delivered in National Conference on Alternative Energy Sources and Applications held at Sri Ram Engineering College, Perumalpattu, Chennai on 22nd April, 2010.
41. Invited lecture "Electrode Materials for Fuel Cell Applications" delivered in "National Conference on Emerging Materials" at **NBKR Science & Arts College, Vidhya Nagar, Andhra Pradesh** in "on July 18 & 19th 2009.
42. Invited lecture "Application of Cathode Nanomaterials for Lithium-ion Cells" delivered in LectureSeries at **Lady Doak College, Madurai** on 25.03.09
43. Guest Lecture "Application of Nanomaterials in the Emerging Technological Field" delivered in "**Chemistry Association Celebration**" at **National College, Trichy** on 22.08.08

Books / Chapter written

- 1) Book Title:** Sensor and Nanotechnology based Diagnostics in the field of Mycobacteriology
Chapter Title: Sensors and Nanotechnology based diagnostics in the field of Mycobacteriology, Mohanraj T, Shunmuga Nathan S, Shakkthivel P, Vasantha VS, *Springer Nature*. (2023)
- 2) Book Title:** Natural Products based Soft Materials in Electrochemical Biosensors for Cancer Biomarkers,
Chapter Title: Natural Products based Soft Materials in Electrochemical Biosensors for Cancer Biomarkers, Shunmuga Nainar Shunmuga Nathan, Wan Iryani Wan Ismail, Piraman Shakkthivel, Vairathevar Sivasamy Vasantha, *Wiley Scrivener*. (2023)
- 3) Book Title:** Biocompatible Nanomaterials Synthesis, Characterization and Applications;
Chapter Title: Synthesis, characterization and Application of Biocompatible Magnetic Nanoparticles, Page 171-208, Nova Science Publisher Inc., New York.