



Dr. M. SIVAKUMAR
ASSISTANT PROFESSOR

Contact

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

Teaching Experience: 19 Years

Research Experience: 21 Years

Additional Responsibilities

1. Programme Co-ordinator, Week-end M.Phil. Programme in Department of Physics, since July 2016.
2. Member- Centre for Yoga Studies
3. Convener – 29th Convocation Committee for VIPs Guests Memento organizing
4. Convener – Teachers' day celebration Gift and Memento committee
5. Department Doctoral Committee Member
6. Member – Board of Studies to Dept. of Physics, Alagappa University.
7. Member – in CDC Board of Studies for PG and M.Phil.
8. Course Advisor (PG program timetable, CIA tests schedule, project allotment, scholarships, etc.)

9. Faculty co-ordinator of Science Club of Department of Physics.
10. Ph.D and M.Phil. scholars Selection committee member.
11. Staff In-charge for Department Colloquium for PhD and MPhil scholars.
12. In-charge for Atomic Force Microscope in the Department of Physics.
13. Doctoral Committee member in Anna University of Tech., Madurai.
14. Question paper setter in Bharathiar, Madurai Kamaraj, Alagappa, Periyar, Manonmaniam Sundaranar Universities for PG programme.
15. Question paper setter in Anna University, Jamal Mohammed College, etc. for B.Tech., B.E. and B.Sc., courses.
16. ACT NEXT – 2015 Convener.
17. VPP coordinator (2008, 2013).
18. Tour In-Charge for the year 2008-09 for the PG students and MPhil scholars.
19. Department Library In-Charge during 2008-2010.
20. University Representative for DDE Examinations in various centres of Alagappa University.

Areas of Research

Solid State Ionics,
Lithium Electrodes and Electrolytes,
Sodium and Sulfur electrodes,
Biodiesel,
Crystal Growth.

Research Supervision / Guidance

Program of Study		Completed	Ongoing
Research	Ph.D.	2+1 (submitted)	9
	M.Phil.	29	6
Project	PG	34	6
	UG / Others	3	--

Publications

International		National		Others
Journals	Conferences	Journals	Conferences	Books / Chapters / Monographs / Manuals
33	36	--	44	--

Cumulative Impact Factor (as per JCR) : 61.839
h-index : 09
i10 index : 09

Funded Research Projects

Completed Projects

S. No	Agency	Period		Project Title	Budget (Rs. In lakhs)
		From	To		
1	DST-SERC major project	20.01.2010	19.01.2013	SYNTHESIS AND CHARACTERIZATION OF NANO CRYSTALLINE LiFePO_4 CATHODE MATERIALS FOR LITHIUM BATTERY FABRICATION BY POLYOL PROCESS	25.51
2	Alagappa University	Nov' 2009	Jan' 2011	STUDIES ON CONDUCTIVE ELEMENTS COATED LiCoO_2 AND LiFePO_4 CATHODE MATERIALS FOR LITHIUM BATTERIES	0.64
3	DST-NSC	01.04.2010	31.03.2013	SYNTHESIS AND CHARACTERIZATION OF VANADIUM BASED CATHODE MATERIALS FOR LITHIUM ION SECONDARY BATTERIES	~26.0 per side
4	UGC	01.07.2012	31.12.2015	STUDIES ON COMPOSITE POLYMER ELECTROLYTES BASED ON COPOLYMERS FOR SECONDARY LITHIUM BATTERIES	11.21

Ongoing Projects (Department Projects- As a Member)

S. No	Agency	Period		Project Title	Budget (Rs. In lakhs)
		From	To		
1	UGC-SAP (DRS-III)	2015	2020	Preparation of crystals, Thin films and Battery materials for devices	105
2	DST-FIST Level II	2015	2020	Growth and study of different metal oxide thin films for gas sensors and memory devices	144

Combined Department Projects: (Completed- As a Member)

S. No	Agency	Period		Budget (Rs. In lakh)
		From	To	
1.	UGC-SAP (DRS I)	2004	2009	82.25 (Participated from 2007 onwards)
2.	UGC-SAP (DRS II)	2009	2014	70.50
3.	DST FIST (Level I)	2005	2009	35.00 (Participated from 2007 onwards)
4.	DST-PURSE	2011	2014	600.00 (For all Science Departments)

Consultancy Projects (As a Member)

S. No	Agency	Period		Project Title	Budget (Rs. In lakhs)
		From	To		
1	Universities, Colleges, Institutions	2015 (June)	2016 (May)	Consultancies on Characterization	12,99,856
2	Universities, Colleges, Institutions	2016 (June)	2017 (Dec.)	Consultancies on Characterization	7,41,660

Distinctive Achievements / Awards

1. Post-Doctoral Fellowship – 15.11.2004 to 31.07.2006 –National Science Committee, Taiwan ROC.
2. Visiting Principal Scientist in DST-NSC Collaborative Research Project during 2011-14.
3. Best Paper Award for our paper entitled “Effect of ZrO₂ filler on P(S-MMA) gel blend polymer electrolyte for Lithium polymer battery” -M.Ramachandran, R.Subadevi, M.Sivakumar Presented in the International Conference on Nanoscience and Nanotechnology for Energy Applications (EApp-2016) organized by Centre for Nanoscience and Nanotechnology and Centre of Excellence for Energy Research, Sathyabama University, Chennai-600 119. India during 27-29, June 2016.

Events organized in leading roles

Number of Seminars / Conferences / Workshops / Events organized: 11

1. Organized a “National Seminar on “Recent Advancements in Frontier Areas of Materials Science” as a **Co-convener** in the Department of Physics, Alagappa University, Karaikudi, India held on 23-24th March, 2016.
2. Organized Alagappa University Celebrates Themed Nobel Excellence Talks – 2015 ACT NEXT-2015, as a **Convener** on 18th March 2016.
3. Organized an “International Workshop on Advanced Materials -2014 (IWAM-2014)” as a **Convener** in the School of Physics, Alagappa University, Karaikudi, India held during 20-21 March 2014.
4. Organized a National Workshop on Characterization Techniques (NWCT-2, 2013)” as a **member** of Organizing committee in the School of Physics, Alagappa University, Karaikudi held on 24 & 26, March 2013.
5. Organized a “National Workshop on Characterization Techniques(NWCT-1, 2012)” as a **member** of Organizing committee in the School of Physics, Alagappa University, Karaikudi on 24 & 26, March 2012.
6. Organized an “International Workshop on Advanced Energy Materials (IWAEM-2012)” as a **Convener** in the School of Physics, Alagappa University, Karaikudi, India during 9-10, February 2012.
7. Organized a “State Level Workshop on Structure solving by Powder X-ray diffraction (SLWSSP-XRD 2011) as a **member** of Organizing committee in the School of Physics, Alagappa University, Karaikudi during 26-27, July 2011.
8. Organized a “National Conference on Recent Trends in Advanced Energy Materials” as **Convener** held on 10th & 11th March, 2010 in the School of Physics, Alagappa University, Karaikudi.
9. Organized a National Workshop on “Theory and Practice of XRD Techniques” as a **member** of organizing committee in the School of Physics, Alagappa University during July13-17,2009.
10. Organized a National Workshop on “Crystal Growth and Characterization” as a **member** of organizing committee in the School of Physics, Alagappa University on March 16, 2009.
11. Organized a National Workshop on “Recent Advances in Materials Science” as a **member** of organizing committee in the School of Physics, Alagappa University, on March 07, 2008.

Events Participated

Conferences / Seminars / Workshops

1. Participated in National Workshop on Expansion and Enrichment of Distance Learning (EEDL-2012) organized by the Directorate of Distance Education, Alagappa University, Karaikudi, Tamil Nadu, during 27-28, March 2012.

2. Participated in the National Seminar on Recent Trends in Functional Materials (FUNMAT'12) organized by the Department of Physics, Ultra College of Engineering & Technology for Women, Madurai on 17th February 2012.
3. Attended International Workshop on Advances in Functional Nanomaterials organized by Center for Nanoscience and Nanotechnology, Anna University, Chennai Tamil Nadu, India during February 21-24, 2011.
4. Participated DAE-BRNS Theme Meeting on Covariance Error Matrix in Nuclear Data and its Applications in Reactor Fuel Cycle and Technology, organized by the Dept. Statistics, Manipal University, Manipal, Karnataka, India during 25-28, February 2008.
5. Participated International Conference on Stochastic Modelling (ICSM09) organized by the Department of Mathematics, Alagappa University, Karaikudi, Tamil Nadu, India during February 12-14, 2009.
6. Participated in the National Workshop on Bio-diesel, organized by School of Energy, Environment and Natural Resources, Madurai Kamaraj University, Madurai, Tamil Nadu during 2007.

Other Training Programs

1. Orientation Program conducted at the ASC, Madurai Kamaraj University, Madurai during 24.09.2008 to 21.10.2008.
2. Refresher Course entitled "Recent Trends in Physics" conducted at the ASC, Madurai Kamaraj University, Madurai, during 03.11.2009 to 23.11.2009.

Overseas Exposure / Visits

1. Post Doctoral Fellow – National Taiwan University, Taipei, Taiwan from 15.11.2004 to 27.07.2006
2. Indian side Principal Visiting Scientist 2011-14

Membership in

Professional Bodies

1. Life Member : Indian Association of Physics Teachers (IAPT)
2. Life Active Member : Society for Advancement of Electrochemical Science and Technology (SAEST)
3. Life Member : Society for Polymer Science India – Tiruvananthapuram Chapter (SIPS)

Editorial Board

1. Edited the Abstracts & Souvenir of the NATIONAL CONFERENCE ON RECENT TRENDS IN ADVANCED ENERGY MATERIALS held at the School of Physics, Alagappa University, Karaikudi, on 10th & 11th March, 2010. ISBN: 978-93-80400-14-3.
2. Edited the Proceedings of the NATIONAL CONFERENCE ON RECENT TRENDS IN ADVANCED ENERGY MATERIALS held at the School of Physics, Alagappa University, Karaikudi, on 10th & 11th March, 2010. ISBN:978-93-80697-40-6.

Advisory Board

1. Lady Dock College – Special Invitee in Syllabus Framing

Resource persons in various capacities

Number of Invited / Special Lectures delivered: 16

1. 12.01.2008 – Dept. Physics, NPR Arts & Science College, Uluppakudi, Natham – Chief Guest and Invited Talk – *Introduction Energy Storage Devices*.
2. 21-22, August 2009 – National Conference on Recent Advances in Materials Science-2009 (RAMS-09), Dept.Physics, Sri Sevugan Annamalai College, Devakkottai, *Production and Fuel properties of Bio-diesel from Mahua oil*
3. 13.09.2010 – Special Address on the occasion of Special program under Autonomous Fund – Dept.Physics, V.V.Vanniapperumal College for Women, Virudhunagar, *Introduction to Electrochemical storage devices and Bio fuels*
4. 27.11.2009 – One day National Workshop on “Recent Trends in Modern Analytical Techniques and Energy Storage Devices” in Latha Mathavan Engg. College, Alagar Kovil, Madurai – Keynote Address and Invited Talk on “*Recent Trends in Electrochemical Energy Storage Devices*”.
5. 26.10.2010 – **PHYSKNIT-2K10, State Level Inter Collegiate Meet** organized by Dept.Physics, Fatima College, Madurai, *Renewable Energy*.
6. March, 4, 2011. **National Seminar on Green Revolution-Energy Applied Technology (GREAT’11)**, organized by the Department of Chemistry, Ultra College of Engineering and Technology for Women, Madurai-625 104, Tamil Nadu – **Valedictory Address and Invited Talk** on “*Electrochemical Energy Technology*”.
7. October, 21-22, 2011. “Developments of Polymer Electrolytes” as an Invited Talk in the **National Seminar on Polymers Synthesis, Characterization and Applications (POLYCAP’2011)** organized by the Department of Physics, Mannar Thirumalai Naicker (MTN) College, Madurai-625 004.

8. 22nd January 2013. “Bio-Fuels And Energy Storage Devices” as an Invited Talk in the National Seminar on Crystal Growth and Bio-fuels, organized by the Department of Physics, Meenakshi College, Madurai.
9. 08.03.2014 “**Lithium Electrodes - A Review**” organized by the Department of Physics, Cousannel College, Muthupettai, Ramnad in the National Level Seminar on Recent Advances in Nanomaterial Synthesis and Characterization (RANSSAC-2014).
10. 26.01.2014 “**Introduction to Fuel Cells**” organized by the Department of Physics, Sri Sevugan Annamalai College, Devakkottai in the International Seminar on Advanced Materials”
11. 08.08.2014 “**Energy Storage using Nano crystalline Materials for Lithium Batteries**” organized by the Department of Physics, National College, Tiruchirappalli, in the National Conference on Crystal Growth and Energy Storage, during 7-9, August 2014.
12. 08.09.2014 “**Functional Materials – A Review**” organized by Department of Physics, Idhaya College for Women, Sarugani, Sivagangai District, Tamil Nadu, in An One day National Seminar on Recent Advances in Functional Materials-2014 on 08.09.2014.
13. 19.12.2014 “**AN ANODIC RECITAL OF OXYGEN DEFICIENT COPPER VANADATE FOR LITHIUM BATTERIES**” organized by School of Chemical Sciences, Mahatma Gandhi University, Kottayam, India in International Conference on Nanostructured Materials and Nanocomposites (ICNM-2014) during 19-21, December 2014.
14. 03.03.2015 “**Nano Electrodes for Energy Storage Devices – An Overview**” organized by the Department of Electronics & Communication and Physics, Syed Hameedha Arts & Science College, Kilakarai, Ramanathapuram District, in National Seminar on Nanotechnology and Nanosensors – NASON-15.
15. 12.12.2015 “**Development of carbonaceous materials coated positive electrodes for Li-ion batteries**” organized by Hindustan College of Science and Technology, Farah, Mathura, UP., India in the 3rd International Conference on Nanostructured Materials and Nanocomposites (ICNM-2015) during 12-14, December 2015.
16. 10.08.2016 “Energy Materials” in TEQUIP sponsored Faculty Development Programme organized by the Department of Physics, Alagappa Chettiar College of Engineering and Technology, Karaikudi-3.

Others

1. No. of PhD Thesis evaluated : 2
2. No. of PhD Public Viva Voce Examination conducted : 2

Recent Publications

1. Authors, (Year), "Title of the Paper", Journal / Conference Name, Publisher, Country, Volume/ Issue, page numbers. (Impact Factor: xx).
1. Synthesis and electrochemical performance of PEG-MnO₂-sulfur composites cathode materials for Lithium-Sulfur batteries
G.Radhika, R.Subadevi, K.Krishnaveni, Wei-Ren Liu and M.Sivakumar
J.Nanoscience and Nanotechnology (Accepted) *IF: 1.3*
2. An efficacy of 'nano' in brannerite-type CoV₂O₆ conversion electrode for lithium batteries
M. Sivakumar, P. Prahasini, R. Subadevi, Wei-Ren Liu and Fu-Ming Wang
RSC Advances 6 (2016) 112813. *IF:3.284* DOI: 10.1039/c6ra20989k
3. Facile synthesis and characterization of ZrO₂ nanoparticles via modified co-precipitation method
M. Ramachandran, R. Subadevi, Wei-Ren Liu and M. Sivakumar
J.Nanoscience and Nanotechnology (Accepted) *IF: 1.3*
4. Studies on the effect of carbon wrapping on Sulfur/ Poly(acrylonitrile) (PAN) composite cathode materials for Lithium Sulfur Batteries
K.Krishnaveni, R.Subadevi, G.Radhika, T.Premkumar, M.Raja, Wei-Ren Liu, M.Sivakumar
J.Nanoscience and Nanotechnology (Accepted) *IF: 1.3*
5. Sulfonium cation based ionic liquid incorporated polymer electrolyte for lithium ion battery
R. Muthupradeepa, M. Sivakumar, R. Subadevi and V. Suryanarayanan
Polymer Bulletin (In Press) DOI: 10.1007/s00289-016-1796-y. *IF:1.371*
6. Synthesis and electrochemical characterization of olivine type lithium iron phosphate cathode materials via different techniques
R.Muruganatham, R.Subadevi, M.Sivakumar
Ionics (In Press) DOI: 10.1007/s11581-016-1676-3. *IF:1.754*
7. A brannerite type cobalt vanadate conversion anode for lithium batteries
P. Prahasini, R. Subadevi, Fu-Ming Wang, Wei-Ren Liu, M.Sivakumar
Ionics 22(2016)347-356 (DOI: 10.1007/s11581-015-1559-z) *IF:1.754*
8. A novel attempt for employing brannerite type copper vanadate as an anode for lithium rechargeable batteries
P. Prahasini, R. Subadevi, Fu-Ming Wang, Wei-Ren Liu, M. Sivakumar and I.V.B. Maggay
J.Mater. Sci.: Materials in Electronics 27 (2016) 3292-3297. DOI: 10.1007/s10854-015-4157-y. *IF: 1.798*
9. Enhanced rate performance of multiwalled carbon nanotube encrusted olivine type composite cathode material using simple polyol technique
R.Muruganatham, R.Subadevi, M.Sivakumar

- J. Power Sources* 300 (2015) 496-506 (DOI: 10.1016/j.jpowsour.2015.09.103) **IF:6.333**
10. Investigations on the rate performance of $\text{LiFePO}_4/\text{CeO}_2$ composite materials via polyol technique for rechargeable lithium batteries
M. Sivakumar, R. Muruganatham, R. Subadevi
RSC advances 5(2015)86126-86136 (DOI: 10.1039/C5RA12418B) **IF: 3.289**
 11. Synthesis of surface modified LiFePO_4 cathode material via polyol technique for high rate Lithium secondary battery
M.Sivakumar, R.Muruganatham, R.Subadevi
Appl. Surf. Sci. 337 (2015) 234-240 (DOI: 10.1016/j.apsusc.2015.02.100) **IF:3.150**
 12. Studies on graphene enfolded Olivine composite electrode material via Polyol technique for high rate performance in Lithium ion batteries
R.Muruganatham, M.Sivakumar, R.Subadevi, S.Ramaprabhu, N-L.Wu
Electronic Materials Letters. (Accepted) (doi:[10.1007/s13391-015-5061-6](https://doi.org/10.1007/s13391-015-5061-6)) **IF: 2.057**
 13. Enhanced proton conductivity by the influence of modified montmorillonite on poly (vinyl alcohol) based blend composite membranes
PB Palani, KS Abidin, R Kannan, S Rajashabala, M Sivakumar
DAE Solid State Physics Symposium 1731 (1) (2015) 110028. doi: 10.1063/1.4948049
 14. Comparative studies on biodiesel from rubber seed oil using homogeneous and heterogeneous catalysts
R.Meenadevi, R.Subadevi, Samuel Paul Raj, M.Sivakumar
International J. Green Energy 12 (2015) 1215-1221 (DOI:10.1080/15435075.2014.893879), **IF:1.601**
 15. A facile synthesis and characterization of LiFePO_4/C using simple binary reactants with oxalic acid by polyol technique and other high temperature
R.Muruganatham, M.Sivakumar, R.Subadevi, N-L.Wu
J.Mater. Sci.: Materials in Electronics 26 (2015) 2095-2106. DOI 10.1007/s10854-014-2653-0.**IF: 1.798**
 16. Improvement of proton conductivity in nanocomposite polyvinyl alcohol (PVA)/chitosan (CS) blend membranes
P. Bahavan Palani, K. Sainul Abidin, R. Kannan, M. Sivakumar, Fu-Ming Wang, S. Rajashabala and G. Velraj
RSC Advances 4 (2014) 61781-89 DOI: 10.1039/c4ra10788h,**IF:3.289**
 17. Structural, morphology and ionic conductivity studies on composite PS-MMA - ZrO_2 polymer electrolyte for lithium polymer battery
M.Ramachandran, R.Subadevi, Fu-Ming Wang, Wei-Ren Liu, M.Sivakumar
International J. ChemTech Research 6 (2014) 1687-1689.
 18. Studies On The Effect Of Dispersoid(ZrO_2) In PVdF-co-HFP Based Gel Polymer Electrolytes
M.Sivakumar, R.Subadevi and R.Muthupradeepa
AIP Conf. Proc. 1536, 857-858 (2013); doi: 10.1063/1.4810498
 19. Structural and magnetic properties of LiFePO_4 cathode materials prepared by polyol technique
R.Muruganatham, R.Subadevi, M.Sivakumar
Elixir Magnetic Materials 50 (2012) 10609-10612
 20. A Polyol Route LiFePO_4 Cathode Material For Li-Batteries
R.Muruganatham, R.Subadevi, M.Sivakumar
Advanced Materials Research 584 (2012) 341-344.
 21. Synthesis and characterization of Cu Doped LiCoO_2 Cathode material for Lithium Batteries using Microwave assisted Sol-gel synthesis

- P.Prahasini, R.Subadevi, M.Sivakumar and Fu-Ming,Wang**
Advanced Materials Research 584 (2012) 345-349.
22. Development and characterizations of PVdF-PEMA gel polymer electrolytes
R.Subadevi, M.Sivakumar, S.Rajendran, H.-C.Wu, N.-L.Wu
Ionics 8 (2012) 283-289. **IF:1.754**
23. Studies on the Effect of Anions of various Lithium salts in PEMA Gel Polymer Electrolytes
R.Subadevi, M.Sivakumar, S.Rajendran, H.-C.Wu, N.-L.Wu
J.Appld. Polym.Sci. 119 (2011)1-6. **IF:1.67**
24. Compositional effect of PVdF-PEMA blend gel polymer electrolytes for Lithium Polymer Batteries
M.Sivakumar, R.Subadevi, S.Rajendran, H.-C.Wu, N.-L.Wu
Euro.Polym.J. 43 (2007) 4466-4473. **IF:3.485.**
25. Electrochemical Investigations on the effect of Dispersoid in PVA based solid polymer electrolytes
S.Rajendran, M.Sivakumar, R.Subadevi, N.-L.Wu, J.-Y.Lee
J.Appl.Polym.Sci. 103 (2007) 3950-3956. **IF:1.64**
26. Electrochemical studies on [(1-x)PVA-xPMMA] solid polymer blend electrolytes complexed with LiBF₄
M.Sivakumar, R.Subadevi, S.Rajendran, N.-L.Wu, J.-Y.Lee
Materials Chemistry and Physics 97 (2006) 330-336. **IF:2.101**
27. Li-ion conduction of plasticized PVA solid polymer electrolytes complexed with various lithium salts
S.Rajendran, M.Sivakumar, R.Subadevi
Solid State Ionics 167 (2004) 335-339. **IF:2.38.**
28. Characterization of PVA-PVdF based Solid Polymer Blend Electrolytes
S.Rajendran, M.Sivakumar, R.Subadevi, M.Nirmala
Physica B: 348 (2004) 73-78. **IF:1.319**
29. Investigations on the effect of various plasticizers in PVA-PMMA solid polymer blend electrolytes
S.Rajendran, M.Sivakumar, R.Subadevi
Materials Letters 58 (2004) 641-649. **IF:2.437**
30. XRD, FTIR, Impedance and Thermal Studies of PVA-PMMA solid polymer blend electrolyte
S.Rajendran, M.Sivakumar, R.Subadevi, J.Merciline Leonora
Bull.Electrochem. 20 (2004) 87-92. **IF:0.25.**
31. Studies on the effect of salt concentration in PVA based solid polymer electrolytes
S.Rajendran, M.Sivakumar, R.Subadevi
J.Power Sources 124 (2003) 225-230. **IF:6.217.**
32. Studies on the effect of plasticizers in Poly(vinyl alcohol) based hybrid solid polymer electrolytes
S.Rajendran, M.Sivakumar, R.Subadevi
J.Applied Polym.Sci. 90 (2003) 2794-2800. **IF:1.64**
33. Bio-Diesel from palm oil: The clean and green fuel for diesel
R.Meenadevi, Samuel Paul Raj, R.Subadevi, M.Sivakumar
Pro.8th Asian Academic Network for Environmental Safety and Waste Management (AANESWM), December 10-13, 2006, Anna University, Chennai, India, pp.439-444.