

CURRICULUM VITAE

Palanisamy Vickraman



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❖ Personal data

Date of birth : December 7, 1964
Marital Status : Married
Nationality : Hindu, Indian
Date of appointment in Gandhigram Rural Institute (Deemed University) : October 1990
Permanent
Designation : Professor of Physics
Educational qualification : M.Sc., M.Phil., Ph.D.

❖ Academic fabric

Ph.D.

- **Ph.D. in Physics**, Research work carried out at Central Electro Chemical Research Institute, Karaikudi / Gandhigram Rural Institute – Deemed University, Gandhigram, October 2002
- **Title of Thesis:** A study of PVC based blend polymer electrolytes for lithium battery applications
- **Advisor(s) :** Dr. N. Muniyandi, Head Advanced Lithium Battery Division, Central Electro Chemical Research Institute, Karaikudi / Prof. S. Ramamurthy, Head, Department of Physics, Gandhigram Rural Institute – Deemed University, Gandhigram.

M. Phil.

- **M. Phil.** in Physics, Pondicherry University, Puducherry, December 1988
- **Title of Thesis:** Acoustic studies of Aliphatic esters and Aromatic esters in NaOH and KOH

dimethyl formamide (DMF) at various concentrations (M.Phil. awarded 2003).

- vii. Thermo-acoustic behaviour of polyacrylonitrile (PAN) in dimethyl formamide (DMF) by ultrasonic techniques (M.Phil. awarded 2003).
- viii. Ultrasonic studies on some physical properties of polymethylmethacrylate (PMMA) in aprotic solvents (dimethyl formamide, dimethyl sulphoxide and acetonitrile). (M.Phil. awarded 2003).
- ix. Macromolecular interaction and temperature dependence on polyvinylidene fluoride in dimethyl formamide by ultrasonic techniques. (M.Phil. awarded 2003).

❖ Research Projects

Completed – Minor Research Project – funded by UGC, New Delhi

- Characterization of solvent free PVC based electrolytes for lithium battery applications (2001) – one year duration.

Ongoing – Major Research Project – funded by UGC, New Delhi

- Preparation characterization and optimization of super acid fillers based PVdH-HFP blend polymer nanocomposites by phase inversion technique for lithium ion batteries (2010 – 2014) - three year duration.

❖ List of publications peer reviewed journals

1. Provkite Structure Based Filler Impregnated PvdF—Hfp Micro Composites For Lithium Ion Batteries
P Vickraman... - **AIP** Conference Proceedings 1349, 1049 (2011)
2. Investigation on compositional effect of PEG: BaTiO₃ in Plasticized Pvc. LiBETi polymer composite electrolytes,
Palanisamy Vickraman and Dhandapani Ravindran
Vol. 17, Number 6, (2011) pp565-571. ***Ionics***
3. Improved performance of polyvinylidene fluoride-hexafluoropropylene based nanocomposites polymer membranes containing lithium bis (oxalate) borate by phase inversion for lithium batteries.
V. Aravindan, *P. Vickraman*, S. Madhavi, A. Sivashanmugam, R. Thirunakaran, S. Gopukumar, ***Solid State Sciences*** Vol.13, Issue 5, (2011), pp1047-1051
4. A Study on the role of BaTiO₃ in Lithium bis (Perfluoroethanesulfonyl) imidebased VDF-HFP Nanocomposites
P. Vickraman, V. Senthilkumar. ***Ionics*** Vol.16, Number 8, pp763-768 (2010).
5. Annealing temperature dependent on structural, optical and electrical properties

- of indium oxide thin films deposited by electron beam evaporation method.
V. Senthilkumar, P.Vickraman, “*Applied Surface Science*”. Vol. 10, issue 3, (2010), pp880-885.
6. Structural and optical properties of indium tin oxide (ITO) thin films with different compositions prepared by electron beam evaporation,
V. Senthilkumar, P.Vickraman, M. Jayachandran, C. Sanjeeviraja, “*Vacuum*, Vol.84, Issue 6, (2010), pp864-869.
 7. Effects of annealing temperature on structural, optical, and electrical properties of antimony – doped tin oxide thin films
V. Senthilkumar, P.Vickraman, J. Joseph Prince, M. Jayachandran, C. Sanjeeviraja, *Philosophical Magazine Letters*, Vol. 990, issue 5, (2010).pp337-347
 8. A study on the role of BaTiO₃ in lithium bis (perfluoroethanesulfonyl) imide-based PVDF-HFP nanocomposites
P. Vickraman and V. Senthilkumar
Ionics, (2010) DOI.10.1007/s11581-010-0467-5 Number 16, pp763–768
 9. Characterization of poly (vinylidene fluoride-co-hexafluoropropylene) membranes containing nanoscopic AlO (OH) filler with Li/LiFePO cell
P Nithiananthi, **P Vickraman**, V.Aravindan, *Journal of Renewable*, (2010)
 10. Synthesis of fluorine doped tin oxide nanoparticles by sol–gel technique and their characterization
V Senthilkumar, **P Vickraman**- *Journal of sol-gel science*, (2010)
 11. Synthesis fluorine doped Tin oxide nanoparticles by sol-gel technique and characterization
V. Senthilkumar, **P. Vickraman**, R. Ravikumar, *Journal of Sol. Gel. Science and Technology* (2010) 53 : 316-321.
 12. Structural, Optical and electrical studies on nanocrystalline tin oxide (SnO₂) thin films by electron beam evaporation technique
V. Senthilkumar, **P. Vickraman**, “*Journal of Materials Science : Materials in Electronics*” Vol. 21, Number 6, (2010) pp578-582.
 13. Synthesis and characterization of SnO₂ nanopowder prepared by precipitation method
V. Senthilkumar, **P. Vickraman**, M. Jayachandran, C. Sanjeeviraja, “*Journal of Dispersion Science and Technology*” Vol. 31, Issue 9, (2010).
 14. Structural and electrical studies of nano structured Sn_{1-x} Sb_xO₂(x=0.0, 1, 2.5, 4.5 and 7 at %) prepared by co-precipitation method.
V. Senthilkumar, **P. Vickraman**, M. Jayachandran, C. Sanjeeviraja, “*Journal of Materials Science : Materials in Electronics*” 21, (2010), pp343–348.

15. Lithium ion transport in PVC/PEG 2000 blend polymer electrolytes complexed with LiX (X=CIO₄⁻, BF₄⁻ and CF₃SO₃⁻)
P. Vickraman, V. Aravindan and Y.S. Lee, *Ionics*, (2010), vol.16, No:3, pp263-267.
16. Effect of Dielectricscreening on the diamagnetic susceptibility of a donor in low dimensional semiconducting systems-
P. Nithiananthi, **P. Vickraman**, K. Jayakumar
International journal of Modern Physics B vol:23, Issue:8 (2009) 2069-2075.
17. **LiFAP** based PVdF-HFP microporous membranes by phase inversion technique with Li/LiFePO₄ cell,
V. Aravindan, **P. Vickraman**, A. Sivashanmugam, R. Thirunakaran, S. Gopukumar,
Applied Physics A vol. 97, Number 4, (2009) 811 - 819.
18. Li⁺ ion conduction in TiO₂ filled polyvinylidene fluoride-co-hexafluoropropylene based novel nanocomposite polymer electrolyte membranes with LiDFIB
V. Aravindan, **P. Vickraman**, and K.Krishnaraj, *Current Applied Physics* (2009) 9 (6), 1474-1479
19. Nanoparticulate AlO(OH)_n filled polyvinylidene fluoride-co-hexafluoropropylene based microporous membranes for lithium ion batteries
V. Aravindan, **P. Vickraman**, *Journal of Renewable and Sustainable Energy (American institute of Physics)* vol.1, issues 2. (2009)
20. Investigations on Na⁺ ion conducting polyvinylidene fluoride-co-hexafluoropropylene/ poly ethylmethacrylate blend polymer electrolytes.
V. Aravindan, C. Lakshmi and **P. Vickraman** *Current Applied Physics* 9 (2009), pp1106-1111.
21. Ionic transport, thermal, XRD and phase morphological studies on LiCF₃SO₃ based PVC/PVdF gel electrolytes
P. Vickraman, V. Aravindan, M.Selvambikan and No. Sahnkarasubramani,
Ionics (Vol.15, Issue 4, (2009) paged 433
22. Polyvinylidene fluoride (PVdF) based novel polymer electrolytes for magnesium rechargeable batteries with Mg(CIO₄)₂
V. Aravindan, C. Karthikaselvi, **P. Vickraman** and S.P.Naganandhini,
Journal of Applied Polymer Science, 112 (2009) 3024.
23. Lithium fluoroalkylphosphate based composite polymer electrolytes (NCPE) incorporated with nanosized S₂O₂ filler
V. Aravindan, **P. Vickraman**, *Materials Chemistry and Physics* 115 (2009) 251
24. Polyvinylidene fluoride (PVdF)-based novel polymer electrolytes complexed with Mg(CIO₄)₂ **P. Vickraman**, V. Aravindan,, T. Srinivasan and M.Jayachandran, *European Physical Journal Applied Physics* 45 (2009) 11101.

25. Polyvinylidene fluoride-hexafluoropropylene (PVdF-HFP)-based composite polymer electrolyte containing $\text{LiPF}_3(\text{CF}_3\text{CF}_2)_3$
V. Aravindan, **P. Vickraman**, and T. Prem Kumar, *Journal of Non-Crystalline Solids* 354 (2008) 3451
26. Lithium difluoro(oxalate)borate-based novel nanocomposite polymer electrolytes for lithium-ion batteries.
V. Aravindan, **P. Vickraman**, and K. Krishnaraj, *Polymer International* 57 (2008) 932.
27. Characterization of SiO_2 and Al_2O_3 incorporated PVdF-HFP based composite polymer electrolytes (CPE) with $\text{LiPF}_3(\text{CF}_3\text{CF}_2)_3$
V. Aravindan and **P. Vickraman**, *Journal of Applied Polymer Science* 108 (2008) 1314.
28. Polyvinylidene fluoride-hexafluoropropylene based nanocomposite polymer electrolytes (NCPE) complexed with $\text{LiPF}_3(\text{CF}_3\text{CF}_2)_3$
V. Aravindan and **P. Vickraman**, *European Polymer Journal* 43 (2007) 5121.
29. A novel gel electrolyte with lithium difluoro(oxalate)borate salt and Sb_2O_3 nanoparticles for lithium ion batteries
V. Aravindan and **P. Vickraman**, *Solid State Sciences* 9(2007) 1069.
30. ZrO_2 nanofiller incorporated PVC/PVdF blend based composite polymer electrolytes (CPE) complexed with LiBOB
V. Aravindan, **P. Vickraman**, and T. Prem Kumar, *Journal of Membrane Science* 305 (2007) 146.
31. Effects of TiO_2 and ZrO_2 nanofillers in LiBOB based PVdF/PVC composite polymer electrolytes (CPE)
V. Aravindan and **P. Vickraman**, *Journal of Physics D: Applied Physics* 40 (2007) 6754.
32. A study on the blending effect of polyvinylidene fluoride in the ionic transport mechanism of plasticized polyvinyl chloride+lithium perchlorate gel polymer electrolytes, **P. Vickraman**, V. Aravindan and N. Shankarasubramanian, *Ionics* 13 (2007) 355.
33. A study on LiBOB-based nanocomposite gel polymer electrolytes (NCGPE) for Lithium-ion batteries. V. Aravindan and **P. Vickraman**, *Ionics* 13 (2007) 277.
34. Investigations on Pd: SnO_2 /porous silicon structure3s for sensing LPG and NO_2 gas
N. Shankaran Subramanian, R. Vivek Sabaapathy, **P. Vickraman**, G. Vimal Kumar, R. Sriram and B. Santhi, *Ionics* 13(2007) 323.
35. Investigations on vacuum-evaporated CSZ thin films for thermal barrier applications
N. Shankaransubramanian, T. Sornakumar, S. Gurumoorthy, M. Harihara Sundar and **P. Vickraman**, *Ionics* 13 (2007) 461

36. A study on the blending effect of PVdF in the ionic transport mechanism of plasticized PVC-LiBF₄ polymer electrolyte
P. Vickraman, and S. Ramamurthy, *Materials Letters* 60 (2006) 3431.

❖ **Paper presented in international / national level conferences**

1. ***“The Compositional Proforma of PEG :BaTiO₃ For The Effective Ionic Transport On LiBETI Dispersed Semi crystalline Polymer Blend Based Ferro ceramic Micro composites”*** International Conference on Advanced Materials (ICAM 2011), on December 12 to 16, 2011, PSG College of Technology, Coimbatore, India
2. ***“Compositional Effect on Organically modified Nano clay in the ionic transport mechanism of Lithium bisperflouroethane sulfonyl imide based PVdF-HFP nanocomposits”*** International Conference on Membranes; Biological and Environmental Applications organized by Centre for Environment Education and Technology (CEET), Kottayam during the period 16 – 19 September 2011 at Kottayam, Kerala.
3. Participated and presented the paper entitled ***“Perovskite structure based filler impregnated PVdF-HFP Microcomposites for lithium ion batteries”*** in the 55th State Symposium organized by Department of Atomic Energy during the period 26-30 December 2010 at Manipal University, Manipal.
4. Participated and presented the paper entitled ***“Li ion transport on electroceramic dispersed PvdF-HFP-LISbP6 microcompostes”*** in the 5th Asian Conference on Electrochemical power systems during the Period 17th-20th September 2010 at Singapore in the National University of Singapore.
5. Participated and presented the paper entitled ***“Impact of PEMA blending for Li cation transport in ferroeletri filler Loaded LIBETI based PVDF-HFP Nanocomposites for lithium ion batteries in the theme symposium on Advanced ceramic materials Monoliths to composites”*** jointly organized by Maerial Science Department, Sardar Patel University, Gujarat and Material Research Society of India during the Period 9th – 11th February 2010
6. Participated and presented the paper entitled ***“The compositional effect of filler-plastizier on Li ion transport in PVdF-HFP Micro Composites for Lithium battery applications”*** in the national conference on MATERIALS FOR ENERGY AND CONVERSION organized by Department of Physics, Sri Venkateswara University, Tirupathi during the period January 23-24, 2010.

7. Participated in the national symposium on NEW GENERATION COMPOSITES AND HYBRID MATERIALS: CONCEPTS TO APPLICATIONS, organized by MRSI, Kolkata chapter during February 10-12, 2009 at Saha Institute of Nuclear Physics Kolkata.
8. Presented the paper entitled "*Nanoparticulate TiO₂ incorporated PVdF-HFP membranes for lithium ion batteries*" on International Conference on Nanoscience and Technology 08 held on 27-29 February 2008 at Indira Gandhi Centre for Atomic Research, Kalpakkam
9. Presented the paper entitled "*Synthesis of LiBOB and LiDFOB : A novel salts for lithium ion batteries*" on 14th Electrochemical convention of Electrochemists held on 6-7th December 2007 at Indira Gandhi Centre for Atomic Research, Kalpakkam.
10. Presented the paper entitled "*The effect of Al₂O₃ and SiO₂ nanoparticles in the PVdF-HFP matrix for Li ion battery applications*" on International Conference on the Materials for the Millennium held on March 3-5, 2007 at Department of Applied Chemistry, Cochin University of Science at Technology, Cochin.
11. Presented the paper entitled "*PVdF-HFP based composite polymer electrolytes containing LiPF₃(CF₃CF₂)₃*" on International Conference on Nanomaterial and its applications held on February 4-6, 2007 at Department of Chemistry, National Institute of Technology, Tiruchirapalli-15.
12. Presented the paper entitled "*FTIR spectroscopic studies on PVC/PVA blend based composite polymer electrolytes*" on national conference on recent advances in vibrational spectroscopy held on January 29-30, 2007 at Department of Physics, Periyar University.
13. Presented the paper entitled "*A study on the blending effect of polyvinylidene fluoride in the ionic transport mechanism of plasticized polyvinyl chloride + lithium perchlorate gel polymer electrolytes*" on International Conference on Ionics Devices held on December 7-9, 2006 at Department of Physics, Anna University, Chennai.
14. Presented the paper entitled "*Ultrasonics / FTIR studies on molecular interactions of Polyethylmethacrylate (PEMA) and acetonitrile (ACN)*" on 15th National Symposium on Ultrasonics held on December 6-8, 2006 at Department of Physics, Allahabad University, Allahabad – 2.
15. Presented the paper entitled "*Spectroscopic studies on Li metal salt complexation in polymer plasticizer matrix on National Seminar on Novel Trends in Synthesis, Structure, Reaction Dynamics and Biological Studies of Coordination Compounds*" held on March 3-4, 2005 at Department of

Chemistry, Gandhigram Rural University, Gandhigram.

16. Presented the paper entitled "***Ultrasonic and conductivity studies on the effect of propylene carbonate in LiClO₄+ THF binary mixture***" at X national symposium on Ultrasonics organized by Department of Physics, Osmania University and Ultrasonic Society of India, during February 8-9, 2001.
17. Presented the paper entitled "***Effect of temperature and dilution on aqueous Polyacrylamide by Ultrasonic technique***" in the International Conference and Exhibition on Ultrasonic conducted by Ultrasonic Society of India and National Physical Laboratory, New Delhi during December 2-7, 1999.
18. Presented the paper entitled "***Macromolecular interaction studies on the non-linear behavior of polyacrylonitrile in Dimethylformamide by Ultrasonic techniques***" in the IX National Symposium on Ultrasonics during December 14-16, 1998 by Raman School of Physics, Pondicherry University and Ultrasonics Society of India.
19. Presented the paper entitled "***Impedance spectroscopy of PVC/PMMA/LiClO₄/LiCF₃SO₃ blend based electrolytes***" organized by Electrochemical Materials Science Division, CECRI, Karaikudi during July 13-17, 1998.
20. Presented the paper entitled "***PVC based electrolytes for lithium battery applications***" at National seminar on batteries and fuel cells at CECRI, Karaikudi during 14-15, May 1998.
21. Presented the paper entitled "***Acoustical and Hydrodynamical properties of polyacrylamide by Ultrasonic and Viscometric techniques***" held at Gulbarga University, Karnataka during January 9-12, 1998.
22. Presented the paper entitled "***Ultrasonic studies on Polyacrylonitrile in DMF***" at Madras during December 19-20, 1997 conducted by Department of Chemistry, Indian Institute of Technology, Chennai.
23. Presented the paper entitled "***Ultrasonic studies on the effects of Electrolytes in Aqueous ethanol***" in seventh National Symposium on Ultrasonic on September 6-7, 1996 organized by Ultrasonics Society of India.
24. Presented the paper entitled "***Acoustic studies of Aliphatic esters and aromatic esters in NaOH and KOH***" in National Symposium on Molecular Physics during March 20-22, 1989 at Department of Physics, Annamalai University.

❖ **Referee for the following Journals**

- Journal of Membrane Science

- Materials Research Bulletin
- European Polymer Journal
- Journal of Physics and Chemistry of Solids
- Journal of Applied Polymer Science
- Ionics

❖ **Membership in professional bodies**

- Material Research Society of India
- Ultrasonic Society of India
- The Indian Science Congress Association

❖ **Other activities**

I gave eighteen video lectures of half-an-hour duration on Electricity and Magnetism of University Grants Commission video lectures series in Physics produced by AVRC, Chennai.

- Senate member of the University (2004-2007)
- NSS Programme Officer for some time
- Coordinator for NET coaching centre Since 2008

I certify that the above information furnished by me is true to the best of my knowledge.



(P. VICKRAMAN)