

# Palanisamy Vickraman

NB/7, GRU campus,  
staff Quarters,  
Gandhigram-624302  
India

Tel: +91 451 2452371-76  
Mobile +91  
94434 47511



Associate professor in physics,  
Department of Physics,  
Gandhigram Rural Institute-  
Deemed University,  
Gandhigram-624302  
Tel: +91 451 2454090

Email: [vrsvickraman@yahoo.com](mailto:vrsvickraman@yahoo.com)

---

- **Personal data**

- Date of birth:** December 7, 1964
- Marital Status:** Married, two sons
- Nationality:** Hindu, Indian
- Community:** OC/BC/SC/ST
- Date of appointment in GRU:** October 1990

- **Education**

- **Ph.D** in Physics, Gandhigram Rural University, Gandhigram, October 2002  
**Thesis:** A study of PVC based blend polymer electrolytes for lithium battery applications  
**Advisor:** Professor S Ramamurthy
- **M. Phil** in Physics, Pondicherry University, Pondicherry, December 1988.  
**Thesis:** Acoustic studies of aliphatic esters and aromatic esters in NaOH and KOH  
**Advisor:** Professor T. K. Nambinarayanan
- M. Sc., in Physics, Bharathidasan University, Trichy, 1985-1987
- B. Sc., in Physics, Bharathidasan University, Trichy, 1982-1985

- **Teaching experience**

- Under Graduate level 20 years
- Post Graduate level 18 years

- **Research interests**

- Polymer electrolytes for lithium ion batteries-optimization and characterization
- Rechargeable batteries-Magnesium & lithium batteries
- Nanomaterials for energy storage devices
- Ultrasonic studies on polymers (solid/liquids)

- **Research supervision**

- Ph.D Submitted/awarded 1
- Ph.D under guidance 2
- M. Phil. awarded 8
- M.Phil. under guidance –

- **Title of the thesis**

- Physico-chemical studies of some novel lithium salts based nanocomposite polymer electrolytes for lithium rechargeable batteries (Ph D submitted 2008)
- A study on the temperature dependence of ultrasonic velocity and associated acoustic parameters of poly ethyleneglycol 6000 in dimethyl formamide (DMF) at various concentrations (M Phil awarded 2003)
- Thermo-acoustic behaviour of polyacrylonitrile (PAN) in dimethyl formamide (DMF) by ultrasonic techniques (M Phil awarded 2003)
- Ultrasonic studies on some physical properties of polymethylmethacrylate (PMMA) in aprotic solvents (dimethyl formamide, dimethyl sulphoxide and acetonitrile) (M Phil awarded 2003)
- Macromolecular interaction and temperature dependence on polyvinylidene fluoride in dimethyl formamide by ultrasonic techniques (M Phil awarded 2003)
- Ultrasonics/FTIR studies on the limiting compressibility of acetonitrile (ACN) in poly ethylmethacrylate (PEMA) (M Phil awarded 2006)
- Photoelectrochemical behaviour of electrodeposited bismuth thin films on stainless steel (M Phil awarded 2007)

- vii. A study on polyvinylidene fluoride (PVdF) based novel polymer electrolytes for magnesium rechargeable batteries (M Phil awarded 2008)
- viii. Ionic transport, thermal, XRD and phase morphological studies on LiCF<sub>3</sub> SO<sub>3</sub> based PVC/PVdF gel electrolytes (M Phil awarded 2008)

- **Research projects**

Characterization of solvent free PVC based electrolytes for lithium battery applications funded by University Grants Commission through minor research project in the year 2001

- **List of publications in international journals**

1. Polyvinylidene fluoride-hexafluoropropylene (PVdF-HFP)-based composite polymer electrolyte containing LiPF<sub>3</sub>(CF<sub>3</sub>CF<sub>2</sub>)<sub>3</sub>  
V. Aravindan, **P. Vickraman** and T. Prem Kumar, *Journal of Non-Crystalline Solids* 354 (2008) 3451
2. Lithium difluoro(oxalato)borate-based novel nanocomposite polymer electrolytes for lithium-ion batteries  
V. Aravindan, **P. Vickraman** and K. Krishnaraj, *Polymer International* 57 (2008) 932
3. Characterization of SiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> incorporated PVdF-HFP based composite polymer electrolytes (CPE) with LiPF<sub>3</sub>(CF<sub>3</sub>CF<sub>2</sub>)<sub>3</sub>  
V. Aravindan and **P. Vickraman**, *Journal of Applied Polymer Science* 108 (2008) 1314
4. Polyvinylidene fluoride-hexafluoropropylene based nanocomposite polymer electrolytes (NCPE) complexed with LiPF<sub>3</sub>(CF<sub>3</sub>CF<sub>2</sub>)<sub>3</sub>  
V. Aravindan and **P. Vickraman**, *European Polymer Journal* 43 (2007) 5121
5. A novel gel electrolyte with lithium difluoro(oxalato)borate salt and Sb<sub>2</sub>O<sub>3</sub> nanoparticles for lithium ion batteries  
V. Aravindan and **P. Vickraman**, *Solid State Sciences* 9 (2007) 1069
6. ZrO<sub>2</sub> 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
7. Effects of TiO<sub>2</sub> and ZrO<sub>2</sub> nanofillers in LiBOB based PVdF/PVC composite polymer electrolytes (CPE)  
V. Aravindan and **P. Vickraman**, *Journal of Physics D: Applied Physics* 40 (2007) 6754

8. 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.
9. A study on LiBOB-based nanocomposite gel polymer electrolytes (NCGPE) for Lithium-ion batteries  
V. Aravindan and **P. Vickraman**, *Ionics* 13 (2007) 277
10. Investigations on Pd:SnO<sub>2</sub>/porous silicon structures for sensing LPG and NO<sub>2</sub> gas  
N. Shankara Subramanian, R. Vivek Sabaapathy, **P. Vickraman**, G. Vimal Kumar, R. Sriram and B. Santhi, *Ionics* 13 (2007) 323
11. Investigations on vacuum-evaporated CSZ thin films for thermal barrier applications  
N. Shankara Subramanian, T. Sornakumar, S. Gurumoorthy, M. Harihara Sundar and **P. Vickraman**, *Ionics* 13 (2007) 461
12. A study on the blending effect of PVDF in the ionic transport mechanism of plasticized PVC–LiBF<sub>4</sub> polymer electrolyte  
**P. Vickraman** and S. Ramamurthy, *Materials Letters* 60 (2006) 3431

- **Papers submitted to the journals**

1. Synthesis and characterization of LiBOB-based PVdF/PVC-TiO<sub>2</sub> composite polymer electrolytes  
V. Aravindan and **P. Vickraman**, *Polymer Engineering and Science*
2. Li<sup>+</sup> ion conduction in TiO<sub>2</sub> filled polyvinylidene fluoride-co-hexafluoropropylene based novel nanocomposite polymer electrolyte membranes with LiDFOB  
V. Aravindan and **P. Vickraman**, *Journal of Non-crystalline Solids*
3. Lithium fluoroalkylphosphate based composite polymer electrolytes (NCPE) incorporated with nanosized SiO<sub>2</sub> filler  
V. Aravindan and **P. Vickraman**, *Materials Chemistry and Physics*
4. Nanoparticulate AlO(OH)<sub>n</sub> filled polyvinylidene fluoride-co-hexafluoropropylene based microporous membranes for lithium ion batteries  
V. Aravindan and **P. Vickraman**, *Journal of Membrane Science*
5. Polyvinylidene fluoride (PVdF) based novel polymer electrolytes for magnesium rechargeable batteries  
V. Aravindan, G. Karthikaselvi and **P. Vickraman**, *Journal of Applied Polymer Science*
6. Investigations on Na<sup>+</sup> ion conducting polyvinylidene fluoride-co-hexafluoropropylene/poly ethylmethacrylate blend polymer electrolytes,  
V. Aravindan, C. Lakshmi and **P. Vickraman**, *Current Applied Physics*

7. Polyvinylidene fluoride (PVdF) based novel polymer electrolytes complexed with  $Mg(ClO_4)_2$   
**P. Vickraman**, V. Aravindan, T. Srinivasan and M. Jayachandran, *European Physical Journal: Applied Physics*.
8. Ionic transport, thermal, XRD and phase morphological studies on  $LiCF_3SO_3$  based PVC/PVdF gel electrolytes  
**P. Vickraman**, V. Aravindan, M. Selvambikai and N. Shankarasubramanian, *Ionics* (Revised)
9. Performance of  $Li/LiFePO_4$  cells with polyvinylidene fluoride-hexafluoropropylene based polymer electrolyte membranes containing lithium bis(oxalato)borate  
V. Aravindan, **P. Vickraman**, A. Sivashanmugam, R. Thirunakaran and S. Gopukumar, *Journal of Power Sources* (Revised)

• **Papers presented in International/National level conferences**

1. *Nanoparticulate  $TiO_2$  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
2. *Synthesis of LiBOB and LiDFOB : A novel salts for lithium ion batteries* on 14<sup>th</sup> Electrochemical convention of Electrochemists held on 6-7<sup>th</sup> December 2007 at Indira Gandhi Centre for Atomic Research, Kalpakkam
3. *The effect of  $Al_2O_3$  and  $SiO_2$  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 and Technology, Cochin.
4. *PVdF-HFP based composite polymer electrolytes containing  $LiPF_3(CF_3CF_2)_3$*  on International Conference on Nanomaterial and its applications held on February 4-6, 2007 at Department of Chemistry, National Institute of Technology, Tiruchirapalli-15.
5. *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
6. *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.
7. *Ultrasonics/FTIR studies on molecular interactions of Polyethylmethacrylate (PEMA) and acetonitrile (ACN)* on 15<sup>th</sup> National Symposium on Ultrasonics held on December 6-8, 2006 at Department of Physics, Allahabad University, Allahabad – 2.

8. *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
9. *Ultrasonic and conductivity studies on the effect of propylene carbonate in LiClO<sub>4</sub> + 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
10. *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
11. *PVC based electrolytes for lithium battery applications* at National seminar on batteries and fuel cells at CECRI, Karaikudi during 14-15, May 1998.
12. *Impedance spectroscopy of PVC/PMMA/LiClO<sub>4</sub>/LiCF<sub>3</sub>SO<sub>3</sub> blend based electrolytes* organized by Electrochemical Materials Science Division, CECRI, Karaikudi during July 13-17, 1998.
13. *Acoustical and Hydrodynamical properties of polyacrylamide by Ultrasonic and Viscometric techniques* held at Gulbarga University, Karnataka during January 9-12, 1998
14. *Macromolecular interaction studies on the non-linear behaviour 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.
15. *Ultrasonic studies on Polyacrylonitrile in DMF* at Madras during December, 19-20, 1997 conducted by Department of Chemistry, Indian Institute of Technology, Chennai.
16. *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
17. *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
  
- **Membership in professional bodies**
  - 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

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

P. VICKRAMAN