

Varuni A. Seneviratne

Department of Physics, University of Peradeniya, Peradeniya, 20 400, Sri Lanka.

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dmvas@pdn.ac.lk

PERSONAL INFORMATION

Nationality: Sri Lankan
Gender: Female
Birth Date: 1970.07.07
Marital Status: Married
Children: One daughter (11 years)

EDUCATION

Ph.D. (Experimental Solid State Physics),

Department of Physics, University of Oklahoma, Norman, OK, U.S.A. May 2004.

Dissertation: *Local Structures in Poly(ethylene oxide)-LiX*

($X = \text{SbF}_6^-$, BF_4^- , CF_3SO_3^-) and Glyme-LiX ($X = \text{SbF}_6^-$, BF_4^- , CF_3SO_3^-)

Supervisor: Prof. John E. Furneaux.

M.Sc.

Department of Physics, University of Oklahoma, Norman, OK, U.S.A., May 2002.

B.Sc.

Physics (first class honors), University of Peradeniya, Sri Lanka. April 1996.

GRANTS

Principle Investigator of the following grants

National Science Foundation, Sri Lanka (2005) US\$ 7 750/= (Completed)

Third World Academy of Sciences (2007) US\$ 9 000/= (Completed)

National Science Foundation, Sri Lanka (2011) US\$ 15 500/= (completed)

Co-investigator

National Science Foundation, Sri Lanka (2012) US \$ 10350/= (ongoing)

AWARDS

1. National Science Foundation Awards-2012: Certificate of Commendation under the category of Basic Sciences.
2. University of Oklahoma: **Graduate Students Senate Research Travel Award**, Spring 2002.
3. University of Oklahoma: **Graduate College Research Travel Award**, Fall 2001.

4. American Physical Society : ***travel funds to attend the 100th American Physical Society meeting held in Atlanta, Georgia,*** 20th – 26th March, 1999.
5. University of Peradeniya: ***University scholarship for best results in B.Sc. Special (Physics),*** 1996.
6. University of Peradeniya: ***Dr. C. A. Hevavitharana Memorial Prize for Physics, awarded for the best student in the graduating class,*** 1996.
7. University of Peradeniya: ***Prof. A. W. Wolfendale Memorial Prize for Physics, awarded for the best student in the 2nd (junior) year of the Special Degree Course in Physics,*** 1995.

PROFESSIONAL EXPERIENCE

Senior Lecturer (July 2004 – to date)

Department of Physics, University of Peradeniya, Sri Lanka.

Visiting Lecturer (2005 - to date)

Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka.

Visiting Lecturer (2007 - to 2010)

Department of Radiography/Radiotherapy
Faculty of Allied Health Sciences. University of Peradeniya, Peradeniya, Sri Lanka.

Lecturer (April 1997 to July 2004)

Department of Physics, University of Peradeniya, Sri Lanka.
(From January 1998 to May 2004-on study leave at the University of Oklahoma, Norman, U.S.A.)

Temporary Assistant Lecturer (May 1996 to March 1997)

Department of Physics, University of Peradeniya, Sri Lanka.

Graduate Teaching Assistant (January 1998-May 2001)

Department of Physics, University of Oklahoma, Norman, U.S.A.

Graduate Research Assistant (June 2001 to May 2004)

Department of Physics, University of Oklahoma, Norman, U.S.A.
under the supervision of Dr. John E. Moore-Furneaux.

PUBLICATIONS in Journals

1. Performance of dye sensitized solar cells fabricated with electrospun polymer nanofiber based electrolyte, S. S. Dissanayake, M. A. K. L. Dissanayake, **V. A. Seneviratne**, MATERIALSTODAY, Volume:3 Pages:104–111, Published: 2016.
2. Electrical and structural studies of a LiBOB-based gel polymer electrolyte, A. M. I. E. Gunathilaka, L. R. A. K. Bandara, A. K. Arof, M. A. Careem, IONICS Pages:1-7, Published 2016.
3. Influence of Bath Temperature on CBD-CdS Thin Films, W. G. C. Kumarage, L. B. D. R. P. Wijesundara, **V. A. Seneviratne**, PROCEdia ENGINEERING Vol: 139 Pages: 64–68, Published 2016.
4. Tunable optoelectronic properties of CBD-CdS thin films via bath temperature alterations, W. G. C. Kumarage, R. P. Wijesundera, **V. A. Seneviratne**, C. P. Jayalath, B. S. Dassanayake, JOURNAL OF PHYSICS D: APPLIED PHYSICS Volume:49 Pages:95109-95116, Published 2016.
5. Novel Quasi-Solid-State Electrolyte Based on γ - Butyrolactone and Tetrapropylammonium Iodide for Dye-Sensitized Solar Cells Using Fumed Silica as the Gelling Agent, A. M. C. Senevirathne, **V. A. Seneviratne**, O. A. Ileperuma, PROCEdia ENGINEERING Vol: 139 Pages: 87–92, Published 2016.
6. Efficiency enhancement by mixed cation effect in polyethylene oxide (PEO) - based dye-sensitized solar cells, M. A. K. L. Dissanayake, E. M. B. S. Ekanayake, L. R. A. K. Bandara, JOURNAL OF SOLID STATE ELECTROCHEMISTRY Volume:20 ,Published 2015.
7. Electrochimica Acta Optimization of iodide ion conductivity and nano fi ller effect for ef fi ciency enhancement in polyethylene oxide (PEO) based dye sensitized solar cells, M. A. K. L. Dissanayake, W. N. S. Rupasinghe, **V. A. Seneviratne**, ELECTROCHIMICA ACTA Volume:145 Pages:319-326, Published 2014.
8. Polymethylmethacrylate (PMMA) based quasi-solid electrolyte with binary iodide salt for ef fi ciency enhancement in TiO 2 based dye sensitized solar cells, M. A. K. L. Dissanayake, R. Jayathissa, **V. A. Seneviratne**, C. A. Thotawatthage, SOLID STATE IONICS Volume:265 Pages:85-91, Published 2014.
9. Ionic conductivity enhancement in the solid polymer electrolyte PEO 9 LiTf by nanosilica filler from rice husk ash, M. A. K. L. Dissanayake, W. N. S. Rupasinghe, J. M. N. I. Jayasundara, P. Ekanayake, T. M. W. J. Bandara, S. N.

10. Effect of plasticizers (EC or PC) on the ionic conductivity and thermal properties of the (PEO) 9 LiTf : Al₂O₃ nanocomposite polymer electrolyte system, H. M. J. C. Pitawala, M. A. K. L. Dissanayake, **V. A. Seneviratne**, B.-E. Mellander, I. Albinson, JOURNAL OF SOLID STATE ELECTROCHEMISTRY Volume:12 Pages:783-789, Published 2008.
11. Effect of Nano-Porous Alumina Filler on Thermal and Electrical Transport Properties of Solid Polymer Electrolyte (PEO) 12 LiBF₄, H. M. J. C. Pitawala, M. A. K. L. Dissanayake, **V. A. Seneviratne**, B. E. Mellander, I. Albinsson, ADVANCE MATERIALS RESEARCH Volume: 55–57 Pages: 745–748, Published 2008.
12. Combined effect of Al₂O₃ nano-fillers and EC plasticizer on ionic conductivity enhancement in the solid polymer electrolyte (PEO) 9 LiTf, H. M. J. C. Pitawala, M. A. K. L. Dissanayake, **V. A. Seneviratne**, SOLID STATE IONICS Volume: 178 Pages: 885–888, Published 2007.
13. Conductivity and thermal studies on plasticized nano-composite solid polymer electrolyte PEO: EC: LiTf: Al₂O₃, H. M. J. C. Pitawala, M. A. K. L. Dissanayake, **V. A. Seneviratne**, SOLID STATE IONICS Pages: 585–592, Published 2006.
14. Absorption intensity variation with ion association in PEO based electrolytes, J. E. Furneaux, A. M. McCoy, **V. A. Seneviratne**, F. Roger, SOLID STATE IONICS Pages: 469–476, Published 2006.
15. Crystal Structures of Poly (Ethylene Oxide) 3 : LiBF₄ and (Diglyme)_n:LiBF₄ (n) 1,2), Y. G. Andreev, **V. A. Seneviratne**, M. Khan, W. A. Henderson, R. E. Frech, P. G. Bruce, CHEMISTRY OF MATERIALS Volume:17 Pages: 767–772, Published 2005.
16. Characterization of Crystalline and Solution Phases of Diglyme - LiSbF₆, **V. Seneviratne**, R. Frech, J. E. Furneaux, M. Khan, JOURNAL OF PHYSICAL CHEMISTRY. B, Volume: 108 Pages: 8124–8128, Published 2004.
17. Phases and phase transitions of P (EO) 6 LiSbF₆, **V. A. Seneviratne**, R. Frech, J. E. Furneaux, ELECTROCHIMICA ACTA Volume:48 Pages:2221–2226, Published 2003.
18. Far-Infrared Spectroscopy of the Poly (ethylene oxide) x - LiCF₃SO₃ System, **V. A. Seneviratne**, J. E. Furneaux, R. Frech, MACROMOLECULES Volume:35

RESEARCH PAPERS

Research papers presented and published as full papers in proceedings of conferences, seminars, workshops, symposia etc.

1.K.V.L. Amarasinghe, **V.A. Seneviratne**, L.R.A.K. Bandara and M.A.K.L.

Dissanayake, “Electrical And FT-IR Study of Fumed Silica Based Gel Electrolytes; (Tetraglyme)_nKI And (Ethylene Glycol)_nKI”, 14th Asian Conference on Solid State Ionics (ACSSI), 2014.

2.E.M.T.K Ekanayake, **V.A Seneviratne**, L.R.A.K. Bandara, K.V.L Amarasinghe, J.M.K.W. Kumari, C.A Thotawaththage and M.A.K.L. Dissanayake, “Electrical Characterization of Tetrabutylammonium Iodide Based Polymer Free Gel Electrolyte”, 14th Asian Conference on Solid State Ionics (ACSSI), 2014.

3. H.N.M Sarangika, W.A.R.B. Weerasekara, G.K.R Senadeera, M.A.K.L. Dissanayake, K.V.L. Amarasinghe, H.K.D.W.M.N.R. Divarathne and **V.A. Seneviratne**, “Performances Of TiO₂ as Cathode Material in Rechargeable Mg Batteries with Polyethylene Oxide Based Gel Electrolyte”, 14th Asian Conference on Solid State Ionics (ACSSI), 2014.

4. “Electrical and Optical Studies on Pan-LiBF₄ Based Gel Polymer Electrolytes”
K.V.L. Amarasinghe, **V.A. Seneviratne**, L.R.A.K. Bandara, M.A.K.L. Dissanayake
Proc. Advanced Materials of 4th International Conference on Structural Engineering and Construction Management (ICSECM) 2013 p118.

5. Quasi-solid state nanocomposite polymer electrolytes based on PVDF-PEO blend and their applications in dye sensitized solar cells.

W.S.S. Gunathilake, G.K.R. Senadeera, P. Ekanayake, **V. Seneviratne**, M.A.K.L. Dissanayake.

Proc. 12th Asian Conference on Solid State Ionics, Wuhan, P.R. China (2010)

Ed. B.V.R. Chowdari et al, Wuhan University Press (2010)1167.

6 solid polymer electrolyte (PEO)₁₂LiBF₄.

H.M.J.C. Pitawala, M.A.K.L. Dissanayake, **V.A. Seneviratne**, B.E. Mellander, I Albinson,
Proc. 11th Asian Conference on Solid State Ionics, Coimbatore, India (June 2008.)

Ed. B.V.R. Chowdari et al, Macmillan, India Ltd. (2008) 635.

7. Ionic conductivity enhancement in plasticized solid polymer electrolyte, PEO:EC:LiTf by Al₂O₃ nano-fillers. *M.A.K.L. Dissanayake, H.M.J.C. Pitawala, V.A. Seneviratne, Proc. International Conference on Polymer Batteries and Fuel Cells (PBFC-2007), 11-14 June 2007, Rome, Italy.*

8. Absorption Intensity Variation with Ion Association in PEO Based Electrolytes.

J. E. Furneaux, A. M. McCoy, V. A. Seneviratne, R. Frech;

Proceedings of the 10th Asian Conference on Solid State Ionics

(Kandy, Sri Lanka from 12-16 June, 2006),

Ed. B.V.R. Chowdari et al World Scientific, (2006), pp 469-476.

9. Conductivity and Thermal Studies on Plasticized PEO:LiTf-Al₂O₃ Composite Polymer Electrolyte”.

H. M. J. C. Pitawala, M. A. K. L. Dissanayake, V. A. Seneviratne;

Proceedings of the 10th Asian Conference on Solid State Ionics

(Kandy, Sri Lanka from 12-16 June, 2006),

Ed. B.V.R. Chowdari et. al. World Scientific, (2006), pp 585-592.

BOOKS

1. Co-Editor of *Proceedings of the 10th Asian Conference on Solid State Ionics*, World Scientific Publishing Co. Pvt. Ltd. 2006

ABSTRACTS

ABSTRACTS

Abstracts in proceedings of conferences, seminars, workshops, symposia etc..

(oral and poster presentations) (presented author's name is underlined)

1. “Dye Sensitized Solar Cells with Polymethylmethacrylate (PMMA) Based Gel Polymer Electrolyte and Tetrapropylammonium Iodide salt (Pr₄N+I-).”

Proc. of the International Conference on Solar Energy Materials, Solar Cells and Solar Energy Applications (SOLAR ASIA – 2011). (Poster Presentation)

H. Iqbal, K. Perera, V. A. Seneviratne, W.N.S. Rupasinghe, C. A. Thotawatthage, G.K.R. Senadeera, and M.A.K.L Dissanayake.

From 28-30 July 2011 at Institute of Fundamental Studies, Kandy, Sri Lanka.

2. Quasi-Solid State Dye Sensitized Solar Cells with Poly(Vinylidene-Fluoride) (PVDF) Based Gel Polymer Electrolyte and Nano-Porous TiO₂ Electrode.

Proc. of the International Conference on Solar Energy Materials, Solar Cells and Solar

Energy Applications (SOLAR ASIA – 2011). *(Poster Presentation)*

H.A.S.C. Perera, K. Perera, V. A. Seneviratne, W.N.S. Rupasinghe, C. A. Thotawatthage, G.K.R. Senadeera, and M.A.K.L Dissanayake.

From 28-30 July 2011 at Institute of Fundamental Studies, Kandy, Sri Lanka.

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3. “Characterization of Natural Rutile Based Composite Polymer Electrolyte”

Lakshman Dissanayaka, V. A. Seneviratne, (Poster Presentation)

Proc. of Symposia U: International Conference on Materials for Advanced Technologies(ICMAT) -2011 : from 26th June to 1st July, Singapore.

4. “Ionic Conductivity Enhancement in Solid Polymer Electrolyte by Nanosilica Filler from Rice Husk Ash”

Lakshman Dissanayake, N. Rupasinghe, P. Ekanayake, Varuni. Seneviratne, N. Jayasundara. , (Poster Presentation)

Proc. of Symposia N: International Conference on Materials for Advanced Technologies (ICMAT) -2011: from 26th June to 1st July, Singapore.

5. “Ionic conductivity study on natural rutile based composite polymer electrolytes.”

K.V.L. Amarasinghe, M.A.K.L. Dissanayake and V.A. Seneviratne (Oral Presentation)

Proc. Peradeniya University Research Sessions (PURSE) -2010; Vol 15: 449-451

4. “Nanocomposite polymer electrolytes with nanosilica from rice husk ash.”

J.M.N.I. Jayasundara, W.N.S. Rupasinghe, S.N. Thalawala, P. Ekanayake, V.A. Seneviratne and M.A.K.L. Dissanayake. (Oral Presentation)

Proc. Peradeniya University Research Sessions (PURSE) -2010; Vol. 15: 446-447

6. “Effect of carbon black for ionic conductivity of polymer electrolytes.”

E.A.D.M. Athukorala, M.A.K.L. Dissanayake and V.A. Seneviratne (Poster Presentation)

Proc. Peradeniya University Research Sessions(PURSE) -2010; Vol 15: 511-513

7. “The effect of zirconia (ZrO₂) nano fillers on the ionic conductivity of PEO:LiClO₄ polymer electrolytes.”

B.H.G. Pushpawala, H.M.J.C. Pitawala, V.A. Seneviratne and M.A.K.L. Dissanayake (Oral Presentation)

Peradeniya University Research Sesions (PURSE) – 2006; Vol 11: p173

8. “Quantitative Infrared studies of PEO based electrolytes”

J. E. Furneaux, A. M. McCoy, Varuni Seneviratne, Roger Frech. (Oral Presentation)

9th International Symposium on Polymer Electrolytes, Mragowo, Poland, August 22-27, 2004.

9. “ Local Structures in Diglyme-LiBF₄ and PEO-LiBF₄ Systems”

Varuni Seneviratne, Roger Frech, John Furneaux, Masood Khan. (Poster Presentation)

59th Southwest Regional American Chemical Society Meeting, Oklahoma City, Oklahoma, 26th-28th October 2003.

10. "Structure and order in amorphous phases of polymer electrolytes: P(EO)_xLiSbF₆ and P(EO)_xLiCF₃SO₃"

Roger Frech and Varuni Seneviratne. (Oral Presentation)

59th Southwest Regional American Chemical Society Meeting, Oklahoma city, Oklahoma, 26th-28th October 2003.

11. "Structural Investigations of Crystalline and Solution Phases of Monoglyme:LiSbF₆ System."

Varuni Seneviratne, J. E. Furneaux, Roger Frech. (Poster Presentation)

225th American Chemical Society National Meeting, New Orleans, Louisiana, 23rd – 27th March, 2003.

12. "Phases and Phase Transitions of P(EO)₆LiSbF₆."

Varuni Seneviratne, J. E. Furneaux, Roger Frech. (Poster Presentation)

8th International Symposium on Polymer Electrolytes, Santa Fe, New Mexico, U.S.A. 19th - 24th May 2002.

13. "Structure Characterization of Diglyme:LiSbF₆ crystal and a comparison to P(EO)₆LiSbF₆ crystal"

Varuni Seneviratne, J. E. Furneaux, Roger Frech. (Oral Presentation)

57th Southwest Regional American Chemical Society Meeting, San Antonio, Texas, 17th – 19th October, 2001.

14. "Ionic Association of LiCF₃SO₃ in 100,000 Molecular Weight Poly(ethylene oxide)."

Varuni Seneviratne, J. E. Furneaux, Roger Frech. (Oral Presentation)

45th Oklahoma Section American Chemical Society Meeting, Oklahoma State University, Stillwater, Oklahoma, 15th April 2000.

15. Attended **American Physical Society Centennial Meeting**, Atlanta, Georgia, 20th – 26th March, 1999.

16. "Fractals in Ion Conducting Polymers."

Varuni Seneviratne, M. A. Careem, (Oral Presentation)

Proc. Peradeniya University Research Sesiions (PURSE) – 2007; July 1997.

17. Attended **5th Asian Conference on Solid State Ionics**, Kandy, Sri Lanka

SERVICES

Secretary : Board of Study in Science Education. (April, 2008 to date)

Member : Board of Study in Physics. (February, 2010 to date)

Coordinator : M.Sc. in Physics Education (May 2005 to December, 2010)

Co-coordinator*: Postgraduate Diploma in Science Education. (2007/08)

Coordinator and Resource Person: *Teachers workshops held in 2008 and 2010 at the Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka.*

Senior Student Counselor: from 01.01.2007 to 31.12.2008

Secretary and co-editor of the organizing committee of the 10th Asian Conference on Solid State Ionics held in Kandy Kandy, Sri Lanka from 12-16 June, 2006.

TEACHING

PH103-Elementary Laboratory I PH104- Elementary Laboratory II PH230- Quantum and Atomic Physics PH240- Introductory Solid State Physics PH375- Introductory Nanoscience PH304- Special theory of Relativity PH440- Solid State Theory PH431- Quantum Mechanics II PH406- Statistical Physics AS461- Semiconductor Devices and Technology	PH501- Quantum and Statistical Physics PH502- Electron Theory of Solids PH506- Polymer Science PH516 - Material Characterization Techniques PH526 - Introduction to Nanotechnology CHN506- Carbon Nanotubes and Particles.
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POSTGRADUATE DEGREES SUPERVISED

Master of Philosophy.

Cosupervisor of <i>A. M. C. Senevirathne</i>	2016
Co-supervisor of <i>W.N.S. Rupasinghe.</i>	<u>2015.</u>
Co-supervisor of <i>K.V. L Amerasinghe.</i>	<u>2015.</u>
Co-supervisor of <i>H.M.J.C. Pitawala.</i>	<u>2008).</u>

M.Sc. in Material Physics

Co-supervisor of <i>K.M.D.N.M. Keerthisinghe</i>	2009
Supervisor of <i>Ms. H.S Alahakoon</i>	2012
Co-supervisor of <i>Mr. R. B. S. M. Gunetissa</i>	2016

Co-supervisor of Mr. R. B. S. M. Gunetissa	2016
Co-supervisor of Mr. A. M. S. Dissanayake	2017
Co-supervisor of Mr. A. M. I. E. Gunethilake	2017
M.Sc. in Nanoscience and Nanotechnology	
Supervisor of <i>E.A.D.M. Athukorala</i>	2012.
Co-Supervisor of <i>R. Jayathissa</i>	2012
Supervisor of Ms.G.P.N.J.Punchihewa	2015
M.Sc. in Science Education (Physics Education)	
Supervisor of <i>A. H. M. N. K. Amarakoon</i>	2006
Co-supervisor of <i>S. Uruththiramoorthy</i>	2009
Supervisor of <i>B.A. Sanath Kumara</i>	2010
Supervisor of <i>A.M.U.Dhanapala</i>	2012
Currently I am a co supervisor of one M.Phil student and supervisor of five M.Sc students.	

REFERENCES

Prof. John E. Furneaux

Department of Physics & Astronomy,
University of Oklahoma,
440 W. Brooks St., Room 131,
Norman, OK 73019, U.S.A.

Telephone: 405 325 2890 Ext-36103.

Email: furneaux@nhn.ou.edu

Prof. B.S.B Karunaratne

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Postgraduate Institute of Science
University of Peradeniya.
Peradeniya, 20400 , Sri Lanka

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Prof. M.A.K.L. Dissanyake

Emeritus Professor
Department of Physics
University of Peradeniya,
Peradeniya, 20400 , Sri Lanka.

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Email: makldis@yahoo.com

CERTIFICATION

I do hereby certify that the particulars mentioned above are true and correct to the best of my knowledge.

Date: 03|12| 2013

VARUNI A SENEVIRATNE
Varuni A. Seneviratne