

#### THE UNIVERSITY OF PERADENIYA SRI LANKA



#### CURRICULUM VITAE OF PROF. L.R.A.K. BANDARA

Name with Initials: L. R. A. K. Bandara

First names in Full: Lekam Ralalage Anura Kalinga

**Profession:** Professor in Physics

Department of Physics, Faculty of Science,

University of Peradeniya, Sri Lanka

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Kiribathkumbura, Sri Lanka

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**Date of Birth:** 05<sup>th</sup> November 1967

Sex: Male

**Nationality:** Sri Lankan by descent.

Educational Qualifications: (1) Ph.D in Physics (2000)

University of Peradeniya, Sri Lanka

(2) B.Sc. Special Degree in Physics (1994)

[Second Class Honours]

University of Peradeniya, Sri Lanka

#### Fellowships and Postdoctoral positions:

01/09/2008 - 30/11/2008 **Post-Doctoral Position at** LEPMI, INPG, France 01/03/2007 - 31/07/2007 **Post-Doctoral Position at** LEPMI, INPG, France 10/01/1999 - 13/10/1999 Research Fellowship at Chalmers University, Sweden 01/09/1995 - 17/08/1996 Research Fellowship at Chalmers University, Sweden

#### **Employment and Work Experience:**

From 20/02/2017 to date	Professor in Physics, Department of Physics, University of Peradeniya
21/12/2011 to 19/02/2017	Senior Lecturer (Grade I), Department of Physics, University of Peradeniya
03/02/2001 to 20/12/2011	Senior Lecturer (Grade II), Department of Physics, University of Peradeniya
01/08/2000 to 02/02/2001	Senior Lecturer (contract), Department of Physics, University of Peradeniya
19/04/2000 to 31/07/2000	Temporary Lecturer, Department of Physics, University of Peradeniya
25/10/1999 to 31/03/2000	Research Assistant, Department of Physics, University of Peradeniya
01/04/1997 to 31/12/1998	Research Assistant, Department of Physics, University of Peradeniya
22/08/1996 to 01/04/1997	Demonstrator, Dept. of Physics, Univ. of Peradeniya
01/08/1994 to 30/08/1995	Demonstrator, Dept. of Physics, Univ. of Peradeniya
10/02/1994 to 31/07/1994	Research Assistant, Department of Physics, University of Peradeniya

#### Special Academic/Professional Awards or recognized Academic/professional Distinctions:

- 1. <u>Award of Excellence in Teaching: Academic year 2018/2019</u>, Department of Physics, Faculty of Science, University of Peradeniya on January 07<sup>th</sup>, 2021.
- 2. <u>Merit Award for Scientific Publication 2016</u> by National Research Council (NRC) for the research paper titled "Efficiency enhancement by mixed cation effect in polyethylene oxide (PEO)-based dye-sensitized solar cells" published in Journal of Solid-State Electrochemistry (2016), 20, 1, 193-201, on December 18<sup>th</sup>, 2018.
- 3. <u>National Science Foundation (NSF) SUSRED Award- 2017:</u> Support Scheme for supervision of Research Degrees (SUSRED) award- 2017 for the dissertation of **Y.M.C.D.** Jayathilake, Ph.D. (2016) titled "Investigation of Gel polymer electrolytes as cation and anion conductors to be used for possible applications", on 25th July 2018 at BMICH, Colombo.

- 4. <u>Presidential Research Awards 2014</u> for the research papers titled "A novel Gel Polymer Electrolyte based on Polymethylmethacrylate and Copper Trifluoromethane-sulfonate" published in Journal of Electro-analytical Chemistry, 724 (2014) 125-129.
- 5. <u>Presidential Research Awards 2014</u> for the research papers titled "Efficiency enhancement by mixed cation effect in dye-sensitized solar cells with a PVdF based gel polymer electrolyte" published in International Journal of Hydrogen Energy 39, 6, (2014) 2929–2935.
- Merit Award for Scientific Publication 2013 by National Research Council (NRC) for the research paper titled "Efficient solid-state dye-sensitized n-ZnO/D-358 dye/p-CuI solar cell" published in Electrochimica Acta 94 (2013) 34-37.
- 7. Presidential Research Awards 2006 for the research paper titled "Thermal and electrical properties of solid polymer electrolyte PEO<sub>9</sub>-Mg(ClO<sub>4</sub>)<sub>2</sub> incorporating nano-porous Al<sub>2</sub>O<sub>3</sub> filler" published in Solid State Ionics 177 (2006) 343-346.
- 8. <u>Presidential Research Awards 2004</u> for the research paper titled "Photoelectrochemical solar cells with polyacrylonitrile based and polyethylene oxide-based polymer electrolytes" published in Solar Energ. Mater. Solar Cells 84 (2004) 117-124.
- 9. Presidential Research Awards 2002 for the research paper titled "A novel gel polymer electrolyte based on polyacrylonitrile (PAN) and its application in a solar cell" published in Material Research Bulletin 37: 867-874, 2002.
- 10. <u>Best presentation Annual Research Sessions 1998</u>, in the category of presentations by postgraduate researchers at the Annual Research Sessions 1998, held on 07<sup>th</sup> November 1998 at University of Peradeniya.

#### **Professional and Administrative Experience**

- 01. **Director, Science Education Unit,** Faculty of Science University of Peradeniya [From 01st September 2019 to date].
- 02. **Head of the Department**, Department of Physics, Faculty of Science, University of Peradeniya [16/01/2015 to 15/01/2018].
- 03. **Head of the Department**, Department of Physics, Faculty of Science, University of Peradeniya [16/01/2012 to 15/01/2015].

- 04. **Acting Dean of the Faculty of Science**, University of Peradeniya [ 22/05/2013, 25/03/2014, 02/05/2014, from 25/10/2014 to 30/10/2014, 12/10/2015, 24/10/2015, 14/06/2016, 10/08/2016, 05/09/2016]
- 05. **Acting Director, Postgraduate Institute of Science**, University of Peradeniya [17th-18th Dec. 2014, 27th of Nov. 2015, 16th of Aug. 2016, 24th 30th of Nov. 2016]
- 06. **Chairman of the Board of Study in Physics**, Postgraduate Institute of Science (PGIS), University of Peradeniya [February 2013 January 2018].
- 07. **Secretary of the Board of Study in Physics**, Postgraduate Institute of Science (PGIS), University of Peradeniya [01-02-2008 to 31-01-2012].

#### Positions Held and Membership of Scientific Bodies:

- 01. **Chairman of the Faculty Research Committee (FRC)**, Faculty of Science, University of Peradeniya, from 01<sup>st</sup> June 2018 to date.
- 02. **Member of the Board of Management**, from 28/02/2013 to 16/01/2015 Postgraduate Institute of Science, University of Peradeniya.
- 03. **Chairman/Member of the Technical Evaluation Committee,** from 15<sup>th</sup> July 2014, Postgraduate Institute of Science, University of Peradeniya.
- 04. **Member of the Board of Study in Environmental Science**, from 14<sup>th</sup> October 2013, Postgraduate Institute of Science, University of Peradeniya.
- 05. **Member of the Senate**, University of Peradeniya, from 17<sup>th</sup> January 2012 to 16/01/2015.
- 06. **Member of the Faculty Board of Science**, from 03<sup>rd</sup> February 2001, University of Peradeniya
- 07. **Member of the Curriculum Development Committee**, from 2012, Faculty of Science, University of Peradeniya.
- 08. **Chairman of the Advisory Board**, from 2012, Art Circle, Faculty of Science.
- 09. **Member of the Technical Evaluation Committee** [Tyres & Tubes, Electrical goods & Repairs, Laboratory Chemicals/ Equipment and Repairs] for the Years 2012, 2013 and 2014, Faculty of Science, University of Peradeniya.
- 10. **Member of the Regional Procurement Committee**, from 17<sup>th</sup> January 2012, Faculty of Science, University of Peradeniya.

- 11. **Member of the Science Education Committee**, from Year 2012, Science Education Unit, Faculty of Science, University of Peradeniya.
- 12. **Coordinator of the M.Sc. Programme in Physics of Materials**, Postgraduate Institute of Science, University of Peradeniya, from 01/03/2007 to 01/11/2017.
- 13. **Treasurer of the Science Teachers Association**, Faculty of Science, University of Peradeniya, in the financial years 2006/07, 2007/08, 2008/2009 and 2009/2010.
- 14. **Secretary of the Board of Study in Physics**, Postgraduate Institute of Science, University of Peradeniya, from 01<sup>st</sup> February 2008 to 31<sup>st</sup> January 2012.
- 15. **Member of the Board of Study in Physics**, from 26<sup>th</sup> July 2007, Postgraduate Institute of Science, University of Peradeniya.
- 16. Life member of Sri Lanka Association for the Advancement of Science (SLAAS)-LM-5447/E1
- 17. **Senior Student Counselor**, from 01.01.2004 to 31.12.2004, Faculty of Science, University of Peradeniya
- 18. **Member of the panel of Teachers/Examiners**, Postgraduate Institute of Science (PGIS), University of Peradeniya, [September 2001 to date]
- 19. **Member of the selection Committee** Recruitment to the post of lab attendant, Non-Academic Establishments, University of Peradeniya, 19<sup>th</sup> November, 2014.
- 20. **Member of the Committee of Inquiry** To investigate the unacceptable behavior within the Faculty Canteen G.K.P.S. Bandara (A/12/182), 15<sup>th</sup> December 2014.
- 21. **Treasurer of the University of Peradeniya Science Alumni Association** (UPSAA), Faculty of Science, University of Peradeniya, from 21st March, 2015.
- 22. **Member of the Committee of the B.Sc. Honors in Environmental Science**, Faculty of Science, University of Peradeniya.
- 23. **Member of the Coordinating Committee** of the Diploma in Exercise & Sports sciences Programme, Faculty of Medicine, University of Peradeniya, from 3<sup>rd</sup> February 2016.
- 24. **Chairman of the Research Congress** -PGIS -2016, 07<sup>th</sup>-08<sup>th</sup> October, 2016 at PGIS, University of Peradeniya.
- 25. **Chairman of the Organizing Committee** of 20<sup>th</sup> year celebration of PGIS 2016, 07<sup>th</sup> October, 2016 at PGIS, University of Peradeniya.

- 26. **Member of the Staff Residence Committee**, Univ. of Peradeniya from 2016.
- 27. **Member of the Organizing Committee** of the 10<sup>th</sup> Asian Conference on Solid State Ionics (ACSSI-10), Kandy, Sri Lanka, 12-16 June 2006.
- 28. **Member of the Organizing Committee**, 4<sup>th</sup> Workshop on Thin Film Solar Cells and Their Science and Technology, University of Peradeniya, 27th & 28th February 2015.
- 29. **Member of the Organizing Committee**, 28<sup>th</sup> International Symposium on Transport Phenomena, University of Peradeniya, Sri Lanka, 24-24 September 2017.
- 30. **Chairman of the Logistic Sub Committee Convocation 2017,** University of Peradeniya, May 2018.
- 31. **Member of the Environmental Science Degree Programme** of Faculty of Science, University of Peradeniya, From 2012.
- 32. **Secretary of the Physics Welfare Association**, Department of Physics, University of Peradeniya, from 01<sup>st</sup> February 2006 15<sup>th</sup> January 2012.
- 33. **Member of the Organizing Committee**, International Conference on Chronic Kidney disease of unknown etiology: Current aspects and future prospects", University of Peradeniya, Sri Lanka, 08-09, December 2018.
- 34. **Member of the Organizing Committee**, International Conference on Mathematics and Mathematics Education, Postgraduate Institute of Science, University of Peradeniya, Sri Lanka, 22-23, March 2019.
- 35. **Chairman of the Logistic Sub Committee**, International Conference on Mathematics and Mathematics Education (ICMME-2019), Postgraduate Institute of Science of Science, University of Peradeniya, 22-23 March 2019.
- 36. **Coordinator Faculty Research Congress 2019,** Faculty of Science, University of Peradeniya March 2019.
- 37. **Member of the Advisory Committee**, International Conference on Environment and Medical Statistics, Faculty of Science, University of Peradeniya, Sri Lanka, 09-10, January 2020.
- 38. **Chairman of the Advisory panel**, Physical society, Faculty of Science, University of Peradeniya, form 2016 to date.

- 39. **Member (internal) for the Board of Study in Science**, from 12<sup>th</sup> May, 2020 to 11<sup>th</sup> May, 2023, Center for Distance & Continuing Education (CDCE), University of Peradeniya.
- 40. **Member of the Board of Study in Science Education**, from 19<sup>h</sup> April, 2020 to 18<sup>th</sup> April 2023, Postgraduate Institute of Science (PGIS), University of Peradeniya.
- 41. **Member of the Board of Study in Environmental Science**, from 19<sup>h</sup> April, 2020 to 18<sup>th</sup> April 2023, Postgraduate Institute of Science (PGIS), University of Peradeniya.
- 42. **Member of the Technical Evaluation Committee** [Laboratory Equipment, Laboratory Chemicals and glassware/ Repairing Motor Vehicles, Purchasing Accessories (Spare parts, Batteries, Tires & Tubes etc.] for the Year 2020, Faculty of Science, University of Peradeniya.
- 43. **Session Chair**, RESCON 2020, Theme: Physical Science on 27<sup>th</sup> November, 2020, Postgraduate Institute of Science Research Congress, Sri Lanka: 26<sup>th</sup>-28<sup>th</sup> November 2020.

#### **Contribution to National Development**

- 01. Chief Examiner of G.C.E. (Advanced Level) Examinations of the subject of Physics for past 12-years in 2003 2007 and 2009 2016, 2019.
- 02. Member of the panel of Control Marking and a Chief Examiner, G.C.E. (Advanced Level) Examinations of the subject of Science for Technology, 2016-2017.
- 03. Second Examiner in Physics at the B.Sc. Degree examination, Wayamba University, 2014.
- 04. Reviewer of Research papers in Physics at the i-PURSE, 2014.
- 05. Reviewer of Research papers in Physics at the i-PURSE, 2015.
- 06. Served as a Reviewer of 30<sup>th</sup> Annual Technical Sessions of Institute of Physics, Sri Lanka (IPSL) 2014
- 07. Reviewer of Research papers in Physics at PGIS Research Congress, 2014.
- 08. Served as a Reviewer of the research paper titled "Synthesis of Li(Ni1/3Mn1/3Co1/3)O<sub>2</sub> by glycine nitrate combustion process" published in Ceylon Journal of Science, University of Peradeniya, 2016.

- 09. Visiting Lecturer of Sabaragamuwa University of Sri Lanka, Academic Year 2005/2006, Faculty of Applied Sciences, Buttala,
- 10. Visiting Lecturer of Department of Radiology/Radiotherapy, the for Academic Years 2010/2011, 2011/2012 & 2012/2013, Faculty of Allied Health Science, University of Peradeniya.
- 11. Resource person of the workshop for preparation of additional resource materials for G.C.E. (A/L) Physics, National Institute of Education, Maharagama, 24<sup>th</sup> September, 2014.
- 12. Served as a Resource Person at the Training programme on Laboratory Management for participants from South Eastern University of Sri Lanka, Faculty of Science, University of Peradeniya, 15th to 17th September, 2014.
- 13. Served as an External Evaluator at 1<sup>st</sup> Annual Symposium on Research and Industrial Training (ASRITE-2014), Department of Electronics, Wayamba University of Sri Lanka, Kuliyapitiya, 07<sup>th</sup> April, 2014.
- 14. Served as a Resource person at the Text-Book Editing Programme, Education Publication Department, Battaramulla, Colombo, 8-11 February, 2011.
- 15. Served as a Resource person at the Workshop for Advance level Physics Teachers of the Central province, Department of Physics, University of Peradeniya, 22-24 November 2006.
- 16. Served as a Resource person at A/L Physics Teacher's Workshop, PGIS, University of Peradeniya, 10-14<sup>th</sup> December, 2007.
- 17. Served as a Resource person at the Training Workshop on Exploring Opportunities in Nanoscience and Nanotechnology (NANOTEC 2008), Hotel Topaz, Kandy, 2-6<sup>th</sup> June, 2008.
- 18. Served in conducting sessions on 'Electronics' covering the subject content specified in the G.C.E. (A/L) Physics new syllabus at the G.C.E. (A/L) Physics Teacher Training Programme, PGIS, Univ. of Peradeniya, 23-24<sup>th</sup> Sept. 2010.
- 19. Served as a Resource person at the Vidunetha Programme conducted in the Homagama Education Zone 2011/2012 organized by the National Science Foundation (NSF) in collaboration with the Ministry of Education.
- 20. Served in conducting Practical Sessions covering the subject content specified in the G.C.E. (A/L) Physics new syllabus at Physics Practical Training Programme for G.C.E. (A/L) Teachers, organized by the National Institute of Education (NIE), North-Western Province, Maliyadewa Balika Vidyalaya, Kurunegala, 27-28<sup>th</sup> May, 2013.

- 21. Served as the Coordinate and a Resource person at Physics Practical Training Programme organized by the Department of Physics & Science Education Unit, University of Peradeniya & the National Institute of Education (NIE) for G.C.E. (A/L) Teachers of the Uva Province, Dept. of Physics, Univ. of Peradeniya, 30<sup>th</sup> July 01<sup>st</sup> August 2013.
- 22. Served as the Coordinate and a Resource person at Training Workshop for G.C.E. (A/L) Teachers (Technology Stream) of Uva Province, organized by the Dept. of Physics & Science Education Unit, Univ. of Peradeniya, 18<sup>th</sup> 21<sup>st</sup> November, 2014.
- 23. Served as the Coordinate and a Resource person at Training Workshop for G.C.E. (A/L) Teachers of Central Province, organized by the Department of Physics & Science Education Unit, University of Peradeniya, 15<sup>th</sup> December 2014 to 20<sup>th</sup> January 2015.
- 24. Served as a Member of the Research Project Evaluation Panel, IFS, Kandy, 23<sup>rd</sup> July 2014.
- 25. Served as a Member of the Research Project Evaluation Panel, IFS, Kandy 23<sup>rd</sup> July 2013.
- 26. Served as a member of the Fund Raising Committee of the PGIS Research Congress 2015.
- 27. Served as a member of the Organizing Committee of 4th Workshop on "Thin film Solar Cells and their Science and Technology", Department of Physics, University of Peradeniya, 27th and 28th February, 2015.
- 28. Served as the Center Coordinator of the Sri Lankan Physics Olympiad Examination and National Astronomy and Astrophysics Olympiad Examination conducted by the Institute of Physics, Sri Lanka 2010.
- 29. Served as a Resource person at the programme of "Advanced Certificate Course for Grades 6-11 Science Teachers" conducted by National Institutes of Education (NIE), Maharagama, 2015.
- 30. Served as a Resource person at the programme of "Advanced Certificate Course for Grades 6-11 Science Teachers" conducted by National Institutes of Education (NIE), Maharagama, 2015.
- 31. Served as a Resource person at the Workshop on Scientific Writing for PGIS students of Board of Study in Science Education, PGIS, University of Peradeniya, 2-3rd April, 2016.
- 32. Served as a Member of the Research Project Evaluation Panel, IFS, Kandy, 23rd July 2013.

- 30. Served as a Recourse person and contributed towards the successful completion of the following Science Camps conducted by the Science Education Unit of the Faculty of Science:
  - (1) Loyla College, Negambo (2018)
  - (2) Sandalanka Madya Maha Vidyalaya (2018)
  - (3) Gamini Maha Vidyalaya, Nuwaraeliya (2016)
  - (4) Welikanda Maha Vidyalaya, Welikanda (2016)
  - (5) Rattota Maha Vidyalaya, Matale (2016)
  - (6) Sewanapitiya Maha Vidyalaya, Welikanda (2015)
  - (7) Sri Sumangala Jathika Pasala, Nildannahinna (2015)
  - (8) Royal College, Polonnaruwa (2011)
  - (9) Poramadulla Central College, Poramadulla (2010)
  - (10) S.W.R.D. Bandaranayake M.M.V., Panduwasnuwara (2009)
  - (11) Mayurapada M.M.V., Narammala (2009)
  - (12) Ginigathhena Central College, Ginigathhena (2007)
  - (13) Sumana Balika Vidyalaya, Rathnapura (2006)
  - (14) Kekirawa M.M.V., Kekirawa (2006)
  - (15) Kegalu Balika Maha Vidyalaya, Kegalle (2004)
- 34. Coordinate and a Resource person at Training Workshop for G.C.E. (A/L) Teachers (Technology Stream) of Uva Province, organized by the Dept. of Physics & Science Education Unit, Univ. of Peradeniya, 19th 21st October, 2016.
- 35. Served as a Resource person at the Short Course (Group 2) on Teaching Methodologies in Science Education (Grade 6-11 Science Teachers) Central Province, organized by Science Education Alumni Association (SEAA) and Provincial Department of Education Central Province, PGIS, University of Peradeniya, 27th February 2016.
- 36. Member of the selection Committee of the Promotion to the post of Senior Lecture Gr. I of Dr. U. Dahanayake, Faculty of Applied Sciences, Rajarata University of Sri Lanka, on 17th March 2016.
- Served as a Resource person at the Workshop for Advance level Physics Teachers
  of the Central province, Department of Physics, University of Peradeniya, 25-29
  March 2019.
- 38. Served as a Member of the selection Panel Advertised post of Professor of Philosophy Dr. H.M.C. Herath, Department of Philosophy, Faculty of Arts, University of Peradeniya on 09th September 2019.
- 39. Served as a member of the Organizing Committee of the iPURSE -2019, University of Peradeniya, 11<sup>th</sup> and 12<sup>th</sup> September, 2019.

- Faculty Coordinator for the University Research Council, Faculty of Science, University of Peradeniya, from 11<sup>th</sup> August, 2020 to 10<sup>th</sup> August, 2021.
- 41. Member Best Researcher Evaluation Committee for the academic years, 2017/2018, 2018/2019 & 2019/2020, Faculty of Science, University of Peradeniya.
- 42. Member of the subject Committee of Physics and Electronics, University Grant Commission, Sri Lanka in 2020.

### Teaching Experience: Department of Physics & Postgraduate Institute of Science, University of Peradeniya

2000 - to date

Theory and laboratory courses at both undergraduate and postgraduate levels (18 years);

Supervision of undergraduate and postgraduate research projects

(18 years) Department of Physics, University of Peradeniya.

#### B.Sc. General Degree Programme:

General Physics I, Electronics Theory I, Thermal and Statistical Physics, Vibration and AC theory, Electromagnetic Theory & Communication, Energy, Weather & Environment,

#### **B.Sc. Special Degree Programme:**

Mathematical methods in Physics, Special Theory of Relativity, Solid State Ionics materials, Electronics Theory II

#### Supervision of research and seminars:

At undergraduate level for Physics majors (Physics honors), At postgraduate level (Master of Science) for Physics of Materials, Nano-science and Nanotechnology and Science Education (Physics Education) programmes

### Postgraduate courses and relevant Laboratory courses conducted by Postgraduate Institute of Science, University of Peradeniya

M.Sc. in Physics of Materials: Mathematical methods in Physics, Solid State Ionics materials, Semiconductor Devisors

M.Sc. in Nanoscience and Nanotechnology: PHN 517 Energy Storage and Nanotechnology

M.Sc. in Medical Physics: PH 537 Digital Electronics and Microprocessors

M.Sc. in Science Education (Physics Education): SE 567 Basic Electronics & Communication

M.Sc. in Science Education (Biology Education): SE 517 Methods of Teaching Biology (Physics in Biology)

M.Sc. in Clinical Biochemistry: General Physics

M.Sc. in Environmental Science: Radiation Physics

#### Thesis supervised at Postgraduate level:

#### Ph.D./M.Phil. Degrees

- 1. **Y.M.C.D. Jayathilake**, Ph.D. (Co-supervisor), Investigation of gel polymer electrolytes as cation and anion conductors to be used for possible applications. [Completed in 2016]
- 2. **K.V.L. Amarasinghe**, M.Phil. (Co-supervisor), Synthesis and characterization of novel polymer electrolytes with possible applications in electrochemical devices. [Completed in 2015]
- 3. **W.J.M.J.S.R. Jayasundara**, M.Phil. (Co-supervisor), Study of ion transport parameters for optimizing the ionic conductivity of novel polymer electrolytes intended for electrochemical power sources. [completed in 2014]

#### M.Sc. (Master of Science) Degrees

- 1. **A.A.B. Madushani,** M.Sc. in Physics of Materials, Fabrication and Characterization of floated Graphite/Graphene based composite counter electrode for Dye-sensitized Solar Cells, **2018**.
- 2. **R.J.G.L.R. Kumara**, M.Sc. in Physics of Materials, Development multilayer graphene-based counter electrodes for Dye-sensitized Solar Cells, **2018**.
- 3. **P.V.H.L. Kulathunga**, M.Sc. in Physics of Materials, Development of low-cost sound attenuated material for noise pollution, **2016**.
- 4. **R.D.N.P.** Chandrasena, M.Sc. in Science Education, Students' conceptual understanding and misconceptions on force and motion through different instruments combined with Certainty Response Index (CRI), **2014**.
- 5. **D.M.A.P. Dissanayake**, M.Sc. in Science Education, A study on handling laboratory equipment with special reference to developing a practical guide for selected equipment for secondary level, **2014**.
- 6. **E.M.B.S. Ekanayake**, M.Sc. in Physics of Materials, Efficiency enhancement by mixed cation effect in dye sensitized solar cells based on poly(ethylene oxide), **2014**.
- 7. **I.L.A. Hakeem**, M.Sc. in Science Education, Effectiveness of Computer assisted learning in A/L Physics: Electronics, **2013**.

- 8. **S.N.K.K. Tennakoon**, M.Sc. in Science Education, An Analysis of Misconceptions in Electricity among G.C.E. (A/L) Students, **2011**.
- 9. **M. Balakrishnan**, M. Sc. in Science Education, Designing Simple Activities in Fluid Mechanics for Easy Learning for G.C.E. A/L Students, **2010**.
- 10. **L.R. Premalal**, M. Sc. in Science Education, Construction of a Dual-purpose Digital Meter to use in Physics Experiments, **2009**.
- 11. **P.K. Sivalingam**, M. Sc. in Science Education, Enhancing Electronic Concepts through life related experiments for G.C.E. Advance Level Students, **2005**.
- 12. **L.H. Karalliyadde**, M.Sc. in Physics of Materials, Transport properties of polymer electrolytes based on poly(ethyleneoxide) complexed with Magnesium salts, **2004**.

#### Conference/Workshop/Training courses attended:

- 1. Fifth Asian Conference on Solid State Ionics, Kandy, Sri Lanka, 2 7 December 1996.
- 2. Mid Term Conference International Science Program, Uppsala University, Sweden, 12<sup>th</sup> February 1996.
- 3. Symposium on Polymer Electrolytes, Uppsala University, Sweden, August 11-16, 1996.
- 4. Workshop on "Renewable Energy Sources", Colombo, Sri Lanka, 10 11 February 1998.
- 5. Sixth Asian Conference on Solid State Ionics, New Delhi, India, 29th November to 05th December 1998.
- 6. Mid Term Conference International Science Program, Uppsala University, Sweden, \*\* 1999.
- 7. Sixth Euro-conference on Solid State Ionics, Ceteraro, Calabria, Italy, 12 19 Sept. 1999.
- 8. Workshop on "Scientific Writing", Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka, March 31- April 01, 2000.
- 9. International Conference on Materials for Advanced Technologies (ICMAT 2001), National University, Singapore, 1-6 July, 2001.
- 10. Successfully completed the six weeks **Training Programme on Teaching Methodology**, conducted by Staff Development Centre, University of Peradeniya, Sri Lanka, June 2002.
- 11. Successfully completed the training course on "Microcontroller Programming and its applications", conducted by Centre for Instrument Development, Department of Physics, University of Colombo, Sri Lanka, 2006.
- 12. Tenth Asian Conference on Solid State Ionics, Kandy, Si Lanka, 12 16 June, 2006.
- 13. National Conference on "Advanced Materials for Emerging Technologies" (NCAMET-2007), University of Peradeniya, SRI LANKA, 21-22 July, 2007.

- 14. Training Workshop on "Exploring Opportunities in Nanoscience and nanotechnology" (NANOTECH 2008), Kandy, SRI LANKA, 2-6 June 2008.
- 15. Participated in the "**Training Workshop on Electrochemistry**", Postgraduate Institute of Science, University of Peradeniya, Sri Lanka, 3<sup>rd</sup> November 2011.
- 16. Collaboration research discussions and Laboratory visit at Center for Ionics University of Malaya (C.I.U.M), University of Malaya, Kuala Lumpur, Malaysia from 25<sup>th</sup> 29<sup>th</sup> June 2012.
- 17. Served as a Resource Person at the "Vidunetha Programme" conducted in the Homagama Education Zone 2011/2012 organized by the National Science Foundation (NSF) in collaboration with the Ministry of Education.
- 18. Participated in the workshop on "**Student Centered Learning**" organized by the Curriculum Development Committee, Faculty of Science, University of Peradeniya in collaboration with Staff Development Centre, University of Peradeniya on 3<sup>rd</sup> February, 2014.
- 19. Participated in the workshop on "**Digital Forensics**" organized by the Department of Statistics and Computer Science, Faculty of Science, University of Peradeniya in collaboration with The International Research Center, University of Peradeniya on 14<sup>th</sup> March, 2014.
- 20. Participated in the workshop on "Thin film Solar Cells: Their Technology and Business potential for Sri Lanka" organized by the Department of Physics, University of Jaffna in collaboration with Sivananthan Laboratories, University of Illinois at Chicago, USA, at University of Jaffna on 16-17<sup>th</sup> April, 2014.
- 21. Served as a Resource Person at the Short Course on **"Graphite Products and Graphene"** Postgraduate Institute of Science, University of Peradeniya, 22<sup>nd</sup> January 2015.
- 22. Participated in the workshop on "Thin film Solar Cells: Their Science and Technology" organized by the Department of Physics, University of Peradeniya in collaboration with Sivananthan Laboratories, University of Illinois at Chicago, USA, at University of Peradeniya on 27th & 28th February 2015.
- 23. Participated in the 2nd International Conference on Energy 2015 "Advanced energy horizons-opportunities and challenges", Galadhari Hotel, Colombo, Sri Lanka, 2 4 September 2015.
- 24. Served as a Resource Person at the workshop to prepare G.C.E. (A/L) Physics syllabus to be implemented 2017 onwards, organized by the Department of Science, National Institute of Education (NIE), Maharagama, 09th December 2015.
- 25. Participated in the **04**<sup>th</sup> **International Conference on Solar Energy Materials, Solar Cells and Solar Energy Applications** organized by National Institute of Fundamental Studies (NIFS), Sri Lanka, 04-06 January 2018.
- 26. Participated in the workshop on **Outcome based Education-Learner Centered Teaching** organized by the AHEAD project, Faculty of Science, University of Peradeniya on 17<sup>th</sup> December, 2020.

#### **Publications and Papers Presented:**

#### (a). Theses/Books

- 01. Theses (Ph.D) titled "Synthesis, characterization and electrical properties of some solid polymer electrolytes based on poly(ethylene oxide), PEO" L.R.A.K. Bandara, University of Peradeniya in 2000.
- 02. **Book titled "Mechanics" (A Text Book for G.C.E. (A/L) Physics students and First Year University Students),** published by Science Education Unit, University of Peradeniya in 2014 (ISBN 978-955-589-182-0).
- 03. **Book titled "Electronics" (A Text Book for G.C.E. (A/L) Physics students and First Year University Students),** published by L.R.A.K. Bandara, Tele-Print, Kandy, Sri Lanka in 2016 (ISBN 978-955-43300-0-9).
- 04. Book titled "Waves & Oscillations" (A Text Book for G.C.E. (A/L) Physics students and First Year University Students), published by L.R.A.K. Bandara, Tele-Print, Kandy, Sri Lanka in 2018 (ISBN 978-955-43300-1-6).
- 05. **Book titled "Thermal Physics" (A Text Book for G.C.E. (A/L) Physics students and First Year University Students),** published by L.R.A.K. Bandara, Tele-Print, Kandy, Sri Lanka in 2020 (ISBN 978-955-43300-2-3).

#### (b). Research Publications in Peer Reviewed International Journals

- 06. Fabrication of floated graphite/graphene based composite counter electrode for dye-sensitized solar cell
  - A. A. B. Madushani, P. Kumarasinghe, G.R.A. Kumara, L.R.A.K. Bandara, International Research Journal of Engineering and Technology (IRJET) (2020) 07, 04, 2824-2829.
- 07. **Electrical and structural studies of a LiBOB-based gel polymer electrolyte** A.M.I.E. Gunathilaka, <u>L.R.A.K. Bandara</u>, A.K. Arof, M.A. Careem and V.A. Seneviratne, Ionics (2017) 23: 2669 [doi:10.1007/s11581-016-1834-7, 1-7].
- 08. Efficiency enhancement by mixed cation effect in polyethylene oxide (PEO)-based dye-sensitized solar cells
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09. Efficiency enhancement by mixed cation effect in dye-sensitized solar cells with a PVdF based gel polymer electrolyte

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10. Conductivity and Thermal Properties of PAN Based Polymer Electrolytes for Possible Application in Photo Electrochemical Solar Cells
 W. J. M. J. S. R. Jayasundara, T. M. W. J. Bandara, P. S. L. Fernando, H. D. N. S. Fernado, M. A. K. L. Dissanayake, <u>L. R. A. K. Bandara</u> and B.-E. Mellander, Journal of Electrical Engineering (ISSN 2328-2223) 1 (2013) 34-39.

11. **Efficient solid-state dye-sensitized n-ZnO/D-358 dye/p-CuI solar cell** G.R.A. Kumara, J.K. Tiskumara, C.S.K. Ranasinghe, I.S. Rathnayake, W.M.N.M.B. Wanninayake, E.N. Jayaweera, <u>L.R.A.K. Bandara</u>, R.M.G. Rajapakse, Electrochimica Acta, 94 (2013) 34-37.

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- 13. Thermal and electrical properties of solid polymer electrolyte PEO<sub>9</sub> Mg(ClO<sub>4</sub>)<sub>2</sub> incorporating nano-porous Al<sub>2</sub>O<sub>3</sub> filler

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- 14. Photoelectrochemical solar cells with polyacrylonitrile based and polyethylene oxide-based polymer electrolytes
  O.A. Ileperuma, M.A.K.L. Dissanayake, S. Somasundaram, <u>L.R.A.K. Bandara</u>, Solar Energy Materials & Solar Cells 84 (2004) 117-124.
- A novel gel polymer electrolyte based on polyacrylonitrile (PAN) and its application in a solar cell
   M.A.K.L. Dissanayake, <u>L.R.A.K. Bandara</u>, R.S.P. Bokalawela, P.A.R.D. Jayathilake, O.A. Ileperuma and S. Somasundaram, Materials Research Bulletin 37 (2002) 867-874.
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   / LiCF<sub>3</sub>SO<sub>3</sub> poly(perflouoroethylmethyloxide).
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18. Ionic Conductivity of plasticized (PEO)-LiCF<sub>3</sub>SO<sub>3</sub> Electrolytes.

L.R.A.K. Bandara, M.A.K.L. Dissanayake and B. -E. Mellander, Electrochimica. Acta., 43, 10/11 (1998) 1447.

19. Broad band dielectric behaviour of plasticized PEO - based solid polymer electrolytes.

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20. Effect of plasticizers on the electrical and transport properties of (PEO)-LiCF<sub>3</sub>SO<sub>3</sub> electrolytes.

<u>L.R.A.K.</u> Bandara, M.A.K.L. Dissanayake and B. -E. Mellander, in : Solid State Ionics: New Developments, eds. B. V. R. Chowdari, M.A.K.L. Dissanayake and M.A. Careem (World Scientific, Singapore, 1996) p. 405.

- (c). Research Publications in Peer Reviewed National Journals
- 21. Solid State Electrochemical Cells based on PEO-Mg(ClO<sub>4</sub>)<sub>2</sub> Polymer Electrolyte and Mg/Cu Electrodes

<u>L.R.A.K.</u> Bandara, M.A.K.L. Dissanayake, M.A. Careem and V. Amaleswaran, Ceylon Journal of Science: Physical Sciences, 6 (1999) 1-7.

- 22. Electrical Relaxation in some PEO Based Solid Polymer Electrolytes

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25. Ionic conductivity of a PMMA based gel polymer electrolyte and its performance in solid state electrochemical cells
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- 29. Conductivity enhancement in the plasticized solid polymer electrolyte system PEO: LiCF<sub>3</sub>SO<sub>3</sub>: EC due to addition of α- Al<sub>2</sub>O<sub>3</sub>.

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### 30. Ionic Conductivity Enhancement in PEO<sub>9</sub>:Cu(CF<sub>3</sub>SO<sub>3</sub>)<sub>2</sub> Composite Solid Polymer Electrolyte due to Al<sub>2</sub>O<sub>3</sub> filler

P.A.R.D. Jayathilake, R.S.P. Bokalawela, P.W.S.K. Bandaranayake, <u>L.R.A.K. Bandara</u> and M.A.K.L. Dissanayake, Solid State Ionics: Trends in the New Millennium, (*Proc. 8<sup>th</sup> Asian Meeting on Solid State Ionics, Langkawi, Malaysia*,) ed. B.V.R. Chaowdari et al (2002) 337-343.

### 31. Iodide Ion Conducting Polymer Electrolytes based on Polyacrylonitrile (PAN)

M.A.K.L. Dissanayake, <u>L.R.A.K. Bandara</u> and R.S.P. Bokalawela, Extended abstracts, International Conference on Solid State Ionics, Cairns, Australia, July (2001) 231.

### 32. Dielectric properties of LiCF<sub>3</sub>SO<sub>3</sub>[0.5PEO+0.5EC]<sub>9</sub> +5 wt.% α-Al<sub>2</sub>O<sub>3</sub> solid polymer electrolyte system

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#### 33. A Magnesium primary cell based on a novel gel polymer electrolyte

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### 34. Ionic Conductivity and FT-IR study of Tetraglyme/KI/Fumed silica Gel Polymer Electrolytes

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### 35. Electrical Characterization of Tetrabutylammonium iodide based Polymer free Gel Electrolyte

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## 37. Dye sensitized solar cells based on nano porous TiO<sub>2</sub> and gel polymer electrolytes containing Tetrapropylammonium iodide and 1-methyl-3-propylimadazolium iodide binary iodide system

T.M.W.J. Bandara, W.J.M.J.S.R. Jayasundara, M.A.K.L. Dissanayake, C.A. Thotawatthage, G.K.R. Senadeera, <u>L.R.A.K. Bandara</u> and B.-E. Mellander, Proc. Solar Asia 2013 (2<sup>nd</sup> International conference on solar energy materials, solar cells and solar energy applications) CIUM, University of Malaya, Kuala Lumpur, Malaysia, 22-24 August 2013, pgs. 111-116.

### 38. Efficiency enhancement by mixed cation effect in dye-sensitized solar cells with a PVdF based gel polymer electrolyte

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### 39. Zirconia based-nanofillers prepared by spray-pyrolysis for polymer electrolytes used in lithium batteries

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### 41. An investigation of anionic conductivity of the composite Polymer Electrolytes based on PEO and Pr<sub>4</sub>N<sup>+</sup>I<sup>-</sup> salt with the filler TiO<sub>2</sub>

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### 42. A Novel Gel Electrolyte Based on Dimethyl Carbonate and LiCF3SO3 for Lithium Batteries

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### 45. Poly(Methyl Methacrylate)(PMMA) based polymer electrolyte with ternary iodides for high efficient quasi-solid-state dye sensitized solar cells

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#### 46. Facile Way of Preparing Activated Carbon (AC) Electrodes from the Local Jack-Wood for Supercapacitors

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### 47. Poly(Methyl Methacrylate) PMMA Based gel polymer electrolytes for possible application in Dye sensitized solar cells

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# 48. Nanocomposite polymer electrolytes based on PEO-Li(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>N-3YSZ <u>L.R.A.K. Bandara</u>, R. A. Rocha, F. Alloin, E. Djurado, Proc. National conference on Advance Materials for Emerging Technologies (NCAMET), Sri Lanka, 21-22 July, 2007, 22.

# 49. **Ionic conductivity of the solid polymer electrolyte (PEO)**<sub>9</sub>**LiCF**<sub>3</sub>**SO**<sub>3</sub>. <u>L.R.A.K. Bandara</u>, R.L.N. Chandrakanthi, M.A.Careem and M.A.K.L. Dissanayake, Proc. Sri Lanka Association for the Advancement of Science, 50 (1994) 195.

### 50. Effect of plasticizers on electrical conductivity of the solid polymer electrolyte (PEO)<sub>9</sub>LiCF<sub>3</sub>SO<sub>3</sub>.

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## 51. **A new polymeric Cu<sup>+</sup> ion conductor : ( PEO)**<sub>7</sub> - **CuCNS**. M.A.K.L. Dissanayake, K. Tennakoon, <u>L.R.A.K. Bandara</u>, W. A. Samantha, Proc. Sri Lanka Association for the Advancement of Science, 51 (1995) p. 356.

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55. Ionic conductivity and electrical relaxation in plasticized solid polymer electrolytes.

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56. Dye sensitized photoelectrochemical solar cells with PEO based solid polymer electrolytes.

<u>L.R.A.K.</u> Bandara, M.A.K.L. Dissanayake, G.V.K. Ekanayake, O.A. Ileperuma and T.T.K. Weeraman, Proc. of the workshop on Renewable Energy Sources (1998) p. 105.

57. Solid State Electrochemical Cells based on PEO-Mg(ClO<sub>4</sub>)<sub>2</sub> Polymer Electrolyte and Mg/Cu Electrodes.

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### 63. A novel iodide ion conducting polymer electrolyte based on polyacrylonitrile (PAN).

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#### 69. Dye Sensitized ZnO Solid-State solar cells, sensitized with D-358 dye

J.K. Tiskumara, <u>L.R.A.K. Bandara</u>, R.M.G. Rajapakse, G.R.A. Kumara, C.S.K. Ranasinghe, R.M.I.S. Rathnayake, and E.N. Jayaweera, Proceedings of the Peradeniya University Research Sessions, Sri Lanka, 17 (2012) pg.204.

### 70. Optimization of Conductivity of the Gel Polymer Electrolyte Based on Polymethylmethacrylate (PMMA)

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