

Dr. Eranji Nirmada Jayaweera

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EDUCATIONAL QUALIFICATIONS

Postgraduate Qualifications

Ph. D. (Board of study in Chemical Sciences)

- Doctoral thesis title : Development of liquid/gel electrolyte based dye-sensitized solar cells and attempt to scale up
- Institute : University of Peradeniya, Sri Lanka
- Effective Date : 12th October 2016

University Education

- B. Sc. (Special Degree in Physics) – 1st Class (Hons.)
University of Peradeniya, Sri Lanka (2010)

Subjects:

Physics, Mathematics, Computer Science

PUBLICATIONS AND COMMUNICATIONS

Publications:

1. **E.N. Jayaweera**, K.R. Wijewardhana, T.K. Ekanayaka, A. Shahzad, J.K. Song, "Triboelectric nanogenerator based on human hair" *ACS Sustainable Chemistry & Engineering*, 6 (5), 2018, 6321-6327.
2. **Eranji N. Jayaweera**, Gamaralalage R.A. Kumara, Chathuranga Kumarage, Sampath K. Ranasinghe, Rajapakse Mudiyanse G. Rajapakse, Herath Mudiyanse N. Bandara, Oliver A. Ileperuma, Buddhika S. Dassanayake, "CdS nanosheet-sensitized solar cells based on SnO₂/MgO composite films" *Journal of Photochemistry and Photobiology A: Chemistry*, 364, 2018, 109-115
3. **E.N. Jayaweera**, G.R.A. Kumara, H.M.G.T.A. Pitawala, R.M.G. Rajapakse, N. Gunawardhana, H.M.N. Bandara, A. Senarathne, C.S.K. Ranasinghe, Hsin-Hui Huang, M. Yoshimura, "Vein graphite-based counter electrodes for dye-sensitized solar cells" *Journal of Photochemistry and Photobiology A: Chemistry*, 2017, 344, 78-83.
4. **E.N. Jayaweera**, C. S. K. Ranasinghe, G. R. A. Kumara, W. M. N. M. B. Wanninayake, K. G. C. Senarathne, K. Tennakone, R. M. G. Rajapakse, "Novel Method to Improve Performance of Dye-sensitized Solar Cells Based on Quasi-solid Gel-Polymer Electrolytes" *Electrochimica Acta*, 2015, 152, 360-367.
5. **E. N. Jayaweera**, C. S. K. Ranasinghe, G. R. A. Kumara, and R. M. G. Rajapakse, "Highly Efficient SnO₂/MgO Composite Film-Based Dye-Sensitized Solar Cells Sensitized with N719 and D358 Dyes", *Int. J. of Nanosci.*, 2014, 13, 144006.
6. K.R. Wijewardhana, T.Z. Shen, **E.N. Jayaweera**, A. Shahzad, J.K. Song, "Hybrid nanogenerator and enhancement of water-solid contact electrification using triboelectric charge supplier" *Nano Energy*, 52, 2018, 402-407

7. K.R. Wijewardhana, T.K. Ekanayaka, **E.N. Jayaweera**, A. Shahzad, J.K. Song, "Integration of multiple bubble motion active transducers for improving energy-harvesting efficiency", *Energy*, 160, 2018, 648-653
8. P. Samarasekara, U. Wijesinghe, **E.N. Jayaweera**, "Impedance and electrical properties of Cu doped ZnO thin films", arXiv preprint arXiv:1703.02030, 2017
9. C. S. K. Ranasinghe, **E. N. Jayaweera**, G. R. A. Kumara, R. M. G. Rajapakse, B. Onwona-Agyeman, A. G. U. Perera and K. Tennakone , "Tin oxide based dye-sensitized solid-state solar cells: surface passivation for suppression of recombination" *Materials Science in Semiconductor Processing*, 2015, 40, 890–895.
10. C.S.K. Ranasinghe, **E.N. Jayaweera**, G.R.A. Kumara, R.M.G. Rajapakse, H.M.N. Bandara and M. Yoshimura, "Low-Cost Dye-Sensitized Solar Cells Based on Interconnected FTO-Activated Carbon Nanoparticulate Counter Electrode Showing High Efficiency" *Journal of Materials Science and Engineering A* 2015, 5(9-10), 369-376.
11. G.R.A. Kumara, L.Y. Rangali, **E.N. Jayaweera**, C.S.K. Ranasinghe, and R.M.G. Rajapakse "Performance of Metal-free Organic Dyes with Complementary Absorption in Zinc Oxide Dye-sensitized Solar Cells" *International Journal of Scientific Engineering and Applied Science*, 2016, 2(7), 7-13.
12. G. R. Asoka Kumara, C. S. Kumara Ranasinghe, **E. Nirmada Jayaweera**, H. M. Navaratne Bandara, Masayuki Okuya, and R. M. Gamini Rajapakse, "Preparation of Fluoride-Doped Tin Oxide Films on Soda–Lime Glass Substrates by Atomized Spray Pyrolysis Technique and Their Subsequent Use in Dye-Sensitized Solar Cells", *J. Phys. Chem. C*, 2014, 118, 16479.
13. G. R. Asoka Kumara, Cheka Kehelpannala, C. S. Kumara Ranasinghe, **E. Nirmada Jayaweera**, R. M. Gamini Rajapakse and Oliver A. Ileperuma, "A Novel Method to Enhance the Performance of Quasi-solid-state Dye-sensitized Solar Cells Based on Polyacrylonitrile Gel Electrolyte and Nanoparticles of ZnO with Indoline D-358 as the Dye", *Chem. Lett.*, 2014, 43 681.
14. C. S. K. Ranasinghe, **E. N. Jayaweera**, G. R. A. Kumara, H. M. N. Bandara, and R. M. G. Rajapakse, "Development of Dye-Sensitized Solid-State ZnO/D149/CuSCN Solar Cell", *Int. J. of Nanosci.*, 2014, 13, 144007.
15. G. R. A. Kumara, J. K. Tiskumara, C. S. K. Ranasinghe, I. S. Rathnayake, W. M. N. M. B. Wanninayake, **E.N. Jayaweera**, L. R. A. K. Bandara, R. M. G. Rajapakse, "Efficient solid-state dye-sensitized n-ZnO/D-358 dye/p-CuI solar cell", *Elaelectrochemica Acta* 2013, 94, 34-37.

Communications:

1. **E.N. Jayaweera**, C.S.K. Ranasinghe, G.R.A. Kumara and R.M.G. Rajapakse, "Liquid/gel-polymer electrolytes for efficient dye-sensitized solar cells based on composite films", Proceedings of the Postgraduate Institute of Science Research Congress, Peradeniya, Sri Lanka, 09th -10th October, 2015, Vol.2, 135.
2. **E.N. Jayaweera**, C.S.K. Ranasinghe, W.G.C. Kumarage, B.S. Dassanayake, R.M.G. Rajapakse, A. Konno and G.R.A. Kumara, "Sensitization of SnO₂-Based Solar Cells using CdS" Third Conference on Sri Lanka-Japan Collaborative Research, University of Peradeniya, Sri Lanka 18th -20th September 2015, Vol. 3, 19.
3. **E.N. Jayaweera**, C.S.K. Ranasinghe, G.R.A. Kumara, W.M.N.M.B. Wanninayake, K.G.C. Senarathne, K. Tennakone and R.M.G. Rajapakse, "Gel-polymer-liquid composite electrolyte system for highly

efficient dye-sensitized solar cells”, Proceedings of the Peradeniya University International Research Sessions, Peradeniya, Sri Lanka, 4th-5th July 2014, Vol.18, 442.

4. **E.N. Jayaweera**, C.S.K. Ranasinghe, G.R.A. Kumara, R.M.G. Rajapakse, “Highly efficient SnO₂/MgO composite film-based dye-sensitized solar cells co-sensitized with N719 and D358 dyes”, Proceedings of the International Conference on Nanoscience and Nanotechnology, Colombo, Sri Lanka, 12th -13th August 2014, Vol.1, 46.
5. **E.N. Jayaweera**, C.S.K. Ranasinghe, W.G.C. Kumarage, G.R.A. Kumara, R.M.G. Rajapakse, “ZnS-treated, CdS-sensitized solar cells based on SnO₂/MgO composite films”, Proceedings of the Postgraduate Institute of Science Research Congress, Peradeniya, Sri Lanka, 10th -11th October, 2014, Vol.1, 121.
6. L.Y. Rangali, **E.N. Jayaweera**, C.S.K. Ranasinghe, G.R.A. Kumara and R.M.G. Rajapakse, “Performance of metal-free organic dyes with complementary absorption in ZnO dye-sensitized solar cells”, Proceedings of the Postgraduate Institute of Science Research Congress, Peradeniya, Sri Lanka, 09th -10th October, 2015, Vol.2, 140.
7. U. Deshapriya, C.S.K. Ranasinghe, **E.N. Jayaweera**, G.R.A. Kumara, R.M.G. Rajapakse and A. Konno, “Development of ZnO-based Dye-sensitized Photoelectrochemical Solar Cells”, Third Conference on Sri Lanka-Japan Collaborative Research , 18th -20th September 2015, University of Peradeniya, Sri Lanka
8. G.R.A. Kumara, C.S. Kumara Ranasinghe, **E. Nirmada Jayaweera**, H.M. Navaratne Bandara, Masayuki Okuya, and R.M. Gamini Rajapakse, “Preparation of fluoride-doped tin oxide films on soda-lime glass substrates by Atomized Spray Pyrolysis Technique and their subsequent use in Dye-Sensitized Solar Cells”, 65th Annual Meeting of the International Society of Electrochemistry, Lausanne, Switzerland, 31st August- 5th September, 2014.
9. C.S.K. Ranasinghe, **E.N. Jayaweera**, G.R.A. Kumara, R.M.G. Rajapakse, H.M.N. Bandara and M. Okyua, “Preparation of Fluoride-doped Tin Oxide Thin Films using Atomized Spray Pyrolysis Deposition”, Proceedings of the Peradeniya University International Research Sessions, Peradeniya, Sri Lanka, November 4th-5th July 2014, Vol.18, 418.
10. C.S.K. Ranasinghe, **E.N. Jayaweera**, G.R.A. Kumara, R. M. G. Rajapakse, “Highly efficient ZnO-CuSCN based all solid state dye-sensitized solar cells”, Proceedings of the International Conference on Nanoscience and Nanotechnology, Colombo, Sri Lanka, 12th -13th August 2014, Vol.1, 47.
11. R.A.D. M. Ranasinghe, D.S.K. Liyanage, K. Murakami. C.S.K. Ranasinghe, K.G.C. Senarathna, **E.N. Jayaweera**, R.M.G. Rajapakse, “ZnO nanostructures via chemical bath deposition for application in dye-sensitized solar cells”, Proceedings of the Peradeniya University International Research Sessions, Peradeniya, Sri Lanka, November 4th-5th July 2014, Vol.18, 472.
12. C.S.K. Ranasinghe, **E.N. Jayaweera**, G.R.A. Kumara, R.M.G. Rajapakse, “ZnO based all solid state dye-sensitized solar cells with p-type CuI and CuSCN”, Proceedings of the Postgraduate Institute of Science Research Congress, Peradeniya, Sri Lanka, 10th -11th October, 2014, Vol.1, 114.
13. J.K. Tiskumara, L.R.A.K. Bandara, R.M.G. Rajapakse, G.R.A. Kumara, C.S.K. Ranasinghe, R.M.I.S. Rathnayake, and **E.N. Jayaweera**, “Dye-sensitized ZnO solid-state solar cells, sensitized with D-358 dye” Proceedings of the Peradeniya University Research Sessions, Peradeniya, Sri Lanka, November 4th July 2013, Vol.17, 204.

PROFESSIONAL QUALIFICATIONS

- Worked as a Postdoctoral Researcher at the Faculty of Research, Sri Lanka Technological Campus from September 2019 to December 2020.
- Worked as a Postdoctoral Researcher at the Department of Electronic and Electrical Engineering, Sungkyunkwan University, South Korea from June 2017 to June 2019.
- Worked as a Visiting Demonstrator for the M.Sc. degree programme in Nanoscience and Nanotechnology conducted by the Postgraduate Institute of Science, University of Peradeniya from May 2014 to January 2017.
- Worked as a Temporary Demonstrator at the Department of Physics, Faculty of Science, University of Peradeniya from August 2010 to July 2011.

Awards and Achievements

Awards:

- President's Award for Scientific Publications (for 2014 and 2015)
- Award for Academic Excellence, University of Peradeniya, Sri Lanka

Projects and Grants:

- Received a grant from National Research Foundation of Korea (NRF) (Grant No.: NRF-2018R1D1A1B07048517)
- Selected as a Student Delegate to attend the Commonwealth Science Conference held in Singapore from 13-16 June 2017 and received a travel grant from the Royal Society.

REFEREES

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

29/01/2021
Date

E. N. Jayaweera
Signature