

CURRICULUM VITAE

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Education:

- 1992 Ph.D. in Analytical Chemistry (Bioelectroanalytical Chemistry)
University of Hawaii at Manoa, Honolulu, Hawaii, USA
Dissertation title: Construction and Characterization of Plant Tissue-Based Biosensors
Research Advisor: Prof. Garry A. Rechnitz
Distinguished Professor of Chemistry and Biotechnology
- 1989 M.S. in Inorganic Chemistry (Bioinorganic Chemistry)
University of Hawaii at Manoa, Honolulu, Hawaii, USA
Thesis title: Monooxygenase reactions of Cytochrome P-450 and Model Systems
Research Advisor: Prof. Douglas P. Root
- 1984 B.Sc.(special)- 2nd class honors (upper division) in Chemistry, Subsidiary subject: Botany
University of Peradeniya, Peradeniya, Sri Lanka
Thesis: Chemical Investigation of the Tuber of *Colocasia esculenta* for Inorganic Constituents.

Theoretical Background in Chemistry : Course work in the Graduate School:

Methods of instrumental analysis (Chem 631) Biosensors (Special topics, Chem 731)
Electroanalytical chemistry (Special topics, Chem 731), Organometallic chemistry (Chem 622), Main group chemistry and solid state chemistry (Chem 741), Molecular spectroscopy (Chem 602), Physical organic chemistry (Chem 643), Enzymatic reaction mechanisms (Chem 741) Professional aspects of chemistry: Ethical issues in science and funding of scientific research (Special topics Chem 731), Analytical seminar (Chem 691D)

Topics in the area of specialization (Analytical Chemistry)

Advance aqueous equilibria, Statistics and chemometrics, Gas chromatography, High performance liquid chromatography, Analytical atomic spectroscopy, Analytical molecular spectroscopy, Nuclear and radiochemical analysis, Mass spectroscopy.

Employments :

1. Senior Lecturer in Chemistry, Department of Chemistry, University of Peradeniya, Sri Lanka. Dec 1996 – present.
2. Senior Lecturer in Analytical Chemistry, Environmental Science and Chemical Ecology, Postgraduate Institute of Science, Sri Lanka. 1997 – present.
3. International Fellow, SRI International, CA, USA. May 2001 – May 2003 (on leave from
4. University of Peradeniya).
5. Senior Lecturer, Department of Chemistry, University of Kelaniya, Sri Lanka. Sept. 1993 – Dec 1996.
6. Temporary Lecturer, Department of Chemistry, University of Kelaniya, Sri Lanka. May 1993 – Sept. 1993
7. Research Fellow, Institute of Fundamental Studies, Kandy, Sri Lanka, January 1993 – April 1993.
8. Lecturer, Department of Chemistry, University of Hawaii at Hilo, USA. August 1992 – Dec 1992.
9. Graduate Teaching Assistant, Department of Chemistry, University of Hawaii at Manoa, USA. Aug 1986 – July 1992
10. Temporary Demonstrator, Department of Chemistry, University of Peradeniya, Sri Lanka. Dec 1984 – August 1985

Teaching Experience**Department of Chemistry, University of Peradeniya & University of Kelaniya, Sri Lanka**

B.Sc. general degree program :

Fundamentals of Chemistry, Analytical chemistry, Electrochemistry and electroanalytical chemistry, Applied electrochemistry, Chemical kinetics, Statistical thermodynamics, Nucleic acids, Separation techniques in analytical chemistry, Environmental chemistry, Laboratory courses in physical chemistry, environmental analytical chemistry and inorganic chemistry. Cleaner production.

B.Sc. special degree program:

Electroanalytical chemistry, Analytical atomic spectroscopy, Separation techniques in analytical chemistry, Theoretical electrochemistry, Biochemistry (Analytical biochemistry, bioinorganic chemistry and nucleic acid chemistry), Laboratory courses in quantitative and instrumental analysis, inorganic chemistry and biochemistry.

Supervision of undergraduate (Chemistry honors) research and seminars.:

At postgraduate for Analytical chemistry and environmental science programs (Master of Science), undergraduate level for chemistry majors

Postgraduate level courses conducted by the Postgraduate Institute of Science, Sri Lanka

Analytical separations, Analytical sensors, Water Quality, Chemical Ecology (Fate of pesticides), and relevant laboratory courses

Department of Chemistry, University of Hawaii, USA

Laboratory courses in elementary chemistry, general chemistry, quantitative analysis and physical chemistry

Research Experience**SRI International, Menlo Park, CA, USA**

Preparation and characterization of inorganic nanoparticles, Ball milling and Attritor operations, particle size analysis, Optical spectroscopic and Scanning Electron Microscopic characterization of nanoparticles, GC and GC-MS analysis, X-ray diffraction, Electroplating of nanoparticles,

Preparation of corrosion resistant coatings with nanoparticles. Preparation of research reports for industrial clients.

University of Peradeniya and University of Kelaniya, Sri Lanka

Plant tissue-based biosensors and electrochemical sensors for the detection of pesticides, pesticides and pesticide residue analysis by gas chromatography, evaluation of water quality parameters, Biosensors to monitor H₂O₂ in milk industry and biosensors for monitoring important enzymes in tea processing in Sri Lanka.

University of Hawaii at Hilo, USA

Water analysis using ion chromatography and ion selective electrodes.

University of Hawaii at Manoa, USA

Construction of plant tissue-based biosensors, electroanalytical techniques: amperometry, voltammetry and potentiometry, flow injection analysis, UV/Vis spectroscopy, plant tissue culture techniques, use of genetically engineered plants in biosensor construction.

Porphyrin and metalloporphyrin synthesis, characterization of metalloporphyrin using voltammetry, coulometry and spectroscopy, nonaqueous electrochemistry of porphyrin catalysis, gas chromatographic analysis.

Awards, Fellowships and Honors

- 2001-2003: International Fellow, SRI (Stanford Research Institute) International, California USA
2000 Presidential Award for research of international international recognition.
2001 young Scientist Award, National Science Foundation (NSF), Sri Lanka/Third World Academy of Science (TWAS), Italy
1988 Excellence in Teaching Award, American Chemical Society, Hawaii Section,
1986 Pacific Asian Scholarship, Graduate Division, University of Hawaii at Manoa, USA
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Professional activities:

1. Committee member, Section E-2 (chemistry), Sri Lanka Association for the advancement of Science (SLAAS), 1995.
2. Rapporteur, Section E-2 SLAAS, 1996.
3. Chief examiner, General certificate of Education (Advanced Level), 1995, 2004 - 2006.
4. Member, Organizing Committee (Rapporteur), Annual Sessions of Sri Lanka Association for the advancement of Science, University of Kelaniya, 1996.
5. Participant, International seminar on "Problems of monitoring the pesticide residues in exportable commodities iz rice, tea, fish and minor crops, April 4-9, Colombo, Sri Lanka, 1996.
6. Participant, International workshop on acid rain monitoring and atmospheric modeling, April 20-23, Kandy, Sri Lanka, 1999.
7. Resource person, Regional workshop on Biotechnology, February 08-18, University of Peradeniya, Sri Lanka, 1999.
8. Visiting Senior Lecturer, Department of Molecular Biology and Biotechnology, University of Peradeniya, 1998-present.

9. Coordinator, Environmental Science (minor) undergraduate program, Faculty of Science 1997 – 2001.
10. Senior Student Counsellor, Faculty of Science, University of Peradeniya, 2000.
11. Resource person, poster session on Industry-Institute partnership conducted by Ministry of Science and Technology, BMICH, Sri Lanka, August, 2000, (Application of Biosensors to monitor added H₂O₂ in milk in dairy industry).
11. Resource person, SLAAS, Seminar on “New Developments in electrochemical Industry, May 17, 2002, Department of Chemistry, University of Peradeniya .
12. Participant, International workshop on Environmental Chemistry Indian Institute of Chemical Technology (IICT) and UNESCO “Electrochemical detection schemes for monitoring of pesticides, Hyderabad, India, November 10 – 15, 2003.
13. Resource person for World Water Monitoring Day organized by Industrial Services Bureau October, 2004, Kandy, Sri Lanka.
14. Moderator, For Analytical and Inorganic question papers for undergraduates, University of Rajarata and Buttala, 2003 –to date.
15. Participant, Cleaner production as a tool for sustainable consumption and production workshop organized by UNIDO and UNEP, 2005 and 2007..
16. Participant . Third participant Seminar introducing new pesticides organized by Department of agriculture, December 2005
17. Resource Person, New Developments in Electrochemical technologies, Institute of Chemistry March 09 2006.
18. President, University Science Teachers Association-Peradeniya (USTA-P), 2005/2006.
19. General Secretary , Alumni Association of University of Peradeniya (AAUP), 2005/2006.
20. Resource person, Institute of Chemistry Training seminar on “Trends and advances in electrochemical technology”, March, 2006.
21. Resource person , Institute of Chemistry, Training seminar cum workshop on Pesticide residue analysis, December, 2006.
22. Participant, Institute of Chemistry, International Workshop (CHEMTECH), June, 2007.
- 23 Participant, APWSS (21 st Asian Pacific Weed Science Society) conference, October, 2-6, 2007.
Sri Lanka.
23. Participant, Cleaner production consultant training programme, National Cleaner Production center and UNEP, Colombo, Sri Lanka, October 21-25, 2007.

Grants Received:

1. Plant tissue based biosensors for detection of herbicides, National Science Foundation (NSF), Sri Lanka, 1996-1999, RG/96/C/02 (Rs 3,52,000).
2. Development of electroanalytical and chromatographic methodologies for the detection of selected pesticides used in Sri Lanka, National Science Foundation, Sri Lanka, 1999-2002, RG/99/C/06, (Rs.13,35,360).
3. National Research Council of Sri Lanka, Investigation of accumulation and fate of pesticides in soil and in water , 2000, Grant No. 00-36 (Rs. 5148,000/=).
4. Effect of pesticide exposure and nematode infection on the development of limb deformities in frogs, 2005, Rs. 262,000.

5. Investigation of environmental fate of some selected pesticides using electrochemical methods, 2005, Rs 595,000.

Thesis supervised at postgraduate level:

1. Vajira karunaratne, **M.Sc** (Master of Science), "Pesticide residue Analysis of Chilli grown in Sri Lanka", 2000.
2. Nalaka Susantha, **M phil** (Master of Philosophy) "Chemical and Biochemical modification of electrode surfaces for environmentally and industrially important compounds, 2001.
3. A.M. Hafil, **M.Phil** " Electroanalytical methods for pesticides and pesticide residue analysis, 2003.
4. Sisira weliwagama, **Ph.D** Construction and Characterization of electrochemical sensors for some selected pesticides heavily used in Sri Lanka, 2003.
5. U.I . Rodrigo, **M.Phil** , "Electrochemical and gas chromatographic (GC and GC-MS) investigations of the environmental fate of some selected pesticides used in Sri Lanka, 2004.
6. H.P.S.S. Somasiri **M.Sc.** (in Analytical Chemistry), 2005
7. A.Dharmadasa, **M.Sc.** (in Science Education) "Preparation of Study guide for the Environmental Unit (Unit 15) of GCE A/L syllabus", 2006.
8. S..Suthakaran, **M.Sc.** (Science Education) Investigation of Lead (Pb) pollution in Piga-Oya and comparison of analytical method results of Lead content using atomic absorption and UV/Vis Spectrophotometry, 2006.

Research publications and communications

1. A. Navaratne, M.S. Lin and G.A. Rechnitz, Eggplant based bioamperometric sensor for the detection of catechol, *Anal Chim Acta* **237**, 107 (1990).
2. A. Navaratne and G.A. Rechnitz, Plant tissue cultures for biosensing, *Proc. FACCS/ACS Conference*, Anaheim, California, USA, p 801 (1991).
3. A. Navaratne and G.A. Rechnitz, An improved plant tissue based biosensor using tobacco callus cultures, *Anal Chim. Acta*, **257**, 59 (1992).
4. A. Navaratne and G.A. Rechnitz, Use of tin oxide electrodes in flow injection analysis with application to plant tissue based biosensors, *Anal. Lett.*, **25**, 191 (1992).
5. A. Navaratne, Iron(III)tetraphenylporphyrinchloride [Fe(III)TPPCl] catalysed oxidation of 1,2-dichloroethylene, *Proc. Sri Lanka Assoc. Advt. Sci.*, Sri Lanka, p 422 (1995).
6. A. Navaratne, Reductive dehalogenation of 1,2-dichloroethylene catalysed by Co(II) tetraphenylporphyrin [Co(II)TPP], *Proc. Sri Lanka Assoc. Advt. Sci.*, Sri Lanka, p 421 (1995).
7. A. Navaratne, Substituent effects of fluorine on the nonaqueous chemistry of pentafluoroiron(III) tetraphenylporphyrinchloride, *Proc. Sri Lanka Assoc. Advt. Sci.*, Sri Lanka, p 198 (1996).
8. A. Navaratne and N. Susantha, Preliminary evaluation of water quality parameters of irrigation water located at "Ketawela Anicut" in Gampaha District, *Proc. Sri Lanka Assoc. Advt. Sci.*, Sri Lanka, p 199 (1996)

9. N. Priyantha and A. Navaratne, Electrochemical Sensors - An Overview in *Electrochemical Technology*, Sri Lanka Association for the Advancement of Science, Sri Lanka 13 (1996).
10. A. Navaratne, N. Susantha and S. Malavipathirana, Survey of electroactivity of some pesticides used in Sri Lanka, *Proc. Annual Res. Session*, Fac of Science, Univ of Peradeniya, Sri Lanka, p 14 (1997).
11. A. Navaratne and N. Susantha, An electroanalytical sensor for the detection of Gamexone (paraquat), *Proc. Sri Lanka Assoc. Advt. Sci.*, Sri Lanka, p 346 (1997).
12. A. Navaratne. M. Hafil and N. Susantha, Electroanalytical sensor for the detection of Grenade 5 EC (Cyhalothrin), *Proc. Sri Lanka Assoc. Advt. Sci.*, Sri Lanka, p 219 (1998).
13. A. Navaratne and N. Susantha, Carrot callus tissue based biosensor for the detection of hydrogen peroxide, *Proc. Annual Res. Session*, Univ of Peradeniya, Sri Lanka, p 714 (1998).
14. A. Navaratne and A.P. Aluthge, Evaluation of agriculturally important water quality parameters of "Ketawela Anicut" located in Gampaha District, *Proc. National Water Conference*, Colombo, Sri Lanka (1998).
15. Atmospheric Pollution by A. Navaratne (ed), *Proc. Seminar on atmospheric pollution*, Sri Lanka Assoc. Advt. Sc., 1996.
16. A. Navaratne and N. Susantha, An electroanalytical sensor for the detection of Gamexone (paraquat), *Anal. Lett.*, **33**, 1491 (2000).
17. A. Navaratne. and M. Hafil, Electroanalysis of Propanil (N-3,4-dichlorophenyl)propanamide, a chlorinated pesticide used in rice fields, *Proc. Annual Res. Session*, Univ of Peradeniya, Sri Lanka, p 101 (1999).
18. A. Navaratne, Y.P. Kollalpitiya and F. Kamaldeen, Detection of hydrogen peroxide in milk using a biosensor, *Chem Sri Lanka*, **17** (2000)..
19. V. Karunaratne, S. Tennakoon and A. Navaratne, Pesticide residue analysis in chilli grown in Sri Lanka, *Chem Sri Lanka*, **17**, 35 (2000).
20. A. Navaratne and A.M. Hafil, Residue Analysis of Propanil (3,4-DPA) residues by electroanalytical methods, *Chem Sri Lanka*, **18**, 2001.
21. A. Navaratne and S. Weliwegamage, Detection of Thiram using apple tissue based biosensor, *Proc. Annual Res. Session*, Univ of Peradeniya, Sri Lanka, (2001).
22. N. Priyantha, A. Navaratne, D. Jayawickrama and S. Weliwegamage, A model study on applicability of electrochemical methods for detection of Propanil, an environmental analysis, *Proc. Annual Research Sessions*, University of Peradeniya, Sri Lanka (2002).
23. N. Priyantha, A. Navaratne, D. Jayawickrama and S. Weliwegamage, Electrochemical method for rapid screening of the activity of the 4-chloro-2-methylphenoxyacetic acid (MCPA), *Ceylon Journal of Science: Physical Sciences*, 9(2), 31-36 , 2002.
24. N.Priyantha, A. Navaratne, D.Jayawickrama and S. Weliwegamage, Copper (II) oxide-based electrochemical sensor for propanil, *Proc. Annual Research Sessions*, University of Peradeniya, Sri Lanka (2003).
25. S. Weliwegamage, N.Priyantha and A. Navaratne, Investigation of Thiram-Cu²⁺ interactions, *Proc. Annual Research Sessions*, University of Peradeniya, Sri Lanka (2003).

26. N. Priyantha, A. Navaratne, D. Jayawickrama and U.S.K. Welivegamage, Amperometric method for the determination of Propanil in simulated rice field environment, J.National Science Foundation, Sri Lanka, 2004, 32(3&4):115-125.
- 27.
28. Ayanthi Navaratne and Dhanushka Gunawardena, "Uguressa (*Flacourtia ramontchii*) tissue modified amperometric biosensor for determination of catechin." *Proc. Sri Lanka Assoc. Advt. Sci.*, Sri Lanka, 606/E2, 2005.
29. Ayanthi Navartne and Sanjeewa Gamagethera, "An electroanalytical sensor for the detection of Oxyfluorfen (Goal)", *Proc. of 62 nd SLAAS, Section E2, 2006* PP 129.
30. U.A. Jayawardena, R.S. Rajakaruna, A.N. Navaratne and P.H. Amerasinghe, "Effect of biocide Exposure on the survival, growth and development of abnormalities in hour glass tree frog (*Polypedates cruciger*), submitted to SLAAS, 2006.
31. Namal Priyantha, Ayanthi Navaratne and Chandima B. Ekanayake, Distribution of Tyram between water and soil, accepted SLAAS, Section E-2, 2006.
32. Jayawardena, U.A, Rajakaruna, R.S. Navaratne A.N. are parasites responsible for the amphibian decline in Sri Lanka, *Proc. of 11 th Biological Science Graduate congress, December 2006, Thailand, PP 69.*
33. U. jayawardana et. Al . Purse, 2006.
34. Npriyantha, Ayanthi Navaratne and C.B. Ekamnayake, SLAAS 62 nd, Distribution of thiram between water and soil pp 128.
35. A. Navaratne, Namal Priyantha and U. Rodrigo, Analytical Methods for the Investigation of Reactivity of Propanil Accepted for J.of National Science Foundation, 2008.
36. N. Priyantha, A. Navaratne and S. Welivegamage, Determination of MCPA through electrocatalysis of Manganese Species, *Int. J. Electrochem. Sci, 2 (2007) 433-443.*
37. A.N. Navaratne, N. Priyantha, K.P. Imaduwa, C.B. Ekanayake and A. Abeysekara, Fate of Paraquat in Sri Lankan soil types, *Proc of the 21 st Asian pacific weed Science conference, Colombo, pp 352- 356, 2007*
38. A. Priyantha, A. Navaratne, C.B. Ekanayake and A. Abeysekara, residual effect of of propanil in simulated rice field environment *Proc of the 21 st Asian pacific weed Science conference, Colombo, PP 383-386, 2007.*
39. Ayanthi Navaratne and A.M Hafil Stearic acid modified glassy carbon electrode for the detection of Cyhalothrin. A Synthetic pyrethroid" (under review)) in *J. National. Science Foundation of Sri lanka, 2007.*
40. Ayanthi Navaratne and Sanjeewa Gamagedera "Electroanalytical detection scheme for Oxyfluorfen (under review) to J. Nation. Sci. foundation in Sri Lanka, 2007.

References:

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