

Curriculum Vitae of Dilojan Romesh Senanayake

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Undergraduate and (Post) Graduate Education

Doctoral candidate (May 2008 to present) at the Bioremediation Group (Dr Joel Kostka's Lab), Department of Oceanography, Florida State University (FSU), Tallahassee, Florida, USA.

Advanced Graduate (Post-Graduate) Certificate in Hydrogeology (January 1999) from the Department of Geology of the University of South Florida, Tampa, Florida, USA.

Course work: Groundwater Flow Physics, Advanced Hydrogeology, General Geochemistry, Aqueous Geochemistry, Tracer Geochemistry, Water Quality, Solid & Hazardous Waste and Reactive Transport Modelling.

Certificate of Concentration (for MSc.) in **Solid & Hazardous Waste Management** (June 1998) by the Department of Civil and Environmental Engineering with cooperation from the Department(s) of Chemistry, Geology and the Environmental & Occupational Health of the University of South Florida, Tampa, Florida, USA.

Course work: Solid & Hazardous Waste, Fate of Chemical Releases, Chemistry of Toxic Substances, Groundwater Flow Physics, Aqueous Geochemistry and Water Quality.

Master of Science in Chemistry (July 1996) from the Department of Chemistry of the University of South Florida, Tampa, Florida, USA.

Course work: Applied Physical Chemistry, Bio-Magnetic Resonance Spectroscopy, Chemistry of Toxic Substances, Electronic Database Search, Principles of Inorganic Chemistry, Advanced Analytical Chemistry and General Biochemistry.

Thesis: Identification of metabolites of Gamma-Thio-Adenosine Triphosphate ($\gamma^{35}\text{S}$ -ATP) upon the microinjection into *Xenopus laevis* oocytes (Concentration: Bio-Analytical Chemistry).

Bachelor of Arts in Chemistry & General Science (January 1993) with Undergraduate Summer Research in *Organic Chemistry* from Coe College, Iowa, USA.

Course work: Principles of Structural Chemistry, Inorganic Chemistry, Organic Chemistry I & II, Chromatography, Organic Chemistry Laboratory, Solutions & Chemical Analysis Laboratory, Advanced Organic Chemistry, General Physics I & II, Physical Chemistry, Introduction to Materials Science, Solid State Physics (Junior Seminar), Statistics, Calculus I&II, Micro & Macro-Economics, Introduction to Environmental Studies, General Biology I & II, Painting, Techniques in Molecular Biology, Computers in Business and Urban Ecology.

Undergraduate Summer Research (1991): "Competition Studies On Aryne Generation from Halophenyl Triflates" (Research Area: Organic Chemistry, published in *Tetrahedron Letters*, 1993).

Technical Education

Short course on Geographical Information Systems (GIS) (May. 1 – 5, 2006) conducted by the Postgraduate Institute of Agriculture (PGIA), University of Peradeniya, Sri Lanka.

Geographical Information Systems (GIS) training course (Oct. 30 – Nov. 14, 2005) conducted at the International Committee of the Red Cross (ICRC) headquarters in Geneva, Switzerland.

Certificate of Training in MICROSOFT (MS) ACCESS (Nov. 2002) conducted by the Institute of Government Accounts and Finance (Ministry of Finance), Sri Lanka.

Certificate in Computer Awareness (1-year course, Dec. 2000 to Dec. 2001) conducted by the Faculty of Engineering of the Open University of Sri Lanka. Course Exercises: DBASE, PASCAL, Turbo PASCAL, BASIC, MICROSOFT (MS) WINDOWS and Lotus Spreadsheet.

Certificate in Basic (Mechanical) Workshop Practice (Feb. to March 2000, 24-day) conducted by the Faculty of Engineering of the Open University of Sri Lanka. Course Exercises: Gas & Arc Welding, Sheet Metal Work, Machining, Bench Fitting, Non-Ferrous Casting and Electrical Services (soldering, wiring & installation, circuit, etc.).

Short Courses, Seminars and Workshops

Field Integration Course (March 1 – 9, 2006) with respect to International Humanitarian Law (IHL), civilian protection (incl. Water & Sanitation, Health, Economic Security etc.) during armed conflict, conducted by the International Committee of the Red Cross (ICRC) in Kalutara, Sri Lanka.

National Workshop on "**Lightning Protection Systems and Earthing**" (September 24, 2006) conducted by the Department of Meteorology, Sri Lanka.

Workshop on **Environmental Organic Chemistry** (January 18-20 & 25-27, 2002) conducted by the Postgraduate Institute of Science, Peradeniya, Sri Lanka.

Seminar on **Internal Quality Auditing for ISO 9000 Quality Systems** (August 7th & 8th, 2001) conducted by the Sri Lanka Standards Institution.

Workshop on "**Surface Finishing Technologies**" (July 24th, 2001) conducted by Project SMED (Small & Medium Enterprise Developers) of the Federal Chambers of Commerce & Industry of Sri Lanka.

Training Seminar on "**Water Quality Management, A need for the New Millennium**" (May 30th, 2001) conducted by the Institute of Chemistry, Ceylon.

Workshop on **Acid Rain Monitoring and Air Quality Monitoring and Management** (February 12-15, 2002) conducted by the Postgraduate Institute of Science, Peradeniya, Sri Lanka.

Short Course on **Weather Forecasting and Meteorological Instruments** (August 8-11, 2000) conducted by the Postgraduate Institute of Science (Peradeniya) and the Department of Meteorology, Sri Lanka.

Work Experience

Research Assistant and Teaching Assistant at the Department of Oceanography, Florida State University, Tallahassee, Florida. Research involves developing methodologies that contribute towards bioremediation of heavy metal, mainly uranium, and nitrate contaminated sites.

Researcher: (Independent, March 31st, 2007 to May 19, 2008) – Water Quality Management of Tampa-Bay/Alafia-River Estuary, Florida USA. Publications with the Geo-informatics Society of Sri Lanka (GISSL), University of Peradeniya, Sri Lanka (Website: www.gissl.lk). The paper titled “High Time Resolution Monitoring of Inorganic Nitrogen Fluxes into Hillsborough-Tampa Bay from the Alafia River, Florida” can be found at the following website: <http://www.gissl.lk/WaterProf/2007/Procee/3.pdf>

Field Officer - Grade 6 (Water & Habitat) at the International Committee of the Red Cross (ICRC) from *March 28, 2005 to March 31, 2007*. Provided logistical assistance to the ICRC to establish a Water and Habitat Department at the ICRC Delegation in Colombo, Sri Lanka. Duties included assisting procurement of emergency and post-tsunami field supplies for victims of conflict and natural disasters, development of relevant databases based on Geographical Information Systems (GIS) for Water Distribution and Water Quality (WQ), conflict, Internally Displaced persons (IDPs), IDP shelters etc.. Work also includes providing technical information needed for sustaining water, sanitation and habitat based assistance programmes of the ICRC especially with regard hydro_geological investigations, sustainable water source identification, post Tsunami emergency and conflict supplies, health services restoration etc. Additionally providing GIS training, and training of water quality testing for field technicians in order achieve guidelines set by SPHERE (for emergencies) and World Health Organization for drinking water.

Health Care Waste Management Co-ordinator to the Ministry of Health, Nutrition and Welfare under the World Bank funded National HIV/AIDS Prevention Project (*August 15, 2003 to Jan. 31, 2005*).

Duties included the development and implementation of environmental hazard minimising Health Care Waste Management (HCWM) practices through programs and activities, which included developing national policy on HCWM, identifying a suitable legal framework for medical waste management, assessing the current practices of medical waste management and associated risks, recommending improvements, developing action plans and implementing these action plans. Preparation of technical reports for suitable waste collection systems, treatment technologies (incl. autoclaving and incineration) and other safe disposal options, Environmental Impact Assessments (EIAs) for treatment and disposal systems, and Terms of Reference (TORs) and Request for Proposals (RFPs) for procurement of consultants for the EIA, and promoting Public Private Partnerships (PPPs) including cost/benefit analysis of HCWM systems were required in order to satisfy job requirements. Routine inspection/monitoring of the waste streams (incl. municipal type, bio-hazardous, pharmaceuticals incl. cytotoxic drugs, sharps etc. containing waste) of Hospitals, HIV/STD and Chest (TB) Clinics, Blood Banks and Specialised Institution nation-wide (e.g. Cancer Hospital, Leprosy Hospital, Infectious Disease Hospital etc.) and training of health professionals (e.g. Medical Doctors) and personnel (nurses, attendants etc.) with respect to sanitary HCWM were also done while developing a suitable database (incl. GIS) needed for fulfilling the above mentioned tasks.

Environmental Associate/Environmental Management Officer Grade I to the Ministry of Environment and Natural Resources of the Government of Sri Lanka under the World Bank funded Environmental-I-Action Project or "EAIP" (Feb. 1 2001 to Aug. 15, 2003).

Attached to the Ministry of Industrial Development and Constitutional Affairs (Feb. 2001 to Sep. 2001) and Pollution Management Division (Ministry of Environment & Natural Resources, Nov. 2001 to April, 2002) as part of this project, then attached to the Environmental Economics and Global Affairs Division (Ministry of Environment & Natural Resources, since May 2002 to July 31). Work includes preparation of Water Quality and Solid Waste Management Programmes, Implementation Strategies for the safe handling and disposal of solid waste, Environmental Impact Assessments (EIAs) and Initial Environmental Examinations (IEEs) with regard to Industrial Estates (IEs), organising workshops with respect Cleaner Production (CP) methods for Small & Medium (industrial) Enterprise (SME) promotions, and preparation and editing of national and regional environmental reports, establishment of *Conventions Reference Centre* (CRC) for International and Regional Conventions (UNEP, GEF, SACEP etc.), and Tender Procurement (furniture, web-site, publishers etc.).

Research Assistant- Solid Waste Management Research Project of the Department of Agricultural Engineering of the University of Peradeniya, Peradeniya, Sri Lanka (Oct.-Nov. 2000).

Work included landfill design, natural resource laboratory establishment, waste treatment, compost production, and labour and equipment management.

Quality Control (QC) Chemist for Raw Materials, Manufacturing & Finished Products (July 1998 to Oct. 1999) at Bausch & Lomb Pharmaceuticals, Tampa, Florida, USA.

Work included quality control testing of "In-Process" and "Finished" (products), mainly otic, ophthalmic, dermal, oral, intravenous and nasal pharmaceuticals in accordance with methods specified by the European, British, Japanese and US Pharmacopoeia within the regulations of the US Food and Drug Administration (FDA). Routine work included laboratory supervision and co-ordination with in-house manufacturing personnel for the testing of products and release of these products, especially during third (night) shift operations.

Research Assistant: Laboratory Supervisor/Manager and Field Laboratory Instructor (July 1996 to May 1999) for the Water-Rock Interaction Laboratory of the Department of Geology, University of South Florida, Tampa, Florida, USA.

Work included routine laboratory maintenance, and training and teaching students on water and mineral analysis, and in the use of field instruments such as DO, Conductivity, Total Dissolved Solids (TDS), Temperature, pH etc., meters and Global Positioning System (GPS) Instruments. Research involved quantifying nutrient (nitrate, nitrite, ammonium, phosphate, silicate) inputs into Tampa Bay Estuary via the Alafia River and subsurface (i.e. via groundwater) loading, and mineral analysis needed for Magnetic Susceptibility studies of clay, silt and loess from Yemen.

Teaching and Research Assistant (August 1993 to July 1996) at the Department of Chemistry, University of South Florida, Tampa, Florida, USA.

Teaching work included instructing Undergraduate Students in General and Organic Chemistry Laboratories and lab safety training, preparing lectures and experiments, and proctoring and grading exams. Research (summer '94, '95 and '96) included identification of metabolites of gamma-thio adenosine triphosphate upon the microinjection into *Xenopus laevis* oocytes. Received special training in the use of Radioactive Materials (isotopes) and safe handling of radioactive waste.

Microbiology and Chemistry Laboratory Technician (Dec. 1990 to May 1993, Part-time during undergraduate school year and full time during vacation) at Cargill Analytical Services, Cedar Rapids, Iowa, USA.

Work included Chemical and Microbiological testing of mass production food items such as dairy and poultry products, meats, grains, juices etc. Chemical test included determining cholesterol, sodium and fat content of the mentioned food items while microbiology testing was for qualitative and quantitative determination of *E.Coli*, *Salmonella*, *Choliform* etc. Also, other duties included sterilization (autoclaving) of microbiological media (broths, agar etc.) and microbiological laboratory waste.

Undergraduate (Summer 1991 and 1992) Research Assistant for the study of the reactions of halophenyl triflates with lithium di-isopropylamine (Organic Chemistry) jointly conducted by Coe College and the University of Iowa.

Technical and Mechanical Skills

Welding (Arc, MIG, TIG etc.), soldering, pump (water, vacuum, peristaltic etc) operation and maintenance, Standard Penetration Testing (SPT), marine boat operation and maintenance, field/marine sample collection, laboratory maintenance/management, chemical and hazardous material storage and transportation, handling and disposal of radio-labeled chemicals (^{35}S , ^{32}P and ^3H), chemical manifest and inventory preparation. Also, methods development and Standard Operating Procedure (SOP) development for industrial (incl. laboratory) operations.

Laboratory and Computer Skills

Laboratory

Chemical: IR & FTIR for organic inorganic compounds, Ion and High Performance Liquid Chromatography (IC & HPLC), Gas (Liquid) Chromatography (GC/GCLC), Thin Layer Chromatography (TLC), Chromatron (Radial Chromatography), GC-Mass Spectroscopy (MS), Atomic Absorption (AA) and Atomic Emission Spectroscopy (AES), Ultra Violet (UV) & UV-Visible Spectroscopy, and ^1H , ^{13}C and ^{31}P Nuclear Magnetic Resonance (NMR) Spectroscopy. Arsenic Field Test Kits. Field Photometer testing (Paqualab, Palintest, Hach etc.) for water quality parameters such as Fluoride, Nitrate & Nitrite, Ammonium, Hardness, Alkalinity, Aluminum, Sulfate, Potassium, Phosphate, Iron etc.

Physical: Differential Scanning Calorimetry (DSC), Marine and Field Water Sampling, Subsurface (incl. Groundwater) water sampling, X-Ray Diffraction of Minerals, Standard Penetration Testing (SPT), Scanning Electron Microscopy (SEM), Viscotometry, Pycnometer, Specific Gravity Meter, Osmolarity, Salinity/Conductivity, Centrifuge, Turbidity & Nephelometry, Particle Size Distribution (PSD) of Sediments using Sedigraph (Micromeritics®), Freeze Drying (lyophilizer), Residue on Ignition, Boiling Point (BP) Determination, and Dissolved Oxygen, pH, Ion Sensitive Electrode (Fluoride, Bromide, Nitrate etc.) Meters.

Biological & Microbiological: Ecological Census Techniques (Insects, Rabbits, Dear, Foxes etc.), Media Preparation, Sterilization, Inoculation, Autoclaving (media preparation, bio-hazards etc.), Pour Plates, stomaching, etc for food Analysis. Use of Delagua (Oxfam) and ICRC Porta (Wagtech) bacteriological field laboratories for testing Thermo Tolerant Choliform (TTC) in open and tube wells.

Computer:

ArcGIS 9.1, ArcView GIS 3.1, FGIS, DBase, A9CAD/AutoCAD, Visio, Microsoft Access, Spreadsheets (Excel, Lotus, Quattropro etc.), Reactive Transport Modeling (PHREEQC, OS3D, GIMRT etc.), Mathcad, Maple, Groundwater Flow Modeling (MODFLOW, Visual Modflow), Word Processing (MS Word, Word Perfect etc.), MS PowerPoint, UNIX (Operating System), DOS, MS DOS, PASCAL, BASIC etc.

Publications, Research and Coordinated Publications

“High Time Resolution Monitoring of Inorganic Nitrogen Fluxes into Hillsborough-Tampa Bay from the Alafia River, Florida”, Senanayake, D.R. and Steefel, C.I., Geo-Informatics Society of Sri Lanka (**GISSL**), Department of Agricultural Engineering, Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka (October 2007). **Website:** www.gissl.lk

The paper titled “High Time Resolution Monitoring of Inorganic Nitrogen Fluxes into Hillsborough-Tampa Bay from the Alafia River, Florida” can be found at the following website: <http://www.gissl.lk/WaterProf/2007/Procee/3.pdf>

Coordinated and assisted with the procurement activities (Oct. 2003 – Jan. 2005) to generate the Environmental Impact Assessment (EIA) Report for Autoclaves for Sterilization of Healthcare Waste generated by Ministry of Healthcare, Nutrition and Uva Wellassa Development (MHN&UWD) administered institutions located within Colombo Municipal Council (CMC)Area (November 2004).

“Competition Studies On Aryne Generation From Halophenyl Triflate”, Wickham, P.P., Senanayake, D.R., Reuter, K.H., Guo, H., Zelesky, M., Scott, W.J., *Tetrahedron Letters*, September 1993, Vol. 34, no. 47, pp.7521-7524.

Memberships

Life member (2006 to present) of the **Geo-Informatics Society of Sri Lanka (GISSL)**, Department of Agricultural Engineering, Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka. **Phone:** 0094-81-2388923, **Fax:** 0094-81-2387216, **Website:** www.gissl.lk, **Email:** dammin@pdn.ac.lk

Student Member (1997 – 2000) of **American Chemical Society (ACS)**. University of North Carolina, Chapel Hill, NC. **Website:** www.acs.org