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1. Professional Qualifications

Degree	Major	Year	University/College/ Board	Scholarship
Ph. D	Civil and Environmental Engineering*	1999	Clarkson University, Potsdam, New York, USA	Research Assistantship
M. E	Environmental Engineering#	1993	Center for Environmental Studies, Anna University, Chennai	GATE Fellowship & Gold Medallist
B. E	Civil Engineering	1991	College of Engineering Guindy, Anna University, Chennai	First Rank Holder & Gold Medallist

*Ph. D. Dissertation: An Investigation of the Dissolution of Non-Aqueous Phase Liquids (NAPL) in Heterogeneous Porous Media

2. Professional Experience

Period	Title
July 2012 – till date	**Associate Professor** Department of Civil Engineering, Indian Institute of Technology Madras,
June 2005 –June 2012	**Assistant Professor** Department of Civil Engineering, Indian Institute of Technology Madras,
June 2003 – May 2005	**Senior Research Associate and Consultant** M.S. Swaminathan Research Foundation, Chennai, **India.**
January 2000 – November 2002	**Post-doctoral Research Associate** University of Illinois at Urbana-Champaign, IL, **USA**.
October 1993 – July 1994	**Design Engineer** Larsen & Toubro Inc., ECC, Manapakkam, Chennai,**India**.

3. Awards/Honours/Merit

Sl. No.	Recognition	Agency/ year
1.	Magudam Award	Science and Technology Category, CNN New 18 / 2017
2.	Gandhian Young Technology Innovator Award (GYTI)	Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI), New Delhi, India/ 2015
3	Member (Two terms 2014-2019)	State Expert Appraisal Committee for EIA Ministry of Environment and Forests, GoI
4	Technical Expert Committee Member	Central Pollution Control Board, NCEF Project for remediation of Contaminated Sites 2016 - 2019
5	Expert Committee Member, Solid Waste Management	Chennai Corporation, Government of Tamil Nadu, India 2015- 2018
6	Expert Committee Member, Reverse Osmosis Plants	Chennai Metro Water and Sewerage Supply Board, Tamil Nadu, India 2016
7	Technical expert committee	Kerala State Planning Board for Irrigation projects 2017

4. Research Areas

My research focus has been primarily in the water quality sector - specifically groundwater and industrial wastewater treatment. The major contributions have been under three areas as below - Fundamental research, applied research and my current plans to venture into new arenas.

4.1 Fundamental Research

- Understanding Groundwater Contaminant Transport and Transformations - Miscible pollutants and Non aqueous phase liquids (NAPLs)
- Exsitu and Insitu treatment of heavy metal contaminated wastewater and groundwater
- Developing novel Electrochemical based technologies for removal of micropollutants
- Environmental Microbial Resistance propagation and mitigation strategies

4.2 Applied Research

- Developing industry specific end to end sustainable waste management solutions including minimisation, recovery, reuse.
- Biomethanation, codigestion, Dry digestion, Energy and resource recovery for integrated solid waste management

4.3 Societal Out Reach at Field scale

- Petroleum pipeline spill Contaminated site assessment and Remediation at Tondiarpet
- Pesticide factory site assessment at Srikakulam, Andhrapradesh
- Field Demonstration Textile Waste water Reuse for agriculture at Ludhiana, Punjab
- Coastal Oils spill investigation and monitoring bioremediation at Ennore
- Restoration of Water bodies of South Chennai - Pallikaranai marsh land and lakes
- Assessment of impact of non engineered dumpsites on groundwater in Perungudi and Kodungaiyur

5.0 Brief Research Contributions under each topic

5.1 Understanding Groundwater Contaminant Transport and Remediation- Miscible pollutants and Non aqueous phase liquids (NAPLs)

Ground water is contaminated with several pollutants such as microorganisms from wastewater, miscible organic and inorganic hazardous industrial pollutants and nonaqueous phase liquid pollutants. The study of nonaqueous phase pollutants- their migration, transformation and mass transfer are very complex phenomena. Nonaqueous phase liquids (usually acronym-ed as NAPLs) include a wide range of organic compounds such as chlorinated hydrocarbons, petroleum components, and other solvents. There are many issues to be considered when studying the fate and transport of these contaminants such as multiphase flow, NAPL characterization, volatilization from the soil, sorption into the soil, dissolution and transport of dissolved phase and natural attenuation caused by biological and chemical solute transformation

My doctoral research focused on developing new mass transfer correlations for simple heterogeneous aquifer configurations and identifying the factors controlling dissolution when NAPL is entrapped in high saturations. During my post-doctoral tenure, I worked on porescale dissolution and biodegradation of TriChloroethylene using pore network micromodels etched on silicon wafers. The biofilm growth and response to preferred substrates and toxic substrates were captured with advanced image capture technology.

Specific research topics I worked on in groundwater contamination area during the last 10 years:

I. Understanding Multicomponent dissolution in contaminated subsurface systems through laboratory experiments and numerical models
II. Understanding vertical transport and transformation of misicble pollutants in unsaturated systems and transfer to horizontally moving groundwater.

III. Developing novel methods for enhancing insitu biodegradation using biosurfactant producing anaerobic organisms

5.2 Exsitu and Insitu treatment of heavy metal and organic compounds contaminated wastewater and groundwater

Heavy metal contamination such as lead, chromium, copper, Cadmium, Arsenic andSelenium from industries and dumpsites have impacted human health. Our studies have focussed on hexavalent chromium contamination commonly reported across India.

I. The fundamental research focus was on understanding the mechanisms when zero valent iron(ZVI) is used as a reducing agent for Chromium.
II. Novel modifications using nano, micron sized ZVI and coated ZVI were developed to enhance the reduction process and reduce iron leaching.
III. A new technology was developed to increase the longevity of the iron based systems by ten times which will have a huge impact in the revival of the Permeable Reactive Barrier wall technology

5.3 Novel Electrochemical based Technologies for micropollutants

Electrochemical based treatment systems are promising in the areas of industrial wastewater treatment as alternatives to chemical treatment which generated large volume of sludge. With the development of new materials, this process can be improvised and coupled with other advanced treatment technology to develop better systems for removing micropollutants from drinking water or polishing treatment of industrial wastewater. Some the major contributions made in this area over the last five years

I. Developed a treatment technology for synchronized removal / recovery of copper and chromium along with energy production using novel electrodes and a microbial fuel cell.
II. Developed a simple, sustainable, greener water treatment technology for the removal of emerging organic pollutants using modified electro-Fenton process with synthesized hybrid electrodes immobilized with novel Fenton catalysts.
III. Enhancing biological treatment by increasing biofilm growth using electrochemical methods and coupling with advanced oxidation methods for antibiotics removal.

5.4 Antibiotics and Antimicrobial resistance in environment - prevalence and control.

Antimicrobial resistance is an emerging environmental and health crisis globally threatening to outnumber annual cancer deaths by 2050. Rampant use of antibiotics in medical industry, livestock feed, indiscriminate disposal of waste and wastewater from municipalities and pharmaceutical industries, improper sanitation have all been factors for this phenomenon particularly in developing countries. My recent research focus is on the following topics relevant to this problem.

I. Sampling of effluents from dairy farms, poultry farms, aquaculture farms, pharmaceuticals, wastewater treatment plants and its discharge locations and quantifying antibiotics and antibiotic resistant genetic material.
II. Tracking of Antimicrobial Resistant Genes (ARG) and bacterial community present in various stages of the treatment like primary, secondary and disinfection of wastewater treatment plant samples.
III. Determining the choice of disinfection technology like chlorination, ozonation and UV treatment and identifying the optimum dosage level for wastewater treatment plant samples

5.5 Developing industry specific end to end sustainable wastewater treatment solutions

Industry specific environmental treatment technologies is a largely unexplored area due to lackadaisical attitude of the polluters and regulators. As the coordinator for the **Centre for Technology Development and Demonstration for Micro and small industries**, I was widely exposed to the environmental issues in this sector. In many industries generating toxic pollutants, primary treatment is chemical with large volumes of coagulant- invariably lime and Alum followed by biological which was originally invented for domestic effluents. This is a highly inefficient and unsustainable solution since it demands more energy and resource and creates more waste and more often do not meet the regulatory limits. In recent years, our research group has focussed

on addressing industry specific problems to enable them achieve compliance and also encourage eventually to reduce carbon, water and ecological footprints. Some of our focus areas are

I. Developing zero sludge technology for silk and cotton small scale textile dyeing units of Kancheepuram
II. Improvisation of tannery waste treatment by Electrocoagulation based technology coupled with Advance oxidation at a common effluent treatment plant
III. Feasibility of reuse of textile wastewater for irrigation by performing field scale studies at Vardhman Textiles in Ludhiana

5.6 Biomethanation and resource recovery for integrated solid waste management

A detailed assessment of 15 biomethanation plants across South India was performed as part of the TNPCB centre for technology activity which opened up a new area of research activity for me. Biomethanation plants operating are largely inefficient, under-utilised and failing in many areas due to lack of appropriate technology and O&M support. New research is underway in our group to retrofit existing biogas plants in Chennai, optimising methane production, cocomposting of sludge, septage and solid waste and also develop new methods such as dry biomethanation and methanol and Hydrogen recovery from biogas plants

5.7 Contaminated Site Investigations

Indian pollution control boards are waking up to the major environmental issue of several hundred contaminated sites in abandoned and operating industrial areas. Interdisciplinary expertise and new field scale technology are required in evaluation of the extent of pollution and implementation of remediation methods. My experience working in similar areas in the U.S. enabled me to take on field scale projects and also advising the Central and State pollution control boards on strategies for solving this problem. Some of my notable contributions are:

I. <u>Diesel Oil spill sites in soil and groundwater at Tondiarpet</u>
   Our research group performed a site investigation and submitted a report to the National Green Tribunal for Tamil Nadu Pollution Control Board. This report was instrumental in initiation of remediation activities in the Tondiarpet area where people lost their groundwater source due to diesel contamination from a pipeline break. We are also continuing the support to the oil company for developing remedial methods and monitoring the progress of remediation. Following this project, TNPCB has initiated investigation in all the oil terminals in Chennai which are potential sites for contamination.
II. <u>Ground water contamination in and around Pesticide manufacturing plant in Andhra Pradesh</u>
   The study was initiated by the industry due to complaints from nearby villagers about groundwater contamination. Detailed study of the shallow, intermediate and deep aquifers using specialised drilling techniques showed high levels of chlorinated solvent contamination due to releases from effluent storage ponds in the industrial site. Remedial measures were suggested to arrest the release and clean up the groundwater.

5.8 Holistic Lake Water shed Restoration

Rejuvenating and maintaining these water bodies would be vital to the sustainability of this region which is growing very rapidly. Protecting and maintaining these water bodies and re-engineering the water courses that carry the excess water from these lakes will also reduce or minimize the inundation or water logging due to heavy rainfall. Moreover understanding the elevation /topography of the terrain at a finer scale will enable understanding the hydrology of the area precisely. This understanding is essential in preparing regional development plans and layout wise development plans based on drainage network. Stormwater drainage networks at regional and local scales can also be made which will serve as guidelines for construction projects coming up in the region. Storm water drainage mapping will also enable preparation of inundation maps during varying degrees of rainfall events. A better understanding of the hydrogeological conditions is essential to establish the connectivity between surface and groundwater and estimate recharge potentials. To complete the sustainability of water resources study it is also essential to understand the quality of surface and groundwater in the region. The current practice of zero liquid discharge is not feasible in the monsoon season since there is minimal irrigation water requirement. The carrying capacity of the water bodies for pollution load can be assessed and protocols can be established for discharge of treated waste water into the water bodies during the monsoon seasons Implementation of catchment area protection for soil and water conservation is very vital to prevent recurring siltation, reduced runoff and groundwater recharge

6. Research Collaborations

6.1 International

No	Name of Collaborator	Institute/Organization	Nature of Collaboration & Outcomes
1.	Prof. Greg Davis	CSIRO, Australia	• Research Area: Petroleum Contaminated Site remediation • Indo Australia Strategic Fund 2010-2014 • Multiple research visits by faculty • One student visit for three months • One Publication in Journal of Contaminant Hydrology
2.	Prof. Barbara Minsker	University of Illinois at Urbana Champaign, USA	• Research Area: Sustainable and Resilient Infrastructure • Student exchange (Two student groups and three faculty from UIUC spent two weeks understanding the sustainability issue in Infrastructure projects in Chennai. • Five B Tech students from IITM did their Summer Internship in UIUC
3.	Prof Somasundaram.P	Columbia University, NY	• Joint NSF Tie proposal on Biosurfactants for remediation • One research scholar was for research internship for six months
4.	Prof. Prabhakar Clement	University of Alabama, Alabama,USA	• Started collaborating since 2011 during the Petroleum Spill site investigation in Tondiarpet. • One DD student did Summer internship 2016. • Joint workshops, research proposals and GIAN course proposal.
5.	Prof. Peter Vikeland Prof. Amy Pruden Prof. Pedro Alvarez, Prof. Chilin	Virginia Tech, VA, USA Rice University, TX, USA	• NSF funded PIRE project - A consortium of 12 universities across 7 countries working on Antibiotics and Antimicrobial resistance in the environment
6.	Dr. Tong Zhang Dr. Carles Beznidenhout,	University of Hong Kong Rhodes University, South Africa	• Joint research proposal for BRICS - BilateralProject on Antimicrobial Resistance propagation
7.	Dr. Sandrine Humbrecht	Veolia Water France	• Interacted for three summers in their University Partnership programme for research exchange Visited their R&D facilities in Paris and Brussels • Conducted Joint Workshop on Water and Waste Water Treatment in Brussels,
8.	Mr Gowrishankar	Stratus Environmental Inc Sacremento CA, USA	• R & D partner for Site Investigation and Remediation projects of Stratus • Contaminated site consultative partner

9.	Mr Mike Luttingen	Kohler Water Co Milwaukee	• Developed a research proposal for studying decentralised wastewater treatment systems in Chennai • Joint workshop in Milwaukee on DWWT for small housing block, 2016
10.	Dr. Helen Bridle	James Hutton University	• Sensors for Metal precursors to Antimicrobial Resistance • Indo UK NERF joint funding for research
11.	Dr. Henner Hollert	Aachen Unviersity	• Research collaboration in Ecotoxicology • Mtech Btech Post doc and PhD Student Exchange
12.	Dr. Susan Powers	Clarkson University	• Life Cycle Assessment Course

6.2 IITM Collaborations

No	Name of Collaborator/ Department	Nature of Collaboration & Outcomes
1.	Ligy Philip Civil Engineering	• UNICEF project on Flouride in groundwater in Krishnagiri Districts • MOUD Phase I project on Decentralised wastewater treatment for Guntur and Trichy
2.	R. RaviKrishna Chemical Engineering	• Indo Australia Strategic Fund 2010-2014 • One Publication in Journal of Contaminant Hydrology • BPCL Site Investigation and remediation project
3.	G. Sureshkumar Ocean Engineering	• Research Area: Ground water modelling • Indo Australia Strategic Fund Project • Joint guidance of five students
4.	Raghuram Shetty Chemical Engineering	• Joint Guidance of IDRP student • Electrochemical treatment of chromium contaminated water and sediment
5.	K.P. Sudheer Civil Engineering	• RBIC project on Reuse of industrial wastewater for agriculture at Vardhman Industries, Ludhiana • Joint DST – IGCS proposal on Sustainability studies on Chennai River Basin Phase I and Phase II • Joint Guidance of 1 PhD scholar
6.	Shiva Nagendra. S.M. Civil Engineering	• Collaborator in TNPCB Centre for Technology Development • Joint guidance of PhD scholar on Transport and Deposition of pollutant due to Air pollution from Dumpsite fires
7.	Balaji Narasimhan Civil Engineering	• Co-Investigator in DST -IGCS proposal on Sustainability studies on Chennai River Basin Phase I and Phase II • Co-Investigator in TCS CSR project proposal on sustainable watershed management in Siruseri area and TNC project on Lake Restoration
8.	Satya Chakravarthy and Vinu NCCRD, AE	• Plastic , Petroleum Sludge and Municipal Solid Waste Management One joint PhD Guidance
9.	Guhan Jayaraman Satya Gummadi Mukesh Doble Karthik Raman BT	• Environmental Antimicrobial Resistance Surveillance and propagation studies - One joint PhD Guidance and one Research project
10	Dhiman Chaterjee, ME	• Cavitation technology for removal of recalcitrant compounds

7. Research Guidance

7.1 Summary

No of Students/Degree	Graduated	Completing in 2018	Ongoing	Total
PhD	8	4	13	25
MS/M Tech/DD	25	2	2	27
B Tech	10	1		11

7.2 List of students guided/guiding

Doctor of Philosophy

S.No	Name of the Student	Degree/Year	Title of the Thesis	Co-supervisor	Current Position of the student
1.	Albino D.J.	Ph. D./2011	Coupled dissolution, biosurfactant production and biodegradation of Tetrachloroethylene under anaerobic conditions	-	Post-Doctoral Fellow University of Calgary, Canada
2.	Devasena M Sridhar	Ph. D./2011	Migration, entrapment and in-situ remediation of elemental mercury in porous media	-	Sri Krishna College of Technology, Coimbatore
3.	Pavithra Mishra	Ph. D./2012	Dissolution and contaminant transport in aquifers with spatially and temporally variable hydraulic properties.	-	Consultant in Sacremento, CA
4.	Berlin M	Ph. D./2014	Modelling nitrate transport in vadose and saturated subsurface during irrigation with wastewater	Dr. G. Suresh kumar	National Institute of Technology – Arunachal Pradesh
5.	M Vasudevan	Ph. D./2014	Fate and transport of contaminant from petroleum spilled area	Dr. G. Suresh kumar	Bannari Amman Institute of Technology, Sathyamangalam , Tamil Nadu.
6.	Mekala C	Ph. D./2015	Impacts of reusing wastewater for irrigation and groundwater recharge	-	, Kamaraj College of Engineering and Technology, Virudhynagar
7.	Ambika. S	Ph. D./2017	Enhanced removal of chromium and phenol from contaminated water systems using nanostructure and nanozerovalent iron	-	WARI Fellowship for six months@ University of Nebraska Lincoln
8.	Praveena Gangadharan	Ph. D./2017	Wastewater treatment coupled with resource recovery and energy production using microbial fuel cells.	-	Faculty in IIT Palghat
9.	Anju Elizbath Peter	Ph. D./2018	Characterization of air emissions from the open burning of municipal solid waste (MSW) and their impacts on air and water quality at the surrounding area	Dr.S.M.Shiva Nagendra	-
10.	Divyapriya Govindaraj	Ph. D./2018 (Exp)	Development of modified electro-Fenton process for the removal of emerging contaminants from water	-	Received RSIP Innovative Research

S.No	Name of the Student	Degree/Year	Title of the Thesis	Co-supervisor	Current Position of the student
			and wastewater		Fellowship from IITM
11.	Omkar Gaonkar	Ph. D./2018 (Exp)	Transport and Transformation of pesticides in an unsaturated system of organically amended soils.	Dr.G.Suresh Kumar	Won the WARI Six month internship in U Nebraska Lincoln, 2017
12.	Ramya Srinivasan	Ph. D./2018 (Exp)	Enhancing biofilm growth and its application in treating emerging contaminants by electrochemical methods	-	Received Innovative Research Funding from IITM
13.	Sharanya Sriram	Ph.D./2018 (Exp)	Electrochemical remediation of aqueous and soil matrices contaminated with hexavalent chromium	Dr.Raghuram Chetty	Received DST Inspire Fellowship for PhD.
14.	Sahila Beegum	Ph. D./2018 (Exp)	Integration Of Solute Transport And Water Flow Model For Unsaturated And Saturated Soil Zone	Dr.K.P.Sudheer	Received Fulbright Fellowship for one year in UC @Riverside
15.	Bokam Rajasekhar	Ph. D./2019 (Exp)	Characterization and treatment of petroleum contaminated ground water.	Dr.G.Suresh Kumar OE	-
16.	Nitha Ayinippully Nalarajan	Ph. D./2020 (Exp)	Capture Zone analysis in Groundwater	Dr.G.Suresh Kumar OE	-
17.	Pavithra S	Ph. D./2020 (Exp)	Environmental Impact Assessment of Infrastructure development in suburban Areas of Chennai	-	-
18.	Manoharan D (External))	Ph. D./2016 (Exp)	Optimal utilization of energy water and manure resources from wastewater	-	External candidate from Metro Water
19	Catherine F (External)	Phd/2021	Dry Anaerobic Digestion of composite waste	Dr. Vinu CH	Ongoing
20	Kiruthiga M	PhD 2021	Halting Antimicrobial Resistance through disinfection		
25	Sasikala P	PhD 2022	Propagation of AMR through soil systems by manure application	Dr. Satya G BT	

Master of Technology – (Completed 26; Ongoing 2)

S.No	Name of the Student	Degree/Year	Title of the Thesis	Current Position of the student
1.	Kulai Chaitom	M. Tech./2006	Dissolution of organic compounds- development of new correlation	Megalaya PWD
2.	Ratheesh.B	M. Tech./2007	Determination of coupled removal rates for organic solvents undergoing simultaneous dissolution and biodegradation	Shah Consultants
3.	Sateesh Kumar.N	M. Tech./2007	Quantifying aqueous phase relative permeability variations during dissolution of entrapped NAPL	TN PWD
4.	Lt. col.	M.	Removal of fluoride from drinking water by creating an	Military

S.No	Name of the Student	Degree/Year	Title of the Thesis Co-supervisor	Current Position of the student
	Sanjay K Shukla	Tech./2007	in-situ adsorptive barrier in open wells	Engineering college Pune
5.	Major. Satish Jadhav	M. Tech./2008	Salt water intrusion and evaluation the performance of marine coastal collector well	Army
6.	Mangalesh waran	M. Tech./2008	Vermicomposting of the inter mix of industrial waste with organic waste	Faculty, GCT, Coimbatore
7.	Major. Vikas Jain	M. Tech./2009	Design of vermin composting facility for IITMadras solid waste	Army
8.	Aditya singh Tomar	M. Tech./2010	Solid waste management in India- choice of technology based on economics	Infrastructure company
9.	Diwakar R	M. Tech./2010	Enhanced remediation by solubilization of crude oil	
10.	Chiranjeevi	M. Tech./2011	A study on wastewater as a resource for water and construction material	Civil enigneering co.
11.	Pushpendra Singh	M. Tech./2011	Estimation of Green house gas emissions from Waste water treatment plants	Civil Engineering Co.
12.	Srinivas Vijay Musunuri	M. Tech./2011	A rapid, low cost and sustainable technology for in-situ and ex-situ treatment of water contaminated with hexavalent chromium and phenol	Andhra PWD
13.	Harish Kola .V .V	M. Tech./2012	Treatability study of mixed pharmaceutical effluent using coupled physiochemical and biological processes	School educator
14.	Rajender.K	M. Tech./2012	Enhancing dissolution of mixtures of organic compounds	Coal India
15.	Karnapa Ajit	M. Tech./2013	Treatment of mixed dye waste from silk industry and domestic waste water	Faculty in Pvt. Engg. college
16.	Aarthi L	M. Tech./2013	Treatment of electroplating waste water	CDMSmith Env. Consulting co.
17.	Chaitanya M	DD./2013	Decision making tool for Integrated solid waste management	Finance sector
18.	Shruthi Tarigopula	M Tech/2014	Insitu Treatment technologies for Chromium contaminated lake inflows	Larsen and Toubro
19.	Kailasanathan L	M Tech /2015	Sequestration of CO2 from Sago wastewater to recover organic compounds	Larsen and Toubro
20	Lt Col. Anish Gopal	M Tech/2016	Development of a treatment train for recalcitrant perchlorate contaminated explosive washouts	DRDO
21	Navneet Mehrol	DD/ 2016	Technoeconomic selection of treatment technologies for tannery wastewater	Infrastructure co.
22	Abheesta N	M Tech	Electrochemical coagulation for sustainable tannery effluent treatment.	-
23	Yashwant B	M Tech	Conversion of Petrochemical sludge to useful products by Thermal treatment	-
24.	Vasanthi Umashankar	MS/2017	Treatment and reuse of RO membranes	External candidate from Larsen and Toubro
25	Ashika P	MTech '18	Ecotoxicology studies of Pallikaranai Marshland water	Aachen University

S.No	Name of the Student	Degree/Year	Title of the Thesis	Co-supervisor	Current Position of the student
26	Diwakar S	Dual Degree	Microbial Fuel cell for Hexavelent Chromium removal		CZC Finalist

8 Projects

Summary of project nos. and funding

Total number of the Sponsored/CSR Projects = 21.
Total value of the Sponsored/CSR Projects = Rs. 21,40,47,700/-

Total number of the Research Based Consultancy Project = 17.
Total value of the Research Based Consultancy Project = Rs. 31,075,656/-

Total number of the Consultancy Project = 25.
Total value of the Consultancy Projects = Rs. 3,800,656/-

8.1 Sponsored Projects

No	Title	Sponsoring Agency	Amount	Period
			In Lakh I R	
1.	Survelliance of Environmental AMR and Mitigation of propagation	ICMR	387.00	2018-2023
2.	DST – NERC - EPSRC India-UK Water Quality Research Programme AMR and metals interaction through sensors	DST	392.00	2018- 2021
3.	South India Renewable Energy Innovation Challenge	US Consulate Chennai	53	2016-2018
4.	Accelerated Treatment of petroleum chemical sludge using coupled Physicochemical, Photochemical,and biological processes (UAY)	Ministry of Petroleum, MHRD & BPCL	97.00	2016-2018
5.	Centre for Environmental Technology Dissemination, Demonstration and R&D for Industrial pollution.	TNPCB	500	2013-2017
6.	Evaluation of strategies or the environmental restoration of Pallikaranai marsh	TFDX	5.00	2013-2014
7.	Re-use of waste water (Industry and Domestic) for irrigation in Kancheepuram Municipality	PWD	20.17	2012-2015
8.	The changing risks posed by petroleum hydrocarbons in groundwater environments: Multiphase fluid.	DST/Australia	39.26	2011-2014
9.	Bioremediation of petroleum contaminated site using bio surfactant producers	TNPCB	8.63	2011-2013
10.	Groundwater contamination by organic solvent spills an experimental investigation of the dissolution	DST	10.14	2007-2010
11.	Investigations on the performance of marine coastal collector well	LRAMP Lemelson Foundation	2.28	2007-2008
12.	Up scaling and Parallel Application of Multiple Mass Transfer Correlations to Quantify Dissolution	IITM New Faculty Fund	5.00	2005-2008

8.2 Sponsored Projects as co investigator

No	Title	Sponsoring Agency	Amount	Period
			in lakh Rupees	
1.	Understanding and Mitigating Climate change impact on Coastal Region of India	DST/IGCS Phase II	90.00	2018-2021
2.	Sustainable water resources management of Chennai basin under changing climate and land use	DST/ IGCS Phase I	47.14	2014-2016
3.	Decentralized waste water management, benchmarking of public utilities and PPP	MOUD	400	2009-2014
4.	Monitoring water quality in rural habitats of Krishnagiri	UNICEF	5.55	2008-2009
5.	Enhanced electrochemical advanced oxidation of	ICSR -IIT Madras	4.50	2015-2016

	antibiotics on novel bi-functional rotating dual drum	Innovation		
6	Waste water treatment coupled with resource and energy production using microbial fuel cell	DST - WOS	20.95	2014-2017
7	Hydrodynamic Cavitation for removal of recalcitrant toxic petroleum compounds	ICSR ERP	10	2018-2019

8.3 Corporate Social Responsibility Projects

No	Title	Sponsoring Agency	Amount	Period
			in lakh Rupees	
1.	Identifying hotspots in environmental pollution	Cholamandalam MS General Insurance Co. Ltd.,	5.00	2016 - 2017
2.	Sustainable Watershed restoration in Siruseri Region	Tata Consulting Corporation	40.00	2016-2020
3.	Lake Restoration project in Sembakkam	The Nature Conservancy	87.00	2018-2020
4.	Carbon Zero Challenge Renewable Energy Innovation Competition	Virtusa Polaris	150.00	2017-2018

8.4 Research-based Consultancy Projects as principle investigator

No	Title	Sponsoring Agency	Amount	Period
			In Lakh Rupees	
1	Environmental Site Characterization at IOCL Lube	IOCL Lube plant	37	2017
2	Environmental Site Characterization at IOCL Tondiarpet Terminal	IOCL Tondiarpet	35	2017
3	Environmental Site Characterization at HPCL Cassimode Terminal	HPCL Cassimode	25	2017
4	Environmental Site Characterization at HPCL Tondiarpet Terminal	Hindustan Petroleum Corporation Ltd.,	27.43	2016
5.	Design Verification and monitoring performance	Guntur Municipality	15.00	2016
6.	Development of pretreatment of dyeing effluents in Kancheepuram	Kanchipuram Silk & Cotton Dyeing Waste Association	6.45	2016
7.	Environmental site characterization at the Indian Oil Corporation lube plant and Tondiarpet Terminal	Indian Oil Corporation Ltd.,	42.38	2016
8.	Monitoring of remediation project at Tondiarpet site	Bharat Petroleum Corporation Ltd.,	28.75	2016 – 2018
9.	Tannery CETP performance evaluation & improvisation	Madhavaram CETP	11.46	2015 – 2017
10.	Environmental site Characterization of oil spill site at Tondiarpet	Bharat Petroleum Corporation Ltd.,	11.80	2013 – 2018
11.	Development of pretreatment of dying effluents in Kancheepuram	T. Sundaravelu Mudaliar & Sons	1.50	2016
12.	Textile CETP performance Evaluations	Karaiputhur Common Effluent Treatment Pvt. Ltd.,	2.81	2015
13.	Evaluation of waste water characteristics and design of treatment plant	SIDCO Industrial Estate	5.62	2014 – 2016
14.	Treatability Studies for Hexavalent Chromium Bearing Leachate and run-off	ERM India Pvt. Ltd.,	8.99	2015
15.	Site characterization Studies at Nagarjuna Agrichem Srikakulam	Nagarjuna Agrichem Ltd.,	13.48	2014 – 2015
16.	Sustainable irrigation using treated textile effluent	Vardhman Textiles Ltd., Punjab	28.45	2013 – 2016
17.	Design of Treatment Scheme for Pharmaceutical Industrial Estate of	Tamil Nadu Small Industries Development	5.52	2011 – 2012

	SIDCO	Corporation Ltd., Chennai		
18.	Impact of Groundwater Quality Due to Land Application Of Distillery Waste	Amaravathi Cooperative Sugar Mills., Tamilnadu	3.31	2011

8.5 Consultancy Projects as principle investigator

No	Title	Sponsoring Agency	Amount in lakhs	Period
1.	Evaluation of Effluent Treatment plant performance of cellulose plant for pharma	DFE Pharma	5.00	2017-18
2.	Characterization of Emissions from Brake lining industry		5.00	2017
3.	Laboratory Scale Process Evaluation of High Strength HypoEffluent	Rayalaseema Hypo Ltd.	2.50	
4.	Vetting of Design an drawings for Barrackpore Wastewater treatment palnt in WB	L&T ECC	3.00	2017
5.	Design and drawing verification for Patna Wastewater treatment plant	L&T ECC	3.00	2017
6.	Design and verification for WWTP in Guntur	Euro Tech	3.00	2017
7.	Design and Drawing vetting for Three Water Treatment Plants in Orrisa	L&T ECC	1.5	2017
8.	Proof Checking of Network, Pumping stations & Process design of 5 STP in Nellore	L & T Construction, Water & Effluent Treatment IC	8.05	2016
9.	Design and drawing verification for Wastewater treatment plant	Aqua Design Consultants	1.5	2016
10.	ETP Sludge evaluation for incineration	Rohini Textile Industry (P) Ltd	1.12	2015
11.	Adaptive management plan for Pallikaranai Marsh land	Care Earth Trust	2.00	2014-2015
12.	Vetting Of Process Design For Water Treatment Plant At Udaipura	L&T	1.69	2014
13.	Sewerage network and waste water treatment facility for Gayeshpur Town	LARSEN & TOUBRO LIMITED	4.49	2014
14.	Evaluation of ETP at ITC Papermills, Badrachalam	ITC Papu Boards and Speciality Papers Ltd.	0.22	2013
15.	Analysis of Steel Mill Waste for Reuse	Agri Steels Pvt Ltd Erode	0.55	2010
16.	Evaluation of Existing treat system and design of treatment scheme for BHEL Ranipet wastewater	BHEL, Ranipet	2.00	2010
17.	Evaluating Suitability of Iron Plant Waste for Reuse	Agni Steels Private Ltd., Perundurai Tk Erode Dt	0.56	2008
18.	Analysis of Furnace Wastes for Hazardous Heavy Metals	AGNI STEELS (P) LTD., ERODE	0.31	2007
19.	Testing and Certification of Field Water quality test kits	TWAD Board,TN	0.05	2007

8.6 Consultancy Projects as coinvestigator

No	Title	Sponsoring Agency	Amount	Period
1.	Development of Detailed Project Report for Construction and Demolition Waste Management in Chennai Corporation	Corporation of Chennai	8.76	2015-2016
2.	STP and Rain Water Conservation-Civil 7 Structural Design Vetting	Aqua Designs India Pvt Ltd., Chennai	5.06	2013

3.	Testing Soil Samples from Pudupakkam Quarry	VA TECH WABAG LTD. Chennai	0.22	2010
4.	Technology Validation of Spent Pot Lining Utilization Processing	Indus Smelters Ltd Raipur	0.49	2008-2009
5.	Environmental Audit of Effluent Treatment Facilities	Pioneer Textile Industry, Erode	1.50	2007

9. Research Output

9.1 Summary of publications

S. No.	Publication Type	Published	Communicated
1	Patents	**05**	3
2	Chapters in Book	**04**	
3	Technical articles outreach	**6**	08
4	Refereed International Journals	**53**	6
5	Conferences/Symposia	**55**	

9.2 Patents

1. Sriram, S., Chetty, R., Nambi, I.M. (2017) Apparatus for removal of metals from wastewater and method there OF, filed for Indian patent on 23.06.2017 [PATENT NUMBER 201741022070]
2. Sriram, S., Chetty, R., Nambi, I.M. (2017) Apparatus for dual phase chromium removal and energy recovery and methods thereof, filed for Indian patent on 30.06.2017 [PATENT NUMBER 201741023125]
3. Nambi, I.M., and Divyapriya, G., "LCD-Graphene electrode and a method of preparation thereof" (Patent No: 2018410000
4. Nambi, I.M., and Divyapriya, G., Srinivasan, R., "A bifunctional rotating drum electrode system for efficient treatment of persistent organic pollutants" (Submitted IDF No.: 1607)
5. Nambi I.M and Albino J ," Isolated a new microorganism which can produce surfactants in anaerobic conditions" Name of the Organism: Pseudomonas sp. ANBIOSURF-1 International Gene Bank NCBI, NIH, U.S.A. Submission: 2009 Accession Number: FJ93009

9.3 Book Chapters

1. **Indumathi .M. Nambi** Chapter on Water Quality of India in the book titled "Atlas of the Sustainability of Food Security", M.S. Swaminathan Research Foundation (MSSRF) and World Food Programme, 2005.
2. R. Rukmani V. Senthilkumar **Indumathi Nambi**, Nalapathy Thenmathi, " Measures of Impact of Science and Technology in India-Agriculture and Rural Development" Technical Report Report number: PSA/2007/2, Affiliation: M. S. Swaminathan Research Foundation Centre for Research on Sustainable Agricultural and Rural Development, Office of the Principal Scientific Adviser to the Government of India Jan 2007
3. Ponisseril Somasundaran ,Partha Patra, John Albino Dominic, **Indumathi Nambi**
   Chapter1 Microbially Derived Biosurfactants: Sources, Design and Structure-Property Relationships Chapter 2 In book: Surfactant Science and Technology: Retrospects and Prospects, Publisher: CRC Press Taylor & Francis Group, Editors: Laurence S. Romsted, pp.593

9.4 Technical Articles

1. **Nambi, I.M.** Article titled "*Ground water pollution by petroleum compounds from leaking underground storage tanks",* published in Sustainability Tomorrow, Volume 2, Issue 1, CII – ITC Centre for Excellence for Sustainable Development, New Delhi. 2007.
2. Divyapriya, G. and **Nambi, I.M**., Graphene based conductive inks – a novel approach for effectively treating the emerging contaminants. Research & Academics, **Water Digest,** 62-64. (February, 2018)

3. **Nambi, I.M.** and S.E. Powers. (1998) "Simplified Lab-Scale Experiments to Quantify DNAPL Dissolution in Heterogeneous Systems", In: Nonaqueous Phase Liquids – Remediation of Chlorinated and Recalcitrant Compounds, G.B. Wickramanayake and R.E. Hinchee (eds.) Battelle Press, Columbus, 49-54
4. **Manivannan*, I.,** S.E. Powers and G.W. Curry, Jr. (1996) "Dissolution of NAPLs entrapped in heterogeneous systems", In:NAPLs in the Subsurface Environment: Assessment and Remediation, L.N.Reddi (ed.) ASCE, New York, NY, 563-574

9.5 Research/ Project cited In the News media:

1. https://economictimes.indiatimes.com/news/environment/pollution/iit-scientists-develop-a-technique-to-generate-electricity-from-e-waste-in-eco-friendly-manner/articleshow/57334316.cms
2. http://www.newindianexpress.com/cities/chennai/2017/feb/21/sludge-dna-reveals-heavy-metals-1572903.html
3. https://www.thenewsminute.com/article/chennai-oil-spill-could-cause-health-issues-clean-volunteers-even-cancer-says-medical-team
4. https://www.masterbuilder.co.in/iit-madras-innovation-e-waste-electricity-waits-takers/
5. http://www.thehindu.com/news/national/tamil-nadu/report-confirms-oil-leak-contaminated-groundwater/article5016475.ece
6. https://www.pressreader.com/india/the-new-indian-express/20160308/281496455379137
7. http://www.newindianexpress.com/cities/chennai/2017/feb/01/bunker-oil-leaked-from-ennore-ship-collision-say-iit-m-experts-1565753.html
8. http://indiaeducationdiary.in/iit-madras-launches-second-phase-carbon-zero-challenge/
9. http://www.mydigitalfc.com/my-mind/let-us-be-aware
10. https://www.hindustantimes.com/interactives/chennai-oil-spill-collision-cover-up/
11. https://experts.umich.edu/en/publications/toward-a-comprehensive-strategy-to-mitigate-dissemination-of-envi
12. 13.https://industry.gov.au/science/internationalcollaboration/aisrf/Documents/AISRFScienceAndTechnologyBiotechAndTAOutcomes.pdf
13. https://m.dailyhunt.in/news/india/english/skill+outlook-epaper skillout/ newsid-81511719
14. http://psbbschools.ac.in/news/2017/08/16/PSBB%20Mirror%20(Page%201)%20-%20NGM.pdf
15. https://www.eenews.net/stories/1059994944 "Farmers rise up as pipeline spills permeate India's rice bowl"2014

9.6. Peer Reviewed International Journal Publications

1. Divyapriya, G., Thangadurai, P., Nambi, I.M., Green approach to produce graphene thin film on conductive LCD matrix for the oxidative transformation of ciprofloxacin. ACS Sustainable Chemistry & Engineering (Published) (10.1021/acssuschemeng.7b03687)
2. Beegum, S., Sudheer, K. P., Šimůnek, J., Szymkiewicz, A., and Nambi, I. M (2018). Implementation of Solute Transport in the Vadose Zone into the 'HYDRUS Package for MODFLOW', Vadose Zone journal
3. Sivagami. K, Jayavignesh Vijayan, Ramya Srinivasan, Divya Priya Govindaraj, Indumathi M Nambi , Antibiotic Usage, Residues and Resistance Genes from Food Animals to human and environment: an Indian scenario, **Journal of Environmental Chemical Engg.**, https://doi.org/10.1016/j.jece.2018.02.029 Feb 2018.
4. **Yuling Han, Indumathi M. Nambi, T. Prabhakar Clement, " Environmental impacts of the Chennai oil spill accident – A case study" Science of the Total Environment 626, 795–806 (2018)**
5. Sivagami. K, Sakthivel KP and Indumathi Nambi, Advanced Oxidation Processes for the treatment of tannery wastewater, Journal of Environmental Chemical Engg., July 2017, In Press
6. Sivagami. K, Sakthivel KP and Indumathi Nambi, "Improved treatment of tannery wastewater treatment plant effluent using polymeric coagulants", Desalination and Water Treatment, Jan 2018 , (Manuscript Accepted), In Press
7. **Divyapriya Govindarajan and Indumathi M Nambi, "An innate quinone functionalized electrochemically exfoliated graphene/Fe3O4 composite electrode for the continuous generation of reactive oxygen species Chemical engineering Journal, 2017 vol 316, Pg 964-977, I.F 5.44**
8. Bokam Rajasekhar **, Indumathi M. Nambi** , Suresh Kumar Govindarajan "Human health risk assessment of ground water contaminated with petroleum PAHs using Monte Carlo simulations: A

case study of an Indian metropolitan city" Journal of Environmental Management 205 (2018)

9. Selvaraj Ambika, M.Devasena , Indumathi M Nambi (2018) Assessment of meso scale zero valent iron catalyzed Fenton reaction in continuous-flow porous media for sustainable groundwater remediation Chemical Engineering Journal Volume 334, 15 February 2018, Pages 264-272
10. **Peter J. Vikesland, Amy Pruden, Pedro J.J. Alvarez,Diana Aga, Helmut Bürgmann, Xiang-dong Li, Celia Manaia ,Indumathi Nambi, Krista Wigginton, Tong Zhang,Yong-Guan Zhu "Towards a Comprehensive Strategy to Mitigate Dissemination of Environmental Sources of Antibiotic Resistance - What does the Presence of a Gene Tell Us?" Environment Science and Technology vol 51(22) 2017**
11. **Nambi, I. M.,** Rajasekhar, B., Loganathan, V. & RaviKrishna R, "An assessment of subsurface contamination of an urban coastal aquifer due to oil spill". Environ Monit Assess., 189(4):148. doi: 10.1007/s10661-017-5833-6
12. Vasudevan Mangottiri, Berlin Mohandhas, Mohanasundaram S, Suresh Kumar Govindarajan**, Indumathi Nambi** "Numerical Investigations on Feasibility of Surfactant Enhanced Remediation of Polycyclic Aromatic Hydrocarbon in an Unsaturated Subsurface System beneath an Onshore Surface Spill Site" International Journal of Env Technology and Management (2017)
13. Sivagami K, Sakthivel and **Indumathi M Nambi** (2017) Advanced oxidation of tannery Waste water. Journal of Environ. Chem. Engineering, https://doi.org/10.1016/j.jece.2017.06.004
14. **Nambi, I. M.,** Rajasekhar, B., Loganathan, V. & RaviKrishna R (2017). An assessment of subsurface contamination of an urban coastal aquifer due to oil spill. Environ Monit Assess., 189(4):148. doi: 10.1007/s10661-017-5833-6
15. Divyapriya Govindarajan and **Indumathi M Nambi(2017) "**An innate quinone functionalized electrochemically exfoliated graphene/Fe3O4 composite electrode for the continuous generation of reactive oxygen species Chemical engineering Journal, 2017 vol 316, Pg 964-977, I.F 5.44
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17. Mekala, C and **Nambi, I.M** (2017) "Understanding the hydrologic control of N cycle: Effect of water filled pore space on heterotrophic nitrification, denitrification and dissimilatory nitrate reduction to ammonium mechanisms in unsaturated soils" Journal of contaminant Hydrology, 10.1016/j.jconhyd.2017.04.005
18. Ambika S, **Indumathi M Nambi**, Senthilnathan Jeganathan, Low Temperature Synthesis of Highly Stable and Reusable CMC-Fe2+(-nZVI) Catalyst for the Elimination of Organic Pollutants, Chemical Engineering Journal, 2016, 289 (1) 544–55. IF-5.439
19. **Vasudevan, M., Johnston, C.D., Bastow, T.P., Lekmine, G., Rayner, J.L., Nambi, I.M., Suresh Kumar, G., Ravi Krishna, R., and Davis, G.B. (2016). Effect of Compositional Heterogeneity on Dissolution of Non-Ideal LNAPL Mixtures. J. Contam. Hydrol. 194: 10-16. DOI: 10.1016/j.jconhyd.2016.09.006 (IF=2.063)ISSN 0169-7722.**
20. Ansaf V Karim, Ambika S, **Indumathi M Nambi**, Performance Enhancement of Zero Valent Iron Based Systems Using Depassivators: Optimization and Kinetic Mechanisms, Water Research, 2016, 102, 436-444 , IF-5.991
21. Ambika S, **Indumathi M Nambi**, Devasena Sridhar, Synthesis and performance of High energy ball milled meso zero valent iron, Journal of Environmental Management, 2016, 1-9. IF-4.049
22. Ambika S, **Indumathi M Nambi**, Optimized synthesis of methanol-assisted nZVI for assessing reactivity by systematic chemical speciation approach at neutral and alkaline conditions, Journal of Water Process Engineering 13 (2016) 107–116. I.F.0.913
23. Gangadharan, P., **Nambi, I. M**., Senthilnathan, J., and Pavithra, V. M. (2016). Heterocyclic aminopyrazine–reduced graphene oxide coated carbon cloth electrode as an active bio-electrocatalyst for extracellular electron transfer in microbial fuel cells. RSC Advances, 6(73), 68827-68834
24. Vasudevan, M., Suresh Kumar, G., and **Nambi, I.M**. (2016). Scenario-based modelling of mass transfer mechanisms at a petroleum contaminated field site-numerical implications. J. Env. Manage. 175, 9-19. DOI:10.1016/j.jenvman.2016.03.009. ISSN: 0301-4797
25. OmkarGaonkar., G. Suresh Kumar., and **I. M. Nambi**. (2016). "Numerical Modelling on Fate and Transport of Coupled Adsorption and Biodegradation of Pesticides in an Unsaturated Porous Medium" (DOI: 10.1080/09715010.2016.1166073) ISH Journal of Hydraulic Engineering (Taylor and Francis Publications). Impact Factor- 0.111
26. Gaonkar, O. D., Kumar, G. S. and **Nambi, I. M.** (2016). Numerical investigations on pesticide fate and transport in an unsaturated porous medium for a coupled water and pesticide

management. Environmental Earth Sciences, 75(17), 1232. (IF=1.765)
27. Mekala, C and **Nambi, I.M** (2016) "Transport of ammonium and nitrate in saturated porous media incorporating physio biotransformations and bioclogging", Bioremediation Journal, 20, No. 2, 117–132. http://dx.doi.org/10.1080/10889868.2015.1113925
28. Berlin M, **Indumathi M Nambi**, and Suresh Kumar G (2015). "Experimental and Numerical Investigation on Nitrogen Species Transport in Unsaturated Soil during Various Irrigation Patterns". Sadhana, 40(8), 2429-2455.
29. Berlin M, Vasudevan M, Suresh Kumar G, and **Indumathi M Nambi** (2015). "Numerical Modeling on Fate and Transport of Petroleum Hydrocarbons in an Unsaturated Sub-Surface System for Varying Source Scenario". Journal of Earth System Science, 124: 655-674
30. Berlin M, Suresh Kumar G,and **Indumathi M Nambi** (2015). "Numerical modelling of biological clogging on transport of nitrate in an unsaturated porous media". Environmental Earth Sciences, 73(7): 3285-3298.
31. Devasena M and **Nambi, I.M** (2015) Pore Scale Investigations on Residual Mercury. Journal of Porous Media, 18 (12): 1221–1229.
32. Vasudevan, M., Suresh Kumar, G., and **Nambi, I.M.** (2015). Numerical modelling on rate limited dissolution mass transfer of entrapped petroleum hydrocarbons in a saturated sub-surface system. ISH J. Hydrau. Engg. 22(1), 3-15. DOI:10.1080/09715010.2015.1043596. ISSN: 2164-3040.
33. Gangadharan, P., **Nambi, I.M**., 2015. Hexavalent chromium reduction and energy recovery by using dual-chambered microbial fuel cell. Water Sci. Technol. 71, 353. Doi:10.2166/wst.2014.524
34. Gangadharan, P., **Nambi, I.M.**, &Senthilnathan, J. (2015). Liquid crystal polaroid glass electrode from e-waste for synchronized removal/recovery of Cr+ 6 from wastewater by microbial fuel cell. Bioresource technology, 195, 96-101
35. Berlin M, Suresh Kumar G, and **I M Nambi**(2014). "Numerical modelling on transport of nitrogen from wastewater and fertilizer applied on paddy fields". Ecological Modeling, 278: 85-99.
36. Berlin M, Suresh Kumar G, and **I M Nambi**(2014). "Numerical modelling on the effect of dissolved oxygen on nitrogen transformation and transport in unsaturated porous system". Environmental Modeling and Assessment, 19(4): 283-299
37. Vasudevan, M., Suresh Kumar, G., and **Nambi, I.M.** (2014). Numerical study on kinetic/equilibrium 16odelling of dissolution of toluene under variable subsurface conditions. Euro. J. Environ. Civil Engg. 18(9): 1070-1093. DOI: 10.1080/19648189.2014.922902. ISSN: 2116-7214.
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9.6 International Conference Publications

1. Sivagami. K, Indumathi Nambi, "Biodegradation of spilled oil sludge using mixed aerobic culture from sewage treatment plant", International conference on Electrochemical Science and Technology, IISc Bangalore, 10-12th August 2017.
2. Omkar Gaonkar., G. Suresh Kumar and I. Nambi. (2016). "Numerical modelling on the influence of effluent irrigation on fate and transport of dichlorvos pesticide in an unsaturated porous system." Paper ID: TS5-24. Sixth International Groundwater Conference (IGWC-2015) held at SRM University, Chennai during 10 to 13th Feb 2016.
3. Omkar Gaonkar and I. Nambi. (2016). "Site investigation for soil and groundwater contamination at a pesticide manufacturing facility in India." (Abstract ID 333). Eighth International Perspective on Water Resources and the Environment conference organized by the American Society of Civil Engineers (ASCE) and the Environmental and Water Resources Institute (EWRI) held in Colombo, Sri Lanka during 4-6th January 2016.
4. Omkar Gaonkar and I. Nambi. (2016). "Site investigation for soil and groundwater contamination at a pesticide manufacturing facility in India." (Abstract ID 29). CleanUp India 2016 - International Conference on Contaminated Site Remediation 2016, jointly organized by Tamil Nadu Agricultural University, Coimbatore, India, Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) and University of Newcastle, Australia at Hotel Le Meredian, Coimbatore during 13-15th December 2016.
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15. Anju Elizbath Peter, Dr. S.M. Shiva Nagendra and Dr.Indhumathi M.Nambi "Characterization of Ambient particulate matter near an open dumpsite", in the proceedings of International Conference on Green Technologies for Energy Management (ICGTEM'15), Mohamed Sathak Engineering College, Kilakarai, 27-28 March 2015 (Awarded First Prize)
16. Anju Elizbath Peter, Jyothi S Menon and Dr.S M Shiva Nagendra, 'Air quality and¬ personal exposure assessment at a Municipal waste management site' in the proceedings of "1st Indian International Conference on Air quality Management (IICAQM) 2016", IIT Madras, Chennai, 15-16 February 2016. (Awarded third prize)
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19. Divyapriya, G., Srinivasan, R., Nambi, I.M. (2016), Electrochemical oxidation of pharmaceutical compounds in water on a rotating disk reactor catalyzed by a novel Fenton catalyst – Graphene/Ferrocene, 4 th international conference on Advanced Oxidation Processes, organized by BITS-Pilani K K Birla Goa Campus, Goa, India (17-20 Dec, 2016).
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21. Divyapriya, G., and Nambi, I.M. (2016), A Modified Electro Fenton Approach using Graphene oxide/Fe3O4 composite electrode for the removal of micropollutants from water, 8th International Perspective on Water Resources and the Environment" conference organized by the American Society of Civil Engineers (ASCE) and the Environmental and Water Resources Institute (EWRI) to be held in Colombo, Sri Lanka (January 4-6, 2016).
22. Divyapriya, G., and Nambi, I.M. (2014), Formation of α-Fe2O3/Graphene Electrode for the Removal of Emerging Pollutants from Drinking Water – A Modified Electro Fenton Approach, 2 nd International conference on Nano

23. Indumathi I.M. (2016) "Petroleum Contaminated Site Investigation and Remediation in India: A Case Study" Battelle Chlorinated Solvent Conference Houston, TX
24. Indumathi M and Praveena G (2015) "Wastewater Treatment Coupled with Chromium Metal Recover and Energy Production using Microbial Fuel Cell" Third International Symposium on Bioremediation and Sustainable Environmental Technologies Miami, Florida, May 18-21st
25. Indumathi M Nambi and Saranya Sriram(2014) "Degradation of an Pallikaranai wetland due to urbanisation indusced sewage and landfill" Elsevier conference on Urban Environment Pollution, June 16th and June 18th 2014 Toronto , Canada
26. Indumathi M Nambi* and Ambika M (2012)" Sustainable Treatment Technology Using Nanostructured Iron For Combined Removal Of Heavy Metal And Organic Chemicals " International conference by American Academy of Science in U.S.A. between 25th and 29th June 2012
27. Ambika M and Nambi I. M. "Simultaneous removal of heavy metal and aromatic compound from groundwater" at the International Conference on "Environmentally Sustainable Urban Ecosystems, ENSURE'2012, held at IITG, Guwahathi during 24-26 Feb'2012.
28. Pavitra M and Nambi I. M. "Modelling NAPL dissolution from high saturation multi configuration lenses" American Geophusical Union Annual Fall Meeting December 2011.
29. Berlin, M., G. Suresh Kumar., and Indumathi M Nambi. **(2011).** "Numerical Modeling of Nitrate Transport and Transformation in an Unsaturated Sub-Surface System". International Conference on Modeling & Simulation in Civil Engineering (ICMSC-2011) held at Kollam, Kerala during Dec 8 – 10, 2011, Proceedings, pp. 31-38
30. Nambi I.M. and Srinivas V. "Column studies on Sustainable treatment technology for coupled removal of organics and heavy metals from contaminated groundwater" V World Aqua Congress in Integrated Water Management during November16-18th 2011, New Delhi
31. Nambi I.M. and Ambika M. "Removal of Hexavalent Chromium from Contaminated groundwater using nano zero valent iron" at Indo UK workshop "Discussion meeting on advanced technologies for water and energy" held at IITM, Chennai during 16-18 Oct'2011
32. Nambi I.M and Ambika M " Sustainable removal of Chromium and Phenol from industrial waste water" Sustainable bioremediation confercne organised by Battelle in Reno, U.S.A June 2011
33. Ambika.S and Nambi, I.M. "Removal Of Hexavalent Chromium From Contaminated Groundwater Using Nano Zero Valent Iron " International Ground Water Conference, Madurai September, 2011 International Ground Water Conference, Madurai September, 2011
34. Mekala C and Nambi I. M. "Impacts Of Reusing Wastewater For Irrigation And Ground Water Recharge" International Ground Water Conference, Madurai September, 2011
35. Vasudevan M and Nambi I.M. " Modelling transport of petroleum spills in groundwater" International Ground Water Conference, Madurai September, 2011
36. Berlin, Sureshkumar and Nambi I.M. "Modelling nitrate transport through soil and groundwater during irrigation with wastewater" International Ground Water Conference, Madurai September, 2011
37. Nambi I.M. and Albino J. "Optimization of biosurfactant production by Pseudomonas sp (MTCC 10032) under anaerobic condition" Green Remediation Conference, organized by Environmental Institues of USEPA May 2010
38. Devasena M and Nambi I.M. Micromodel Studies for Understanding Residual Mercury Entrapment in the Subsurface - *3rd International Perspective on Current & Future State of Water Resources & the Environment, EWRI-ASCE, 5-7 January 2010, IIT Madras*
39. Devasena M and Nambi I.M. Insitu remediation of mercury contaminated sites – *9th International Conference on Hydroscience and Engineering ,ICHE, 2- 5 August 2010, IIT Madras*
40. Devasena M and Nambi I.M. Migration and entrapment of elemental mercury in the subsurface – *Recipient of Berkner travel Fellowship Award, Meeting of the Americas,8-12 August 2010, Foz do Iguacu, Brazil.*
41. Devasena M and Nambi I.M. Pore Scale Analysis of Mercury entrapment by glass bead micromodel studies – Water- Harvesting, storage and conservation, 23-25 November 2009, IIT Kanpur.
42. Nambi I.M. "*A New Approach to Quantifying Relative Permeability variations during NAPL dissolution from heterogeneous porous media*". Presented at International perspectives on Water resources and environmental engineering conference organized by EWRE, American Society of Civil Engineers at Bangkok, 2009

43. Quantifying residual saturations of mercury entrapped in the subsurface – *Symposium on Southeast Asian Water Environment, 24-27 October, 2008, Bandung, Indonesia.*
44. Transport of Elemental Mercury in the Subsurface. *International congress on environmental research*, 18-20 December, 2008, Birla Institute of Technology and Science – Pilani (Goa campus), Goa, India.
45. Transport of liquid mercury in the subsurface – *Young Talent Symposium, Singapore International Water Week, 22, June 2009, Singapore.*
46. Albino D J and Nambi I M. Biosurfactants - Alternatives for remediation of aquifers. International congress on environmental research, 18-20 December, 2008, Birla Institute of Technology and Science – Pilani (Goa campus), Goa, India.
47. Nambi I M, Jadhav S and Albino D J. Evaluation of Marine Coastal Collector Well for water supply in rural areas. International congress on environmental research, 18-20 December, 2008, Birla Institute of Technology and Science – Pilani (Goa campus), Goa, India.
48. *Pavitra M and Nambi Dissolutionof NAPL in heterogenous subsurface systems*. International congress on environmental research, 18-20 December, 2008, Birla Institute of Technology and Science – Pilani (Goa campus), Goa, India.
49. Nambi I.M. and SathishKumar N. "*Quantifying Relative Permeability variations during NAPL dissolution*". Presented at Fifth Annual Conference of the Geological Society of America, Denver, Colorado, 2007
50. Nambi, I.M., Sanford, R.A., and Werth, C.J. "*Investigation of Anaerobic Dehalogenatiing Bacteria Growth*". Presented at the 225th American Chemical Society Meeting and Exposition, New Orleans, Lousiana, March 2003
51. Nambi, I.M., Sanford, R.A., and Werth, C.J. "*Pore-scale Investigation of Reductive Dechlorination using Silicon-based Micromodels*". Presented at the American Geophysical Union Spring Meeting, Boston, MA, May 2001
52. Nambi, I.M., and Powers, S.E. "*An Improved MassTransfer Correlation for dissolution of NonAqueous Phase Liquids in Heterogeneous subsurface Systems*". Presented at First Annual Conference of the Geological Society of America, Reno, NV, 2000
53. Nambi, I.M., and S.E. Powers. "*Measuring and Modeling Local Mass transfer Rates in Heterogeneous Subsurface Systems*". Presented at the American Geophysical Union Fall Meeting, San Francisco, CA, December, 1998
54. Nambi, I.M., and S.E. Powers. "*Simplified Lab-scale Experiments to Quantify DNAPL Dissolution in Heterogeneous Systems*". Presented in the First International Conference on Remediation of Chlorinated and Recalcitrant Compounds at Monterey, California, May, 1998
55. Manivannan, I., and S.E. Powers. "*An Experimental Study of DNAPL Dissolution in Heterogeneous Subsurface Systems*". In the Annual Environmental Engineering Conference, Gananoque, Canada, January, 1998
56. Manivannan, I., S.E. Powers, and G.W. Curry. "*Dissolution of Non-Aqueous Phase Liquids Entrapped in Heterogeneous Subsurface Systems*". Presented at the ASCE Symposium: NAPLs in the Subsurface Environment: Assessment and Remediation, Washington DC, November 1996
57. Manivannan, I., A.K.Sutheimer, and S.E. Powers. "*Image Analysis for Estimating the Saturations of NAPLs in Heterogeneous Porous Media*". Poster presented at the American Geophysical Union Fall Meeting, San Francisco, CA, December, 1995
58. Manivannan, I., and S.E. Powers. "*Ongoing Experimental Work in Two Dimensional Cell in the study of Dissolution of DNAPLs*". In the Annual Environmental Engineering Conference, Gananoque, Canada, January, 1995

10.0 Teaching Contributions

10.1 Teaching Philosophy

My teaching experience with undergraduate & graduate classes for the eleven years have provided great insights on how to be a teacher who can not only teach effectively but also inspire the students . Paying attention to the feedback from students and researchers over the years has helped me in horning my teaching skills. I truly believe pedagogy is an art and the teacher has to be a learner first to be successful. My primary focus has always been on the 'how' part of teaching rather on 'what'. The modern day teachers have a challenging role to play trying to balance their teaching with research and administrative duties. It becomes all the more challenging to teach Environmental Engineering to a large class with 80 students of which 80% are new to this course and not necessarily interested in the subject. Today, there is a paradigm shift in the way students learn, articulate and apply their knowledge. The teacher should be sensitive to these changing scenarios and should be willing and able to adapt to them. The teacher has to be tech savvy and hence I constantly updated and adapted myself to the demands of the time and learned to use modern technology such as tablet PCs, ICT enabled programmes such as Moodle/blackboard etc. I observed that online quizzes, interactive queries, clarifications on Moodle was greatly welcomed by the students and helped to conduct fool proof examinations and grading.

The training programmes that I attended helped me to understand the nuances of teaching. I would like to highlight a few programmes which had a positive impact on me as a teacher, namely (i) a three day "Faculty development Program" organized by IUSTTF at Mysore in 2006, and(ii) refresher courses conducted by the Teaching Learning Centre at IITM in 2010 and the Civil Engineering Department at IITM in 2012. These courses enabled me to develop a style of teaching which incorporates modern teaching techniques such as development of learning objectives based on Bloom's taxonomy, active learning, bookend models, etc., along with some traditional chalk and talk and power point mode of teaching packed with animations and videos. I also developed different models for teaching small graduate level students and large undergraduate students.

I believe in experiential learning and always integrate real world applications in my courses through YouTube videos, expert guest lectures and more importantly, field trips to provide a first-hand understanding. In the past semester, Solid Waste Management course was offered for the first time to students and there were 5 field trips and 4 guest lectures. This format was greatly welcomed by the students as mentioned in their feedback. My own exposure to field scale issues in industry through R&D and consultancy projects greatly enriched the practical content I delivered in class along with the theoretical concepts.

I believe in developing engineers who are trained holistically which motivated me to take an active part in the development of new Minor stream on "Sustainable Environmental and Infrastructure Systems". This course is intended to inculcate sustainability concepts for students in all the branches of engineering at a much deeper level compared to the B. Tech course on 'Ecology and Environment'. The curriculum has been developed with focus on fundamental sciences and engineering principles associated with planning, designing, and managing sustainable and resilient infrastructure systems.

I also believe from my own experience as a student and as a mother that students are more likely to be pay attention to the teacher if they understand that the teacher cares for them. Getting to know the background of some students, their friends helps in understanding why they are disinterested in a particular course or in studies, in general, Facebook and LinkedIn enable getting to know each other at personal level which does have an impact on their interest toward the subject we teach. A midterm descriptive evaluation helped me greatly in understanding their needs better to make amendments on time. My experience as a hostel warden for four years was very rewarding in terms of understanding students' needs, their behavioural aspects and the problems that they deal with. This also helped develop positive relationship with students and connect with them easily. This

has been highly rewarding personally since the students tend to stay connected with me beyond the class and after graduation.

I have been thoroughly enjoying this journey so far and will continue to do so with the tremendous amount of energy I derive every day from the satisfaction of walking out of a well planned and executed lecture intercepted with rich class interaction. Throughout my teaching career I valued the feedback I received from the students through the review process and incorporated them in my teachings. There is no substitution to the joy I derive from the positive feedbacks and the appreciation from students. These feedbacks have constantly motivated me to excel in my profession. I don't have any hesitation in giving credit to my students in shaping my professional teaching career. The emails and thank you notes from past students are testimony to this, validates my existence as a good teacher pushing me to achieve greater heights.

9.2 **List of courses taught**

Course No	Course Name	Average Number of Students	Number of times offered	Feedback score
CE3040	Environmental Engineering	100/50	5	0.876
CE4820	Advanced Environmental Engineering	10	1	0.805
CE4030	Hydraulic & Environmental Engineering Lab	50	1	
CE1010	Introduction to Civil Engineering Profession	100	5	0.853
ID1200	Ecology & Environment	800	4	
CE3241	Sustainable Environment and Infrastructure Systems	30	4	0.830
CE5150	Environmental Chemistry & Microbiology	15	4	0.959
CE5170	Physico-Chemical Processes for Water & Wastewater Treatment	15	3	
CE5190	Environmental Monitoring Lab	8	3	
CE5200	Environmental Microbiology and Engineering Lab	8	5	
CE5210	Transport of Water and Wastewater	10	1	
CE4280	Hazardous Waste Management	45	11	0.841
CE5460	Groundwater Engineering	10	3	
CE6015	Solid Waste Management	35	1	

10.3 Courses that can be offered by me in the future

Course No	Course Name
CE6180	Environmental Impact Assessment
CE5160	Biological Process Design for Wastewater Treatment
CE5180	Air and Water Quality Models
CE5180	Air Quality Management
CE2060	Geology & Soil Mechanics
CE3010	Transportation Engineering I

10.4 New courses proposed

1) Contaminated Site Assessment and Remediation Engineering
2) Green Technologies and Resource Recovery
3) Eco engineering with LifeCycle Assessment

11.0 Other Academic Activities:

11.1 Centres

1. Centre for Technology Development Demonstration and Dissemination

Budget: Rs 5 Crore sponsored by Tamil Nadu Pollution Control Board

2. Centre for Urbanisation Buildings and Environment (Environment Vertical)

Budget : 10 Crore from Government of Tamilnadu

11.2 Lab Development

- Modification of Workshop for Technology Centre
- Planning, Design and Drawing for refurbishing Room 5 and 6 in EWRE building as MTech Environmental Labs
- Planning, Design and Draawing for converting existing room to Instrumentation Room II at EWRE building
- Procurement of major/minor experimental and analytical facilites for EWRE lab such as Millipore Water Systems (4 lakhs), Gas Chromatograph with ECD (14 lakhs), Tensiometer (7 lakhs), Advanced Metallurgical Microscope (10 lakhs), Ground Water Table top model (3,lakhs)
- Flow sampling system, Datalogger, Automatic Water level loggers
- Procurement of Software for the lab such as Ground Water Modelling Software (GMS) 3.5 lakhs, Storm Water Management Model (SWMM) 2.5 lakh, Image Pro Analysis software.

11.3 Course Development

- **NPTEL Phase II**: Web based Course on Solid and Hazardous Waste Management
- One **MTech / PhD Elective** : Remediation Technologies for Contaminated Soil and Groundwater
- Development of an **MTech/Minor stream program on Sustainable Engineering and Management**

11.4 Innovation Competition:

Stockholm Water Junior Prize 2019, World Water Week 2019 (In progress)

Carbon Zero challenge Innovation and Entrepreneurship October 2016-Feb 2018:
Energy and Environment for Colleges and Startups across South India in Renewable Energy innovations in Environment , Urban, industry, transport and agricultural domains

11.5 Conferences Organised

1. **Co-organiser** - ASCE EWRI Third International Conference on Sustainable Water resources and Environment at IITM, Chennai, 2010
2. Member, Local Organising Committee for APD-IAHR Conference, 2009 at IIT Madras
3. Member, Local Organising Committee ICHE, 2010 at IIT Madras
4. Coorganiser IPHE Conference on Water and Environmental Management 2016
5. LOC member SWAT Conference 2018

11.6 Short Term Courses Organised :

1. CEP course on Wastewater collection and Treatment for HUDA engineers sponsored by JICA December 2006
2. STTP-QIP Short term course "Informed Design Of Environmental Engineering Systems - Looking Beyond Design Criteria" June 4 -9, 2007
   Co-organiser: S. M. Shiva Nagendra

3. CEP Course on Hazardous Waste Management June 25th – 29th, 2007 sponsored by Tamilnadu Pollution Board. Co-organiser: Prof S. Mohan
4. STTP course on Environmental Chemodynamics 17th -22nd January 2011 Co-organiser: R Ravi Krishna
5. Short term Course on Contaminated Site Assessment and Remediation CPCB sponsored course , 2016 Co-organiser Mathava Kumar

11.7 Workshops/ Training programs Organised:

1. Two-day Training program on "Water Quality and Related Health Issues", held in Department of Civil Engineering, Indian Institute of Technology Madras, Chennai during 14-15, November, 2008 for UNICEF block Coordinators.
2. Two-day training programs on "Water Quality and Related Health Issues", held in Tamilnadu Hotels, Krishnagiri, during 26-27, November, 2008 for NGOs, TSC and Education Department Staff involved in water, IVDP Functionaries and CFVP Block Coordinators and Trainers.-sponsored by UNICEF
3. World Water Day Workshop on Protecting Chennai's water bodies" on March 22nd 2010 sponsored by US Embassy and ASCE EWRI South India Chapter
4. Three-day Training Program in Decentralized Wastewater Management at IIT Madras from 10-12, November 2011 sponsored by Ministry of Urban Development
5. One-day workshop on "Onshore Petroleum Spills Case studies in India and the Way Forward" on the 7th of February, 2012 sponsored by DST Indo Australia Joint Reasearch project
6. One day workshop on Inland Oil spills - Assessing the current status and Developing a Road map October 2014
7. Two days workshops on Environmental Management in Sago Industry funded by CETEDDD in Aathur
8. Two day International Workshop on Environmental Antimicrobial Resistance funded by NSF PIRE research group. Feb 2016

11.8 International Academic Visits

1) **Naples, Italy in December 2008:** Member of the Indian delegation invited to visit Centres of Competence (CRdC) as a member of a research team to foster research collaborations between both the countries
2) **Paris, France in June 2011, 12, 13:**Veolia University Club Meeting- A consortia of researchers working in water area who are associated with Veolia Water, a multinational environment company meet every year. Veolia arranges for field trips to their pilot plants in the country
3) **Lyon, France** Veolia Water Treatment Facility
4) **Perth, Australia 2011:**To collaborate with CSIRO group and oil refinery remediation sites on the Indo Australia Strategic research fund project.
5) **Brussels, Belgium in May 2012:**Veolia University Club meeting to visit R&D projects on wastewater treatment and a workshop on wastewater treatment.
6) **Bangkok, Thailand, 2007:**Asian Institute of Technology, for ASCE EWRI conference/ institute visit
7) **Denver, USA, 2009:**University of Colorado, Boulder and Colorado School of Mines, Golden for interaction and lab visits during conference trips
8) **Colombo, Srilanka 2015:** ASCE EWRI conference on water and Environment
9) **Houston Texas, 2016:** To initiate tie-ups with faculty in Rice University as part of PIRE project.
10) **Blaksburg Virgnia, USA, 2016:**To collaborate with faculty in Virginia Tech as part of PIRE project.
11) **Hamburg, Dartmond, Njemegen**, **in Germany, 2016:** As part of 10-member team of water experts-organized by Goethe Institute as their visitors program on Embrace the rivers.
12) **Edinburgh, UK 2018** Herriot Watt University - Research Collaboration Meeting

11.9 Professional Affiliations/Membership

- American Society of Civil Engineers
- Environment and Water Resources Institute
- American Chemical Society
- American Geophysical Union
- National Ground Water Association, U.S.A
- Geological Society of America
- Water Environment Federation
- American Association of Environmental Engineering Professors and Scientists

12. Review Member in International Journals/Funding Agency

- Water Resources Research
- Environmental Science and Technology
- Chemical Engineering – Journal
- Journal of Materials in Civil Engineering
- Journal of Earth System Science
- Indian Geo Technical Engineering – Journal
- National Science Foundation

13. Institute/ Department Academic Activities :

1. Member of DC Commitees (40)/ PhD External Examiner (4) Total no: 44
2. Member Patent Application Evaluation Committee, IITM
3. Member UGC Fellowship selection committee Anna University
4. Member Selection Committee for Institute Blues
5. Member Awards committee for Bhagyalakshmi Iyengar Prize
6. Department Advisor to Foreign Students
7. Purchase Committee member in Chemical, Chemistry, Ocean Engineering Departments
8. Institute Master Plan Evaluation Committee for Water, waste water and Solid waste management

14. Other Academic Activities

1)	Member of DC Committees in IITM, other institutes:	60 PhD Committees
2)	PhD External Examiner in IITs and other institutes:	11 PhD viva voce
3)	Member Curriculum Development Board of studies:	NIT Trichy, BIT, SriKrishna
4)	Member Curriculum / Syllabus Committee:	Anna University
5)	UGC Accreditation committee member:	Sardar Patel Engineering College, Mumbai

15. Administrative Responsibilities

1.	Head of the Lab	2012-2015
2.	ICSR Board member	2016-201
3.	Member and Chairman ICSR Recruitment cell :	2014- 2016
4.	Member Board of Infrastructure	2012-13
5.	Warden Sarayu	2009 – 11
6.	Warden, Sarayu Extension	2011 – 13
7.	JEE Coding Team	JEE 2009
8.	GATE Tabulation Team	GATE 2010
9.	Faculty Association EC member	2007-2009

16. Other Administrative Activities

1) Member Patent Application Evaluation Committee
2) Member Selection Committee for Institute Blues
3) Member Awards committee for Bhagyalakshmi Iyengar Prize

4) Department Advisor to Foreign Students
5) Purchase Committee member in Chemical, Chemistry, Ocean Engineering Departments
6) Institute Master Plan Evaluation Committee for Water, waste water and Solid waste management

17.Invited Talks were given in the following organizations (selected)

1) Indian Council for Medical Research (ICMR) New Delhi
2) National Environmental Engineering Research Institute (NEERI) Nagpur
3) Oil and Natural Gas Corporation ONGC Chennai
4) Ashoka Trust for Ecology and Environment, Bangalore
5) Centre for Science adn Environment, New Delhi
6) Centre for Ganga River basin Management and Studies, New Delhi
7) Salem Steel Plant
8) HARE Engineers
9) SaiRam Engineering College
10) VelTech Engineering College
11) RMK Engineering College
12) VIT Engineering College, Vellore
13) College of Engineering Trivandrum
14) Annamalai University, Chidambaram
15) College of Engineering Trissur
16) SSN college of Engineering
17) SRM University and college of Engineering
18) Srikrishna College of Engineering, Coimbatore
19) Coimbatore Institute OF Technology
20) Apollo College OF Engineering, Chennai

18. Personal Details

Date of Birth	11th June 1971
Home Address	4 Warden Quarters IITMadras campus
Marital Status	Married
Languages Known	English, Hindi, Tamil
Name as in Passport	Indumathi Manivannan Nambi