

Celebrating the Generosity of



Dr. Srinivasan "KG" Ganapathi

IMPACT OF
YOUR GIVING
IN

2024



ALUMNI & CORPORATE RELATIONS
INDIAN INSTITUTE OF TECHNOLOGY MADRAS

Director's Message

Greetings!

IIT Madras continues to retain her top position for the ninth consecutive year, in the National Institute Ranking Framework, thanks to the world-class research, unwavering dedication and creative mindset of its faculty and students. The contribution and support of Alumni and well-wishers like you have crucially helped this standing and stature. Our achievements in research, education, innovation, and entrepreneurship have also earned us the recognition of an 'Institute of Eminence' as well as the top position in the Atal Innovation Ranking from the Government of India.



Prof. V. Kamakoti

IIT Madras is making an indelible mark in promoting and providing education to students from the length and breadth of India to areas beyond Indian territory, through her initiatives in rural developmental educational programs, international, interdisciplinary M.Tech courses, and online diploma courses. The popularity and reach of our online courses can be gauged by the fact that around 25000 students in ages ranging from 17 to 82, have enrolled for these courses across national boundaries, and about 30% are from rural India. The institute, in a first-ever initiative by an IIT, has consolidated its position on the world map by establishing her international campus in Zanzibar, Africa where about 45 students have been admitted to different programs.

Innovation and entrepreneurship are ingrained in all our endeavours – our ambitious ventures in rocket and space explorations, the development of lab-grown diamonds, hyperloop, the Brain Research Centre etc, are a testimony to this. The start-up ecosphere is also a reflection of this spirit, wherein last year, 70 startups came to fruition, successfully nurtured by our centres of excellence, the Centre for Innovation, Nirmaan – the pre-incubator, the Incubation Cell, technology centres such as 'IITM-Pravartak' at the IIT Madras Research Park and others. This year, our target is to incubate at least a 100 Start-ups in various sectors. It is expected that at least 20% of the passing out students will be proud CXOs of their own ventures! The year 2023 also saw 221 national and 105 international patents from our Institute and we are looking to closing this current financial year with 366 patents, to account for 'a patent a day'.

Towards promoting inter-disciplinary research and exploring new frontiers, a Department of Medical Sciences and Technology was launched in May 2023, a School of Sustainability in Oct 2023, a Department of Data Science and Artificial Intelligence in Nov 2023 and a new Interdisciplinary Dual Degree program on Quantitative Finance in Dec 2023 through the synergy of the departments of Management Studies, Computer Science and Engineering and Mathematics. Our School of Sustainability has signed MoUs for collaborations with Tel Aviv University, Israel and Technische Universität Dresden, Germany, with the aim of being recognized as a leader for sustainability teaching and research in the global south.

Lofty ambitions and achievements are impossible without the deep-rooted faith and support of alumni and well-wishers like yourself. We are indebted to you for your bountiful, impactful contributions and the faith reposed on us. On behalf of IIT Madras, I express my deepest gratitude for continuing to strengthen the Institute. Together with your support, we are confident of building an IIT Madras that is more inclusive, diverse, and seized of tomorrow's needs to be nationally and globally relevant.

Thank you!

Dean's Message

Greetings from the Office of Alumni and Corporate Relations!

I want to extend my deepest gratitude for your incredible generosity and continuous support towards IIT Madras. An act of giving is much more than making a donation. It is the manifestation of kindness, compassion, and deep-rooted empathy within each of us. It is the very essence of being human. And as one of our esteemed donors, you are no exception to this.



Prof. Ashwin Mahalingam

Strong academic institutions play a critical role in today's world - training minds young and old, and contribution to research and innovation. Your contributions have had a truly transformative impact, not only on the institute but also on our students, faculty and the broader community. This "Impact of Giving" report serves as a testament to the profound influence your contributions have had on the lives of our current students, the advancement of innovation in research, and the infrastructure of the institute.

At IIT Madras, we take great pride in the strong relationships we have fostered over the years. It is through your consistent engagement with us that we've been able to push the boundaries of innovative research, improve our infrastructure, and provide scholarships that have empowered students from diverse backgrounds. These efforts have created life-changing opportunities, ignited new ideas, and elevated IIT Madras to the forefront of global education and research.

Your commitment, as part of our esteemed benefactor network, has strengthened our institute's global reach. It has opened doors to new partnerships, fostered collaborations, and helped us nurture the leaders of tomorrow.

We are profoundly grateful for your belief in IIT Madras. Your continued support not only upholds the values and traditions of the institute but also helps us chart a bold and visionary path forward. Together, we are building a legacy of lasting excellence.

Once again, thank you for your dedicated engagement with IIT Madras



Dr. Srinivasan "KG" Ganapathi

1985/BT/MT

Founder and CEO of Vimaan Robotics Inc.

**Distinguished Alumnus Awardee of IIT Madras
(2021)**

Cause Contributed

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**Nita and KG Ganapathi
Institute Chair**

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Nita and KG Ganapathi Institute Chair

Chair positions are offered for Professors who have distinguished themselves as well as been recognized by their peers for their research and/or technology development and who have excelled in teaching and service to the Institute/Nation/Profession.

It is intended to host eminent expert Professors as Chair with various options for visits and engagement, suitable salary and benefits or honoraria, accomodation and varied endowment amounts as applicable. The achievements must, therefore, go beyond those that earned them the Professorship and should demonstrate leadership in one or more of these aspects.

FIRST CHAIR OCCUPANT

Dr. Ligy Philip earned her M.Tech and Ph.D in 1993 and 1998, respectively, from the Indian Institute of Technology Kanpur, specializing in Environmental Engineering.

Research Interest

- Water treatment and Rural Water Supply
- Domestic and Industrial wastewater treatment with emphasis on wastewater reuse and recycling
- Bioremediation of contaminated soils, air and water with heavy metals, pesticides and other hazardous organic compounds



Prof. Ligy Philip
Department of Civil Engineering

Prof. Ligy Philip is Institute Chair Professor in Department of Civil Engineering, IIT Madras. She is a Fellow of National Academy of Engineers (FNAE) and Fellow of Royal Society of Chemistry (FRSC). For more than two decades, Prof. Ligy Philip has been contributing significantly to advancing the knowledge in the area of Environmental Engineering, and for the betterment of society through field and industry oriented projects. She has conducted high quality research on treatment of industrial effluents from highly polluting industries, bioremediation of contaminated soils and groundwater, novel processes for drinking water treatment, and sustainable management of waste. Technologies developed by her have been successfully utilized by several industries and NGOs.

She has provided consulting services to a large number of industries in the area of pollution monitoring and control. Reputed international organizations such as Bill and Melinda Gates Foundation utilize her expertise in the area of sanitation. She has served as a member of many expert committees set up by National Green Tribunal, Tamil Nadu Pollution Control Board and Kerala Pollution Control Board, and is member of several high-level committees of DST. She also has executed many socially relevant projects. Sustainable water and waste management projects are implemented in five villages. The technologies developed by her group were implemented in these villages.

For more details: [CLICK HERE](#)

Broad Area of Research

Water treatment and Rural Water Supply

- Development of new adsorbents for the treatment of arsenic and fluoride contaminated water.
- Developed an economical and effective household filter which can be used in any rural household.
- This filter has been field tested extensively. Recent research in this area resulted in development of adsorbents which have three to five times more capacity than the best available adsorbents for arsenic and fluoride removal, today.
- Developing low cost, easy to use treatment systems for rural areas.

Domestic and Industrial wastewater treatment with emphasis on wastewater reuse and recycling

- Developed a novel treatment system for tannery wastewater. This system consisted of a biological system for the simultaneous removal of organic matter and biotransformation of hexavalent chromium followed by an adsorption or precipitation system. Presently, concentrating on the treatment of domestic wastewater with focus on water recycle.

Bioremediation of contaminated soils, air and water with heavy metals, pesticides and other hazardous organic compounds

- Microbial cultures have been isolated and identified for the complete mineralization endosulfan, the most commonly used and currently the most notorious of all pesticides in India.
- Currently this work is being extended to isolate and enrich microbial cultures which can attack an array of pesticides belonging to different groups. These “bugs” will be very effective for remediation of pesticide contaminated agricultural fields.
- Biological systems have been developed for treatment of wastewater, soil, and aquifers contaminated with highly toxic hexavalent chromium. Currently working along with Tamilnadu Pollution Control Board to demonstrate the feasibility of cleaning up of chromium contaminated site in Vaniyambadi (both soil and aquifer) using bioremediation.

Air pollution monitoring, modeling and control

- Carrying out state-of-the art work in flue gas treatment using advanced oxidation and biological methods. The integrated system can reduce the NO_x and SO_x levels to required standards within 6 seconds of residence time.
- No residual pollution and recovers elemental sulfur as resource.
- This technology is being implemented in a pilot scale by M/S Futura Polyesters, Manali, Chennai.
- Research and consultancy works are being carried out for the treatment of VOCs (Benzene, xylene, toluene, and dichloromethane) from air stream using biotrickling filters and rotating biological contactors.
- SIDA is sponsoring current studies on the air pollution status in Chennai. This is a part of an international effort to curb the atmospheric pollution of developing Asian countries. These projects are also intended to spread the awareness of pollution and help the policy makers to implement the policies to reduce the pollution.

Major Projects handled

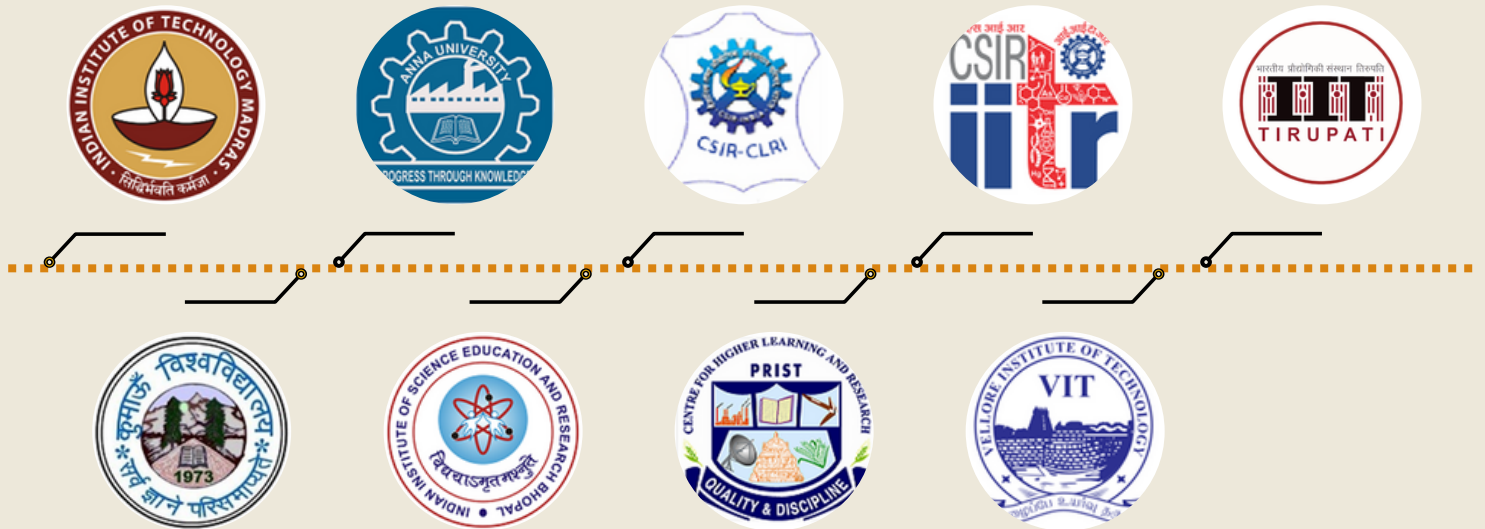
Sutram for Easy Water

Water Technology Research and Innovation Centre for Sustainable Treatment, Reuse and Management for efficient, Affordable and Synergistic solutions for water.

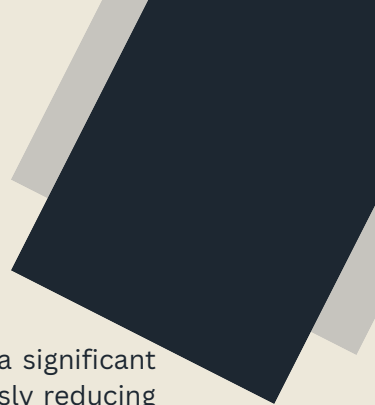
Goal

The overall goal is to ensure adequate, safe, reliable and sustainable sources of drinking water for rural and urban India and process water for highly polluting and water intensive industries, through research, technology development and capacity building.

Participants involved:



Inauguration of SUTRAM Project by Hon'ble Union Minister for Science and Technology, Dr. Harshvardhan, on January 25, 2019



Water and Sustainability

Population growth, technological interventions and changes in life style have put a significant stress on water resources. While unsustainable rates of consumption are continuously reducing the availability of water, increased industrial and anthropogenic activities have been leading to significant deterioration of the quality of water sources. Impact of climate change will add further stress on water resources. It cannot be over emphasized that sustainable management of water resources is crucial to the socio-economic development of any nation. Importantly, three of the Sustainable Development Goals set by the United Nations i.e., SDG-6, SDG-11 and SDG-12 are directly linked to our understanding and management of water resources.

- It has been realized in recent years that since water systems interact with all parts of society and industry, there exist significant opportunity for application of the circular economy paradigm at the interfaces to create additional value, increase the resilience, reduce the risk and thus achieve sustainable growth.
- The new paradigm is waste is actually a resource, out of its place. Application of 3 Rs principle of reduce consumption, recycle the water, recover resources for reuse is essential for sustainability.

Aqua MAP

Vision

Identify and innovate win-win solutions for complex and challenging water problems in our nation by developing and evolving smart water management practices, while also balancing and building the nuanced relationship between the stakeholders, the community and government to formulate just and sustainable policies

Mission

- Complete successful pilot studies of at least six cases which could be showcased as replicable successful and sustainable models to address water management and policy in the country.
- Address at least three concerns related to chronic water issues through the Grand Challenges which will be translated into pilot projects.

Activities

- Field implementation of Technologies and Management practices
- Grand Challenges
- Hydroinformatics Laboratory

Aqua MAP Projects

- Water And Wastewater Management for a Clean and Healthy Village Transformation in Muthur Village, Karnataka
- Development of clean and healthy village through holistic (wastewater and solid) waste management, Vallipuram, Tamil Nadu
- Providing technical Advisory Services to WATCO on Water Quality Assurance in all cities in the State of Odisha
- Quantitative Analysis framework to take irrigation decisions based on next 7 day weather forecasts
- Sustainable Water Management in Panchayats of Vellore District
- Next generation epidemiological models for accurate predictions of future pandemic waves integrating sewer simulations with public health information
- Clean and healthy village through sustainable water management: Vallipuram, Chengalpattu district, Tamil Nadu
- Water and soil analysis: Creation of a digital twin of the village for environmental management
- Automatic control of rural water supply schemes

Prof. Ligy Philip is a Convener Coordinator of Aqua MAP and Lead Investigator

Awards & Recognitions

- Fellow of Royal Society of Chemistry (FRSC)
- Fellow of National Academy of Engineers (FNAE)

Research Publications (2024)

In Refereed International Journals

- Bhesh Kumar Karki, Ligy Philip, · Kajiram Karki, Anish Ghimire (2024) “Insight into Urban River Water Quality Using Ecological Risk Assessment Based on Risk Quotient” Water Conservation Science and Engineering, Volume 9, Article No: 56, DOI: <https://doi.org/10.1007/s41101-024-00289-1>
- Mohammed Iqbal Thayyil, Ligy Philip, (2024) “Attached growth microalgae-bacteria consortia: A sustainable option for in-situ remediation of contaminated open drains” Journal of Environmental Chemical Engineering, Volume 12, Issue 5, DOI: <https://doi.org/10.1016/j.jece.2024.113837>
- Ritik Anand, Ligy Philip, (2024) “Catalytic Pulse Plasma Treatment for Organic Micro pollutants: Unveiling the Synergistic Role of Photocatalysts in Radical Generation and Degradation Mechanisms” Environmental Science Water Research & Technology, DOI: 10.1039/D4EW00167B.

- Mohammed Iqbal Thayyil, Ligy Philip, (2024) “Z Sustainable treatment scheme for in-situ remediation of contaminated drains using engineered natural systems” Chemosphere, Article No: 142469, DOI: <https://doi.org/10.1016/j.chemosphere.2024.142469>
- Pinakshi Biswas, Bhanu Prakash Vellanki, Manthiram Karthik Ravichandran, Absar Ahmad Kazmi, and Ligy Philip (2024) “Widespread Surveillance of Emerging Contaminants in the Yamuna River Basin: Evaluation of Surface Water, Sediments, Groundwater, and Aquatic Plants” ACS EST Water, DOI: <https://doi.org/10.1021/acsestwater.3c00627>
- Vaishali Choudhary and Ligy Philip, (2024) “Zn-Co layered double hydroxide-based capacitive systems for removal and recovery of phosphate from aqueous environments” Colloids and Surfaces A: Physicochemical and Engineering Aspects, Article No: 133815, DOI: <https://doi.org/10.1016/j.colsurfa.2024.133815>
- Vishnu V Akula, Gayathri Ramalingam, Akshaya Kumar Verma, Zeev Ronen, Yoram Oren, Jack Gilron, Ligy Philip, (2024) “Performance evaluation of pilot scale ion exchange membrane bioreactor for nitrate removal from secondary effluent” Journal of Cleaner Productio, Volume 442, Article No: 141087, DOI: <https://doi.org/10.1016/j.jclepro.2024.141087>
- Bhesh Kumar Karki, Ligy Philip, (2024) “Fate of pharmaceuticals and personal care products like metronidazole, naproxen, and methylparaben and their effect on the physiological characteristics of two wetland plants” Chemical Engineering Journal, Article No: 149180, DOI: <https://doi.org/10.1016/j.cej.2024.149180>
- Pragadeesh Subramani, Milan Basil, Praveen Rosario, Dijin Ramachandran Jalaja, Vaishali Choudhary, Jayakumar Renganathan, Ligy Philip, Kangwoo Cho, Claire Welling, Sonia Grego and Clément Cid, (2024) “Water recycling public toilets based on onsite electrochemical wastewater treatment” Environmental Science: Water Research and Technology, Volume 10, Page 157-167, DOI: <https://doi.org/10.1039/D3EW00454F>

Technology Transferred to Industries/Agencies and Copy Rights

- Ligy Philip, Water analysis Kit for the technology knowhow, M/s: Weaver Technologies LLP, 13, Srisakthi Krishna Apartments, Manikandan Street, Aiyappa Nagar, Madipakkam, Chennai – 91, Agreement No: BM 242825 dt: 13th October 2017
- Ligy Philip, Technology Transfer Of Water Treatment System And Analysis Kits, M/s: Tanstia FNF Service Centre, B-22, Industrial Estate, Guindy, Chennai-32, Agreement No: BJ 548267 dt: 13th March 2017
- Ligy Philip, Knowhow Process to Bioremediate Hexavalent Chromium Contaminated Aquifers, M/s: Shriram Pistons, 23, KG Marg, New Delhi, Agreement No: BG 687671 dt: 23rd January 2017
- Ligy Philip, Knowhow Process to Bioremediate Hexavalent Chromium Contaminated Aquifers, M/s: Munjal Showa Private Limited, 9-11, Maruti Industrial Area, Gurugram, Haryana – 122015, Agreement No: 5/2010 dt: 3rd March 2010
- Ligy Philip, Knowhow Process to Bioremediate Hexavalent Chromium Contaminated Aquifers, Anand Udyog, plot No: 31, Sector -5 (Pkt-1) Mujessar Railway Crossing, Faridabad, Haryana, Agreement No: AL172304 dt: 28th December 2012

- Ligy Philip, Consulting Services Agreement with M/s: Greenenvironment Innovation & Marketing India (P) Ltd, S-3, Second Floor, Door No: 14, Janakpuri 1st Street, Off 100" Road, TN Police Housing Colony, Velachery, Chennai – 600042
- Ligy Philip, Memorandum of Agreement between IIT Kanpur and IIT Madras, Centre for Ganga River Basin Management and Studies (cGanga) supported by National Mission for Clean Ganga, Ministry of Jal Shakti, New Delhi, INDIA
- Manual for Sustainable greywater recycling unit for households, (Copyright) Application No: 11234/2019- CO/L, Prof. Ligy Philip, Dr. Krithika D, Mr. Sanjeev Chhetri.
- User manual on water quality analysis water quality test kit-15, (Copyright) Application No: 11762/2016-CO/L, Prof. Ligy Philip, Dr. R Elangovan, Prof. B S Murty, Registration No: L-72366/2018, dt: 13-01-2018.
- Ligy Philip, Water analysis Kit for the technology knowhow, M/s: Greenenvironment Innovation & Marketing India (P), C-507, 5th Floor, IIT Madras Research Park, Kanagam Road, Chennai - 600113, Agreement No: EF 414869 dt: 16th August 2024.

Book Published

Book Title **“Technological Solutions for Water Sustainability: Challenges and Prospects: Towards a Water-Secure India.”**

Editor: *Ligy Philip; Thalappil Pradeep; S. Murty Bhallamudi*

Publisher: *IWA Publishing*

Publication date: *November 2023*



Book Launch was held on March 22, 2024 by Shri M. K. Narayanan, former NSA to the Govt. of India.

Glimpses of activities related to the Projects



We are grateful to you & your family

Dr. Srinivasan "KG" Ganapathi & Mrs. Nita Ganapathi



We express our heartfelt gratitude for your continued and generous support to IIT Madras throughout the years. We trust that you take great pride in your bond with IIT Madras and the unwavering dedication it has demonstrated towards academic and research excellence since the time of your association.

Your invaluable contributions, alongside the support of your family, have played a pivotal role in facilitating this remarkable growth. We are privileged to have you and your family walking with us along this journey. We extend our best wishes to you and your family. We thank you for your continued support to your alma mater



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