



IIT MADRAS

ALUMNI COMMUNITY
INSTITUTE CHAIR
REPORT 2021

Alumni Community Institute Chair

We have received excellent support towards Alumni Community Chair Professorship. We remain very thankful for the generous contributions by various Alumni and Non- Alumni Donors. This report encapsulates and foregrounds the initiatives that have been taken up in conjunction with the Chair Professorship by Prof. R. Nagarajan

About Prof. R. Nagarajan:

Prof. R. Nagarajan is the Alumni Community Chair Professor, Department of Chemical Engineering, IIT Madras, Robert T. Henson Distinguished Visiting Scholar, Davidson School of Chemical Engineering, Purdue University. After completing his 3-year term as Head of the Department of chemical Engineering, Prof. Nagarajan has undertaken his sabbatical at Purdue University as Robert T. Henson Distinguished Visiting Scholar in the Davidson School of Chemical Engineering. His appointment started on January 1, 2022, and runs through July 31, 2022.



Prof. R. Nagarajan

During this stay, he has conducted a Seminar Series on "Contamination Control in High Purity Manufacturing" for Purdue faculty and students. He has presented a paper at WOCA 2022 (World of Coal Ash) conference at Covington, Kentucky, and organized a Panel at the Deshpande Symposium in Cleveland, Ohio.

He is currently writing a book titled "Process Intensification-- Faster, Better, Cheaper", commissioned by CRC Press. He has been a visible face of IITM, with the alumni and corporate community for about a decade and elevated the institution's presence in the minds of alumni to great heights.

He obtained his B.Tech. in Chemical Engineering in 1981 from IIT Madras, and a Ph.D. in the same field from Yale University. He worked with IBM Storage Systems Development Laboratory in San Jose, and he joined IIT M in 2004.

From Feb 2009 - Aug 2012, he served as Advisor, Office of Alumni Affairs at IIT Madras, and From Sep 2012- Sep 2018, as **Institute's first-ever Dean of International & Alumni Relations**.

He has personally sponsored **10 student Awards**. He has established **17 joint doctorate degree programs with leading global Universities**. During his tenure as Dean, I & AR, he has brought corporate professionalism to IITM with his approach to work and leadership. His passion for writing pop fiction is well known, and his extempore speeches have been well appreciated by the audience.

As a fitting recognition of his various academic and administrative contributions, the Institute has designated him as **Chair Professor in the Department of Chemical engineering**.

| Achievements

- Award for “**Distinguished Service to Alumni**” in IITMAA Sangam Confluence for Impact on Sep 29, 2018.
- “**Eminent Engineer Award**” from the Institution of Engineers (India) in October 2018.
- He has won several awards, including **Outstanding Younger Member Award, Institute of Environmental Sciences and Technology (IEST)**, April 1990; Patent (# 5,879,578) Issue Award, March 1999 several IBM Innovation & Performance Awards and Team Awards, etc...

| Impact

- Four high-impact journal papers published, and one patent application filed in the past year.

| Teaching Initiatives

- “**Chemical Engineering 101**” for first-year UG students.
- “Building towards a career in the chemical industry” for graduate students
- Elective courses on: Particle Characterization, Chemical Vapor Deposition, Transport Phenomena

| Department Responsibilities

- **Head of Department** since Oct 2018.
- Formed “**Department Advisory Board**” with industry & alumni representatives.
- Drafted Vision & Roadmap 2030 for the Department.

| Institute Responsibilities

- Co-wrote proposal for “**Institution of Eminence**”, a status awarded in 2019.
- Involved in rankings – related activities.

| Alumni Connects

- **Trustee** on Board of Alumni Charitable Trust.
- **Director** on Board of IITM Canada Foundation.
- **Chair**, Travel Grant Committee, Office of ACR

| Faculty-in-charge of alumni-related Centres

- CSIE (Centre for Social Innovation & Entrepreneurship) -- <https://csie.iitm.ac.in/>
- IITM Heritage Centre -- <https://heritage.iitm.ac.in/>

- IITM Archive (co-Principal Investigator) -- <https://archive.iitm.ac.in/>

About the Research:

| Research Priorities:

- Coal beneficiation using the ultra-sonic fields
- Nano emulsions of plant oils used for cancer treatment
- Dust-repellent surfaces and coatings for building exteriors

- **Doctoral research:**

1. One Ph.D. thesis defended in Jan2020 (Dr. Srivalli Hariharan)

“A comparative study to understand the effect of solvents, particle size and their role in the de-alkalization of coal was carried out”.

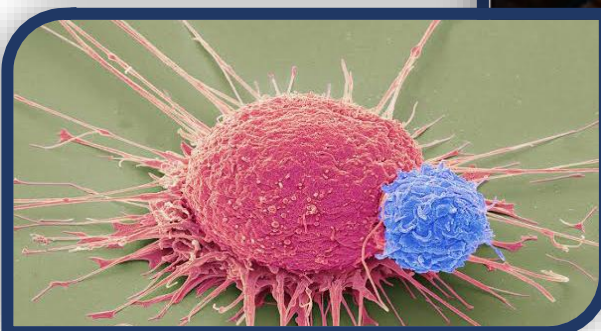


Dr. Srivalli Hariharan

2. 2 Ph.D.'s currently co-Guided with Prof. T Pradeep on an industry-relevant project, and one External Ph.D. from CSIR under solo Guidance

- **Post-Doctoral Research:**

Three post-doctoral Fellows being mentored currently.



They have developed a nano-scale emulsion of clove bud essential oil. Using a technique with potent anticancer and antibacterial activity



Prof. R Nagarajan and his team of scientists, Dr. M. Joyce Nirmala, Mrs. Latha Durai and Mr. Vineet Gopakumar developed formulation using clove oil to combat cancer. To view the video “IIT Madras researchers mark the dawn of a new age of anticancer medicine”, [To know more](#)



Dr. Joyce Nirmala

“We would like to validate our findings through in-vivo animal models. We also plan to further check the formulation for other types of cancers and microorganisms. India is known world-wide for its medicinal spices, be it turmeric for its anti-septic properties, or pepper for its anti- bacterial properties and so on. There are 63 different varieties of spices available. We therefore have many unexplored spices to investigate”.

To Know more about the Oil-Based Cancer Therapy work [Click here](#)

Thank you!

We would like to take this opportunity again to express our heartfelt gratitude to all those who made benevolent contributions towards the growth and development of IIT MADRAS.



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