

# Sundararajan RAMAKRISHNAN

SCIENTIST



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## EDUCATION

**Ph.D. | Indian Institute of Technology Kanpur  
Materials Science and Engineering**

Dissertation: *Metallic Flow Field Plates for PEM Fuel Cell*

*On-going*

**M.S (by Research). | Indian Institute of Technology Madras  
Metallurgical and Materials Engineering**

Thesis: *Functionalized MWCNT reinforced electro spun polymeric micro layer over GDL for PEM fuel cell.*

*June 2012*

**M.Sc Materials Science and Technology | Pondicherry Engineering College, Pondicherry  
Department of Physics**

Thesis: *Corrosion behavior of mild steel components of automobile importance and developing new protective coatings*

*Aug 2005*

**B.Sc Applied Sciences | PSG College of Technology, Coimbatore  
Department of Physics**

Thesis: *PC based displacement measurement, LED as a Transducer*

*May 2003*

## RESEARCH EXPERIENCE

**Scientist | Centre for Fuel Cell Technology, ARCI, Chennai Division**

*Jan 2021 – Till Now*

**Project Scientist C | Centre for Fuel Cell Technology, ARCI, Chennai Division**

*Sep 2018 - Dec 2020*

**Project Middle-level Scientist | Centre for Fuel Cell Technology, ARCI, Chennai Division**

*Dec 2016 - Sep 2018*

**Project Officer | Centre for Innovation (CFI), Indian Institute of Technology Madras**

*Jul 2013 - Aug 2013*

**Project Assistant -II | CEPD, National Chemical Laboratory, Pune, India**

*Feb 2006 - July 2006*

## TEACHING EXPERIENCE

**Temporary Faculty (on Contract) | National Institute of Technology Tiruchirappalli  
Department of Metallurgical and Materials Engineering**

*Sep 2013 - Dec 2016*

- Taught graduate and post-graduate courses for B.Tech and M.Tech students of Metallurgical and Materials Engineering department
- Taught graduate courses for B.Tech students of Mechanical, Production, Chemical and Electrical Engineering divisions
- Handled laboratory courses for B.Tech students of above mentioned streams.
- Co-guided B.Tech and M.Tech MME students towards their research thesis
- Actively involved in departmental activities towards NBA accreditation, Conclave on Academic Reforms, Syllabus/Curriculum modifications

## PATENT

**DURABLE CORROSION RESISTANT COATING FOR FUEL CELL SEPARATOR AND THE PROCESS THEREOF (Indian Patent filed)**

## PUBLICATIONS

### BOOK CHAPTER

1. A chapter on **“RECENT DEVELOPMENTS IN HYDROGEN FUEL CELL: STRENGTH AND WEAKNESS”** authored by Natarajan Rajalakshmi, Rengarajan Balaji and **Sundararajan Ramakrishnan**, in the **“Handbook on Sustainable Fuel Technologies: Developments and Perspectives”**, 2021, Elsevier (Pg. No.431-480) (ISBN: 978-0-12-822989-7).
2. A chapter on **“HIGH TEMPERATURE PROTON EXCHANGE MEMBRANE - AN INSIGHT”** authored by **Sundararajan Ramakrishnan**, Krishnan Ramya, Natarajan Rajalakshmi in book titled **“PEM Fuel Cells - Fundamentals, Advanced Technologies, and Practical Application”**, 2022, Elsevier (Pg.No.223-243) (ISBN: 978-0-12-823708-3).

### INTERNATIONAL JOURNAL

1. **“Aligning carbon nanotubes, synthesized using the arc discharge technique, during and after synthesis”**, Joseph Berkman, **S Ramakrishnan**, Gaurav Jain, Prathap Haridoss, **Carbon** 55 (2013) 185-195 [ISSN: 0008-6223]. **[Impact Factor: 9.54]**

### CONFERENCE PROCEEDING

1. **“Purification of carbon nanotubes using liquid Bromine”**, **S Ramakrishnan**, Prathap Haridoss, Proceedings of International Symposium for Research Scholars on Metallurgy, Materials Science and Engineering (ISRS 2010) published by Department of Metallurgical & Materials Engineering, IIT Madras, Chennai 600036, India. [ISSN No: 0973-659x, 128-132].

### INTERNATIONAL CONFERENCES

1. **“Corrosion behaviour of steels used in automobile”**, R. Elansezhian, **S Ramakrishnan**, East Asia Pacific conference on corrosion CORCON-2005, organized by NACE International India section, Chennai.
2. **“Influence of micro-porous layer on the hydrophobic nature of Gas Diffusion Layer in a PEM Fuel Cell”**, **S Ramakrishnan**, Prathap Haridoss, International symposium & exhibition on Fuel Cell technologies, FUCETECH 2009, Mumbai.

3. **“Influence of functionalization and surfactant addition on the morphology and dispersion of multiwalled carbon nanotubes in polymer matrices”**, S Ramakrishnan, Prathap Haridoss, International conference on Nanoscience & Nanotechnology, ICANN 2009, IIT Guwahati.
4. **“Purification of carbon nanotubes using liquid Bromine”**, S Ramakrishnan, Prathap Haridoss, International symposium for research scholars on Metallurgy, Materials Science and Engineering, ISRS 2010, IIT Madras, Chennai.
5. **“High yield formation of carbon nanotubes using arc discharge assisted with nitrogen jet”**, Joseph Berkman, S Ramakrishnan, Prathap Haridoss, International symposium for research scholars on Metallurgy, Materials Science and Engineering, ISRS 2010, IIT Madras, Chennai (The paper received “Best Paper presentation” in Oral session).
6. **“Horizontal alignment of multi-walled carbon nanotubes by mechanical forces on the surface of the arc discharge synthesized soot”**, Joseph Berkman, S Ramakrishnan, Prathap Haridoss, International symposium for research scholars on Metallurgy, Materials Science and Engineering, ISRS 2012, IIT Madras (The paper received “Best Paper presentation” in Oral session).
7. **“Effect of Microstructure and the interface on Localized Corrosion in Metallic Nitride Coated Metallic Flow Field Plate in Simulated Low-Temperature Fuel Cell Conditions”** Sundararajan Ramakrishnan, Krishnan Ramya, Natarajan Rajalakshmi and Shobit Omar, 240th ECS Meeting (Digital Presentation), October 2021.

#### **NATIONAL CONFERENCES**

1. **“Horizontal alignment of multiwalled carbon nanotubes by mechanical forces on the surface the arc discharge synthesized soot”** Joseph Berkman A, S Ramakrishnan, and Prathap Haridoss, National Metallurgists Day, NMD 2012, Jamshedpur.
2. **“Electrodeposition of conducting polymer over metallic bipolar plate for PEM fuel cell application- Preliminary analysis”** S. Ramakrishnan, N. Rajalakshmi, National Conference on Recent Advances in Chemistry (RAC-19), January 2019, Anna University, Chennai (**Best Oral Presentation**)
3. **“Investigations on conducting polymer-coated metallic bipolar plate in simulated proton exchange membrane fuel cell conditions”**, Sundararajan Ramakrishnan, Krishnan Ramya, Natarajan Rajalakshmi and Shobit Omar, National Conference on Energy Technologies (NCET 2022), organized by INAE Chennai Chapter along with IIT Madras and ARCI, April 2022.

#### **ACHIEVEMENTS**

- ✓ **Won “CERTIFICATE OF MERIT” in National Level Science Talent Search Exam (NLSTSE) 1999.**
- ✓ **QUALIFIED in Graduate Admission Test in Engineering (GATE) 2005 in ENGINEERING SCIENCES - AIR 234.**
- ✓ **Recipient of Fellowship (2006-2009) from Ministry of Human Resource Development, India.**

#### **WORKSHOPS/CONFERENCES ATTENDED**

- ✓ **Short term course on CFD of Convective Heat and Mass transfer at CFD Centre, IIT Madras, Chennai from 18th – 22nd September, 2006.**

- ✓ An Indo-UK workshop on Low carbon technologies for Decentralized power production 17th-18th March, 2008 sponsored by British Council & Asian Pacific Centre for Energy and Environment.
- ✓ TWISHA'09, National Seminar on advanced polymers followed by workshop on Fuel cell technology organized by Department of Polymer Engineering, Mahatma Gandhi University College of Engineering, Kerala from 23rd-24th January 2009.
- ✓ CMS'09, Computational Materials Science workshop organized by the Department of Materials Engineering at Indian Institute of Science (IISc), Bangalore and the UGC Networking Resource Centre for Materials (NRC-M) from 6th-8th March 2009.
- ✓ One day workshop on Atom Probe Tomography organized by the Department of Metallurgical and Materials Engineering, IIT Madras, India, Combinatorial Sciences and Materials Informatics Collaboratory (CoSMIC), Iowa State University, USA and Defence Metallurgical Research Laboratory (DMRL), India on 9th January 2012.
- ✓ One day course on Microscopic Techniques in Materials Characterization organized by the Department of Metallurgical and Materials Engineering, National Institute of Technology Tiruchirappalli, India on 10th October 2014.
- ✓ One day course on Structural Characterization organized by the Department of Metallurgical and Materials Engineering, National Institute of Technology Tiruchirappalli, India on 14th October 2014.
- ✓ Workshop on "Atom Probe Tomography" at International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad on 7th September 2018 and presented the work on "Concentration Profile and Spatial Distribution of elements in PEM Fuel Cell Catalyst and Coatings over Metallic Flow Field Plate"
- ✓ Participated in All India Training Programme Industrial Metal Finishing, Electroplating Technologies, Aerospace Chemical/Process and Effluent Treatment Processes, organized by The Electrochemical Society of India in association with Dept. of Inorganic and Physical Chemistry, IISc Bengaluru on 5th – 7th March 2010.

#### INVITED LECTURES

- **"Fuel Cells"**, Engineering Materials and Manufacturing Processes (EMMP 2013), National Institute of Technology Tiruchirappalli, 18th December 2013
- **"Wonder Materials of the 21st Century"**, Advanced Materials and Manufacturing Methods (A3M), National Institute of Technology Tiruchirappalli, 7th June 2016.