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Academic Chronicle:

Ph. D. – University of Madras, India – 2018 (thesis to be submitted)

Master of Science – Chemistry (70 %) – Sacred Heart College (Thiruvalluvar University), India – 2010

Bachelor of Science – Chemistry (65 %) – Islamiah College (Thiruvalluvar University), India – 2007

Research Experience:

- **Organization:** CSIR-Central Electrochemical Research Institute (CECRI) - Madras unit. (www.csirmadrascomplex.gov.in/cecri.html)
- **Period:** 5.5 years from 01/03/2011 to 31/09/2016
- **Ph.D. Research Topic:** "Development and characterization of stable & high performing anion exchange membranes for alkaline polymer electrolyte fuel cells (APEFCs) and alkaline direct methanol fuel cells (ADMFCs)"

  - The work focuses on the development of anion exchange membranes for alkaline fuel cells (APEFCs and ADMFCs) with excellent ionic conductivity and chemical stability.

List of Journal Publications:

1. **K. Hari Gopi**, Santoshkumar D. Bhat, "Anion exchange membrane from polyvinyl alcohol functionalized with quaternary ammonium groups via alkyl spacers", **Ionics** 2017 (https://doi.org/10.1007/s11581-017-2272-x).

2. **K Hari Gopi**, Santoshkumar D Bhat, Akhila Kumar Sahu, P Sridhar, "Quaternized poly(phenylene oxide) anion exchange membrane for alkaline direct methanol fuel cells in KOH-free media", **Journal of Applied Polymer Science** 2016, 133, 43693.

3. **K Hari Gopi**, S Gouse Peera, S D Bhat, P Sridhar, S Pitchumani, "Preparation and characterization of quaternary ammonium functionalized poly (2, 6-dimethyl-1, 4-phenylene oxide) as anion exchange membrane for alkaline polymer electrolyte fuel cells", **International Journal of Hydrogen Energy** 2014, 39, 2659-2668.

4. **K Hari Gopi**, S Gouse Peera, S D Bhat, P Sridhar, S Pitchumani, "3-Methyltrimethylammonium poly (2, 6-dimethyl-1, 4-phenylene oxide) based anion exchange membrane for alkaline polymer electrolyte fuel cells", **Bulletin of Materials Science** 2014, 37, 877-881.

5. S Sasikala, **K Hari Gopi,** Santoshkumar D Bhat, "Sulfosuccinic acid-sulfonated polyether ether ketone/organo functionalized microporous zeolite-13X membrane electrolyte for direct methanol fuel cells", **Microporous and Mesoporous Materials** 2016, 236, 38–47.

6. S Gouse Peera, S Meenakshi, **K Hari Gopi**, Santoshkumar D Bhat, P Sridhar, S Pitchumani, "Impact on the ionic channels of sulfonated poly (ether ether ketone) due to the incorporation of polyphosphazene: a case study in direct methanol fuel cells", **RSC Advances** 2013, 3, 14048-14056.

Research work presented in National/International Conferences:

1. K. Hari Gopi, Ashwin Nambi and N. Rajalakshmi, "Development of air cooled PEFC stack - design of land and pillar flow field and its flow analysis validation by computational fluid dynamics (CFD)", Poster presentation in **6th International**

Hydrogen and Fuel Cell Conference (IHFC-2017) held during 10–12 December 2017 at Hotel Hyatt, Pune.

2. K. Hari Gopi and Santoshkumar D. Bhat, "Development of anion exchange membrane electrolyte from polyvinyl alcohol functionalized with quaternary ammonium groups via alkyl spacers", Oral presentation in **International Conference on Membrane Technology and its Applications (MEMSEP 2017)** held during 21–23 February 2017 at National Institute of Technology, Tiruchirappalli.

3. K. Hari Gopi, Santoshkumar D. Bhat and Akhila Kumar Sahu, "Quaternized poly (2,6-dimethyl-1,4-phenylene oxide) anion exchange membrane for alkaline direct methanol fuel cells (ADMFCs)", Poster presentation in **International Symposium on Polymer Science and Technology (MACRO-2015)** held at Indian Association for the Cultivation of Science, Kolkata during 23–26 January 2015.

4. K. Hari Gopi, Santoshkumar D. Bhat and Akhila Kumar Sahu, "Quaternized poly (2,6-dimethyl-1,4-phenylene oxide) anion exchange membrane for alkaline direct methanol fuel cells (ADMFCs)", Oral presentation in **International Conference on Electrochemical Science and Technology (ICONEST-2014)** held at Indian Institute of Science (IISC), Bangalore during 7–9 August 2014.

5. K. Hari Gopi, Santoshkumar D. Bhat and Akhila Kumar Sahu, "Quaternized poly (2,6-dimethyl-1,4-phenylene oxide) anion exchange membrane for alkaline direct methanol fuel cells (ADMFCs)", Poster presentation at National Convention of Electrochemists **(NCE -18)** on **Emerging Trends in Electrochemical Engineering, Science and Technology** during 23–24 July 2014, at School of Chemistry-Madurai Kamaraj University, Madurai.

6. K. Hari Gopi presented in the **Indo-US Science and Technology Forum (IUSSTF-2014)** held at Hotel Green Park, Chennai during 3–4 April 2014.

7. K. Hari Gopi, S. Gouse Peera, Santoshkumar D. Bhat, P. Sridhar and S. Pitchumani, "Preparation and characterization of quaternary ammonium functionalized poly(2,6-dimethyl-1,4-phenylene oxide) as anion exchange membrane for alkaline polymer

electrolyte fuel cells", Poster Presentation in **4th International Conference on Advances in Energy research (ICAER-2013)** held at Indian Institute of Technology Bombay during 10–12 December 2013.

Technical Skills:

- Synthesis of novel polymer electrolyte membranes for fuel cell application and their physico-chemical characterization (NMR, FT-IR, AFM, SEM, TGA, etc.)

- Electrochemical evaluation (Ionic conductivity & durability) of fabricated polymer membranes.

- Assembly and single cell testing of in-house synthesized membrane for APEFC & ADMFC studies.

- Fabrication of Membrane Electrode Assembly (MEA) of varying active area by techniques like Brush coating, Decal method.

- **Instruments handled:**

  - Fuel cell test stations: Bitrode LCN100-36 (electronic load) & BioLogic FCT-150S
  - K-coater (CCM electrode preparation)
  - UV-Visible spectrophotometer - UV-2450 (Shimadzu, Japan)
  - Autolab - PGSTAT-30 (FRA, GPES)
  - Biologic VSP - Modular 5 Channel Potentiostat (VMP 3B-20)
  - FT-IR spectrophotometer - Nicolet 6700 (Thermo Scientific).
  - Density Meter - Mettler Toledo
  - Universal Testing Machine - AGS-J 10kN (Shimadzu Autograph)

- Simultaneous TG-DSC analyzer - STA 449 (NETZSCH, Germany)

- **Software Packages:** MS Office, Origin, ChemDraw, ChemSketch, ANSYS-CFD