Research Projects handled as Principal Investigator

S. No	Title	Sponsoring Agency	Period	Amount (in Lakhs)	Achievements
1	Hydrogen Energy	CSIR	Apr 2012-Mar 2017	430.00	Development of newer membranes and catalysts for polymer electrolyte fuel cells
2	New polymer electrolyte membranes for direct methanol fuel cells	SERB	Jul 2012-Jan 2016	21.26	Development of composite membranes for direct methanol fuel cells
3	Modified anion exchange membranes for alkaline polymer electrolyte fuel cells	CSIR	Jan 2014-Jan 2019	25.00	Development of quaternized polymer membranes for alkaline fuel cells
4	Demonstration and Validation of 3 kWe PEMFC System	NMITLI	Oct 2013-Dec 2016	183.00	Development of 3 kWe water cooled stack. Tested and Validated in Reliance test bed site.
5	Demonstration and Validation of LT-PEMFC System for Automotive Application	IOP-NMITLI-KPIT, Pune	Jul 2016-Mar 2020	331.00	Development of stack with metallic bipolar plates for automotive applications
6	Demonstration and Validation of a 5 kW HT PEMFC based Combined Cooling and Power System	IOP-NMITLI-Thermax	Jul 2016-Mar 2020	252.00	Development of 5 kW high temperature stack with indigenous components
7	Demonstration and Validation of Hydrogen Ecosystem for Stationary Power Backup Application for Telecommunication Towers	DST-HFC	Oct 2019-March 2024	211.00	Development of 1 kW open cathode fuel cells for stationary application
8	Development of PEMFC Components-Indigenous proton exchange membrane for polymer electrolyte fuel cells	CSIR-Hydrogen Technology Mission	April 2022-March 2025	103.2	Development of alternate composite membranes for low humidity fuel cells and also testing of PVDF membranes in collaboration with CSIR-CSMCRI
9	Scale up of short side chain PFSA composite membrane for low humidity polymer electrolyte fuel cells	CSIR-FTT	April 1st 2024-March 31st 20226	159.40	Ongoing
10	Reinforced perflurosulfonic acid short-chain ionomers and sulfophenylated polyphenylenes with radical scavengers and expanded substrate support via self-polymerization: Its impact as composite membrane in polymer electrolyte fuel cells	SERB-CRG	Janaury 30th 2024-Janaury 29th 2027	27.9	Ongoing
11	CSIR-Hydrogen Technology Phase-II: Developing and Establishing Hydrogen as Next Gen Fuel: Vertical 3-Hydrogen	Mission Mode	April 1st 2025-March 31st 2028	170	ONGOING

Number of Students Guided:

Ph.D. students guided: 7 (AcSIR and Madras University)
M.Sc. and M-Tech Students guided: 4 (AcSIR and Madras University)

Deputation abroad

- For the invited talk at CIMTEC 2010, Montecatine Terme, Italy during June 2010
- For the invited talk at ECS Meeting, 2011, Montreal Canada, during May 2011
- For carrying out research at CNR-ITAE under Indo-Italy Bilateral exchange Programme during July 04- July 11th, 2014
- To avail Raman Research Fellowship at University of South Carolina, USA from March to May 2024

Technologies Developed/ Transferred

- Co-ordinated the development of 10 kW LT-PEMFC stack for automobile application
- Contributed to the development of high temperature stack for 3-wheeler for TVS motors and Thermax for CHP application.
- Contributed to the development of 1 kW PEFC stacks to IGCAR Kalpakkam for hydrogen removal.
- Contributed to the development of 40 W portable DMFC and DBFC system. Technology transferred to Genex Ltd Mumbai.
- Contributed towards the development of alternative membranes for PEFC in the project from Applied Materials, EMPOWER and FTT programmes.
- Technology transfer of LT-PEMFC system to M/s. KPIT, Pune