

PRIYA . V

Room No: 112, Department of Chemistry, University of Calicut, Malappuram, Kerala, India 673635

• +91-8606497319 • priyavallayil@gmail.com & cy18d106@smail.iitm.ac.in

OBJECTIVE

To obtain a post doctoral research position that challenges me and provides the opportunity to reach my potential professionally and personally by utilizing my abilities and prove to be an asset to your organization and the society

EDUCATION

Ph. D. in Electro Organic Chemistry **Jan 2019 - June 2024**

Advisor: Prof. S. Sankararaman and Prof. R. Kothandaraman

Indian Institute of Technology Madras (IIT Madras), Chennai, India

(Thesis title: Molecular Engineering of Aromatic Redox Shuttles and their Application in Organic Redox Flow Batteries and Metal-ion Batteries)

Ph. D Viva Voce completed on 13.06.2024

M. Sc Chemical sciences **July 2016 - May 2018**

Pondicherry University, **78 %** (1st class)

B. Sc Chemistry **July 2013 - May 2016**

Calicut University, **87.75 %** (Distinction)

Higher Secondary (12th std) **July 2011 - Mar 2013**

Kerala State Board, **96.4 %** (Distinction)

High School (10th std) **Mar 2011**

Kerala State Board, **99 %** (Distinction)

WORK EXPERIENCE

Adhoc Assistant Professor of Chemistry **August 2024-present**

ACHIEVEMENTS AND AWARDED FELLOWSHIPS

- DST-INSPIRE Scholar (2013-2018)
- Qualified GATE-2018, 2019
- Awarded “Junior Research Fellowship” IIT Madras (January 2019 – December 2020)
- Awarded “Senior Research Fellowship” IIT Madras (January 2021 –December 2023)
- Recipient of Institute Research Award-2023 from IIT Madras
- Recipient of Women Leading IITM Award-2024 from IIT Madras

COMPETENCE

- Skilled in multistep synthesis and have expertise in preparing and purifying organic compounds on a milligram to gram scale.
- Well experienced in handling dry reactions, and various sensitive reagents.
- Structural elucidation of complex organic molecules using NMR spectroscopy (^1H , ^{13}C), HRMS, FT-IR, single crystal XRD, etc.
- Experienced in handling analytical tools such as FT-IR, NMR, and UV-Visible spectroscopy.
- Strong ability to make and present scientific reports.
- Experienced in electrochemical characterization of prepared materials for battery testing by different techniques such as cyclic voltammetry (CV), linear sweep voltammetry (LSV), electrochemical impedance spectroscopy, etc.
- Well experienced in organic redox flow and metal-ion cell assembling and operation
- Physical and chemical characterization of electrode materials by different techniques such as Raman, TGA/DSC, SEM/EDX, BET, Powder XRD etc.
- Good knowledge of Microsoft Office (Word, Excel, PowerPoint), Scifinder, Chem Draw, Topspin, origin, and other advanced digital tools.
- Mentoring and guiding of M.Sc., intern students for their projects
- Teaching assistantship for M.Sc. and B. tech classes
- Teaching assistantship for NPTEL courses

PATENTS

- **P. Vallayil**, S. Sankararaman, K. Ramanujam; Enhancing capacitor type behavior of Trinaphthylene-hexaone cathode-based battery when Zn replaced by Li anode (Patent filed provisionally, Patent No: IP80839)

PUBLICATIONS

- **P. Vallayil**, V. Padalkar, C. Nandi, K. Ramanujam, S. Sankararaman; An engineered electrode of phenazine with suitable binder and carbon to exhibit excellent energy and power density in an aqueous organic zinc ion battery; *J. Power Sources*, 2024, **597**, 234153
- **P. Vallayil**, S. Sankararaman, K. Ramanujam; Structurally and electrochemically tunable Pyrylium platforms: A new class of redox anolyte for non-aqueous organic redox flow battery operating at a high-current density; *J. Energy Storage*, 2023, **58**, 106325
- **P. Vallayil**, K. Ramanujam, S. Sankararaman; A new 2,3-dimethoxy-1,4-naphthoquinone redox anolyte for non-aqueous organic static redox battery; *Electrochim. Acta*, 2022, **407**, 139889
- **P. Vallayil**, S. Sankararaman, K. Ramanujam; Enhancing capacitor type behavior of Trinaphthylene-hexaone cathode-based battery when Zn replaced by Li anode (Manuscript submitted)
- M. Shoaib, **P. Vallayil**, N. Jaiswal, P. I. V. Subha, S. Sankararaman, K. Ramanujam, V. Thangadurai; Recent Advances in Redox Flow Battery Technology – A Comprehensive and Critical Review on Electrolyte Developments and Engineering Perspective (*Adv. Energy Mater.* 2024, **14**, 2400721)

INSTRUMENTS HANDLED

- Handling software such as Origin 9, ChemDraw 20.1.1, Top spin, Mercury, Orignalys, MS Office-19, Nova etc.
- Handling Instruments such as Biologic, Autolab, Orignalys, IR and UV-vis spectrophotometer, Bruker NMR spectrometer etc.

CONFERENCE & WORKSHOPS

1. Oral presentation at REN-2023, **Paris, France** (Oct 23-25, 2023)
2. Oral presentation at RAiSE-2021, **IIT Madras** (Dec 2-4, 2021) (Virtual conference)
3. Oral presentation at IECS-2023, **Research Park, IIT Madras** (Jan 18-21, 2023)
4. Poster presentation at 29 CRSI National Symposium in Chemistry & CRSI-ACS Symposium series in Chemistry, **IISER Mohali** (July 7-9, 2022)
5. Poster presentation at 22 National Convention of Electrochemists, **PSG Tech, Coimbatore** (August 26-27, 2022)
6. Poster presentation at Chemistry in House Symposium (CiHS-2022), **Department of Chemistry, IIT Madras** (September 14, 2022)

REFERENCE:

Prof. Sankararaman S.

Department of Chemistry,
Indian Institute of Technology Madras, Chennai
Email sanka@iitm.ac.in

Prof. Kothandaraman R.

Department of Chemistry,
Indian Institute of Technology Madras, Chennai
Email rkraman@iitm.ac.in & rkraman@smail.iitm.ac.in

Declaration :

I hereby declare that the details stated above are true and correct to the best of my knowledge.