Name : Dr. R. Joy Salomi
Designation : Assistant Professor
Email ID : joysalomi@ldc.edu.in

EDUCATIONAL QUALIFICATION

Degree	Subject	Institution	University	Month &Year of Passing	Percentage	Class
Ph.D.	Mathematics	AMET Deemed to be University	AMET Deemed to be University	February 2023	-	-
M.Sc.	Mathematics	Lady Doak College	Madurai Kamaraj University	April 2018	90%	First Class with Special Distinction
B.Sc.	Mathematics	Lady Doak College	Madurai Kamaraj University	April 2016	85%	First Class with Special Distinction

Qualification	Institution	District	Month & Year of Passing	Percentage
HSC	St. Joseph's Girls' Higher Secondary School	Madurai	March 2013	88 %
SSLC	St. Joseph's Girls' Higher Secondary School	Madurai	March 2011	97 %

TEACHING EXPERIENCE

Designation	Subject	Name of the Institution	From	To
Part-Time Lecturer (SF)	Mathematics	Lady Doak College, Madurai	04.06.2018	31.10.2018
Assistant Professor (SF)	Mathematics	Lady Doak College, Madurai	20.11.2018	10.04.2019
Assistant Professor (SF)	Mathematics	The American College, Satellite Campus, Madurai	11.08.2022	31.07.2023

Assistant Professor (SF)	Mathematics	Lady Doak College, Madurai	01.08.2023	30.09.2023
Assistant Professor (Aided)	Mathematics	Lady Doak College, Madurai	03.10.2023	Till now

RESEARCH DETAILS

Area of specialization: Mathematical Modelling, Nonlinear Differential Equations

Research Title : Mathematical Modelling in Nonlinear Chemical Processes

Institution : Academy of Maritime Education and Training (AMET), Deemed to be University, Kanathur, Chennai.

Category : Full-time

Duration : May 2019 - May 2022

Date of Ph.D. Viva Voce Examination : 23.02.2023

Supervisor : Dr. L. Rajendran, Professor, Department of Mathematics, AMET Deemed to be University, Chennai.

Credential : Proposed a new analytical method named "**Rajendran-Joy method"** to solve nonlinear differential equations in my article "Cyclic voltammetric response of homogeneous catalysis of electrochemical reactions: Part 1. A theoretical and numerical approach for EE'C scheme", Journal of Electroanalytical Chemistry, 918 (2022) 116429. https://doi.org/10.1016/j.jelechem.2022.116429 **(Elsevier, Science Citation & Scopus Indexed).**

Google Scholar link : https://scholar.google.com/citations?user=GO7eyXwAAAAJ&hl=en

Scopus link : https://www.scopus.com/authid/detail.uri?authorId=57218119454

PUBLICATIONS

Title of the Article	Name of the Journal	Volume, Issue, Page No.	DOI/URL address	Year of publication
Electric potential and surface oxygen ion density for planar, spherical and cylindrical metal oxide grains	Sensors & Actuators: B. Chemical **(Elsevier)**	321, 128576	https://doi.org/10.1016/j.snb.2020.128576	2020
Nonlinear Roll Motion of Ships Using Akbari-Ganji Method	International Journal of Advanced Science and Technology	29(6s), 311-317	http://sersc.org/journals/index.php/IJAST/article/view/8765	2020
Mathematical modeling of hydrogen evolution at a rotating disk electrode	AIP Conference Proceedings	2277, 130012(1-11)	https://doi.org/10.1063/5.0025576	2020

Poisson–Boltzmann Equation and Electrostatic Potential Around Macroions in Colloidal Plasmas: Taylor Series Approach	Solid State Technology	63(6), 10090-10106	http://solidstatetechnology.us/index.php/JSST/article/view/5644	2020
Transient Current of Catalytic Processes at Chemically Modified Electrodes	International Journal of Electrochemical Science **(Elsevier)**	16, 210452	https://doi.org/10.20964/2021.04.36	2021
An Approximate Analytical Solution of Nonlinear Equations in N-Aminopiperidine Synthesis: New Approach of Homotopy Perturbation Method	Turkish Journal of Computer and Mathematics Education	12(1S), 595-605	https://doi.org/10.17762/turcomat.v12i1S.1935	2021
Solving nonlinear reaction–diffusion problem in electrostatic interaction with reaction-generated pH change on the kinetics of immobilized enzyme systems using Taylor series method	Journal of Mathematical Chemistry **(Elsevier)**	59(5), 1332-1347	https://doi.org/10.1007/s10910-021-01241-7	2021
Transient current, sensitivity and resistance of biosensors acting in a trigger mode: Theoretical study	Journal of Electroanalytical Chemistry **(Elsevier)**	895, 115421	https://doi.org/10.1016/j.jelechem.2021.115421	2021
Kinetics of the Catalytic Combustion of Ethanol and Ethyl Acetate with Estimation of Activation Energy and Rate Constants: An Analytical Study	Current Catalysis **(Bentham Science)**	10(2), 108-118	https://doi.org/10.2174/2211544710666210903115735	2021
Theoretical and Numerical Analysis of Nonlinear Processes in Amperometric Enzyme Electrodes with Cyclic Substrate Conversion	Electrochem **(MDPI)**	3, 70–88	https://doi.org/10.3390/electrochem3010005	2022
Theoretical analysis of transient responses of amperometric biosensor based on the phenol–polyphenol oxidase model	International Journal of Electrochemical Science **(Elsevier)**	17, 22047	https://doi.org/10.20964/2022.04.42	2022
Amperometric biosensors and coupled enzyme nonlinear reactions processes: A complete theoretical and numerical approach	Electrochimica Acta **(Elsevier)**	415, 140236.	https://doi.org/10.1016/j.electacta.2022.140236	2022
Cyclic voltammetric response of homogeneous catalysis of	Journal of Electroanalytical	918, 116429	https://doi.org/10.1016/j.jelechem.2022.116429	2022

electrochemical reactions: Part 1. A theoretical and numerical approach for EE'C scheme	Chemistry **(Elsevier)**			
Analytical expression of substrate concentration in biofilm reactor using Taylor series method	AIP Conference Proceedings	2516, 250001(1-9)	https://doi.org/10.1063/5.0108648	2022
Transport and kinetic analysis of amperometric response towards PPO-based rotating disk bioelectrodes	Journal of Electroanalytical Chemistry **(Elsevier)**	928, 117067	https://doi.org/10.1016/j.jelechem.2022.117067	2023
Mathematical modelling of enzymatic glucose fuel cell and numerical validation	Journal of Electroanalytical Chemistry **(Elsevier)**	936, 117382	https://doi.org/10.1016/j.jelechem.2023.117382	2023
Formal analysis of isothermal reaction/diffusion in a defined general geometry	International Journal of Electrochemical Science **(Elsevier)**	18, 100296	https://doi.org/10.1016/j.ijoes.2023.100296	2023

BOOK CHAPTER PUBLISHED

R. Joy Salomi, L. Rajendran, Mathematical Modelling of Transport and Kinetics of Substrate and Redox Mediator within Chemically Modified Electrodes, Emerging Technologies and Innovative Research in Science, Engineering and Management - ETIRSEM 2021, Publisher: DK International Research Foundation. **ISBN: 978-93-90956-62-3**.

PAPERS PRESENTED IN CONFERENCES

- Presented the paper entitled "***Solving nonlinear reaction-diffusion problem in enzymes immobilized artificial membrane involving Michaelis–Menten kinetics***" in the **International Conference on Computational and Applicable Mathematics** (ICCAM - 2022) organized by Department of Mathematics, The Quaide Milleth College for Men, Medavakkam, Chennai on 03.03.2022 & 04.03.2022.
- Presented the paper titled "***Analytical solution of amperometric biosensors modelling for different enzyme kinetics using Akbari Ganji method***" in the **International Conference on Advanced Mathematical Modeling and Computational Techniques** organized by the Department of Mathematics, AMET Deemed to be University, Chennai during 28th to 30th June 2021. **ISBN: 978-93-85434-84-6.**

- Presented the paper entitled "***Analytical expression of substrate concentration in biofilm reactor using Taylor series method***" in the **International Conference on Mathematical Techniques and Applications** (e-ICMTA- 2021) organized by Department of Mathematics, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India held on 24th to 26th March, 2021.
- Presented the paper titled "***Mathematical modeling of roll motion of ships: Akbari – Ganji method***" in the **National Conference on Recent Trends In Graph Theory & Mathematical Modeling** conducted by the Departments of Mathematics, Sethu Institute of Technology held on 5th February 2021.
- Presented the paper titled, "***Nonlinear dynamics on rolling of ships using Akbari-Ganji's method***" in the **International Conference on Mathematical Computer Engineering** organized by the Mathematics Division, School of Advanced Sciences, Vellore Institute of Technology, Chennai during 21-22 February 2020. **ISBN: 978-93-81899-37-3.**
- Presented the paper entitled "***Analytical solution of convection diffusion coefficient equation at a rotating disk electrode***" in the **International Conference on Mathematical Techniques and Applications** (ICMTA-2020) organized by Department of Mathematics, SRMIST, Kattankulathur, India during 30th January to 1st February 2020, sponsored by Science and Engineering Research Board (DST-SERB), this paper communicated in '***AIP conference proceeding'***.

NPTEL COURSE COMPLETED

- NPTEL Online Certification Course on "Descriptive Statistics with R Software" with 92% funded by the MoE, Govt. of India during August – October 2024.

AWARDS & HONORS

- Third prize for proficiency in Major (Mathematics) during the academic year 2016-2017 (I M.Sc.) at Lady Doak College.
- Third prize for proficiency in Major (Mathematics) during the academic year 2017-2018 (II M.Sc.) at Lady Doak College.
- Personal Meritorious Achievement prize for maintaining good academic record at Lady Doak College.

- Rengasamy Memorial prize for being a helpful, cheerful and responsible II. M.Sc. Mathematics student and maintaining good academic record at Lady Doak College.

PARTICIPATIONS

- Participated in **Three days Advanced Training Programme in Algebra and Analysis** from 07.12.2017 to 09.12.2017 organized by Department of Mathematics, **Mepco Schlenk Engineering College**, Sivakasi.
- Participated in the Webinar on "**Impact of Nonlinear Differential Equation in Chemical Sciences**" organized by Science and Humanities of **Hindusthan College of Engineering and Technology** on 30.06.2020.
- Participated in the Second Annual (online) Conference of Mathematics Teachers' Association - 2020 on "**Mathematics Education in Times of the COVID-19 Pandemic**" organized by **Mathematics Teachers' Association (India)** on 5th - 6th September 2020.
- Participated in the Faculty Development Program titled **"Mathematical Sciences Research Challenges for the Next Generation"** organised by the Department of Mathematics, **AMET Deemed to be University** held from 28th to 30th December, 2020.
- Participated in the one day webinar titled "**Mathematical Modelling and It's Application in Sciences and Engineering**" held on 13th March, 2021 organized by the Department of Mathematics, **Academy of Maritime Education and Training** (AMET Deemed to be University) Chennai.
- Participated in webinar on "**Scopus & Web of Science - Beware of Fake Journals**" organized by Centre for Research, AMET Deemed to be University, Chennai on Wednesday, 14th July, 2021.
- Participated in one week International Faculty Development Programme on "**Mathematical Modelling and Data Analytics**" from 23.12.2021 to 29.12.2021 organized by Department of Mathematics, **AMET**.
- Participated in IP Awareness/Training program under "**National Intellectual Property Awareness Mission**" on January 04, 2022 organized by **Intellectual Property Office,** India.
- Participated in Launch of online workshop for Universities and Colleges on Intellectual Property Rights on "**Intellectual Property Rights**" on 17th January, 2022 organized by **UGC**.

- Participated in the National Seminar on "**Current Scenario in Graph Theory and its Applications**" under DBT Star College Scheme on 11.02.2022 organized by the Department of Mathematics, **V.V.Vanniaperumal College for Women,** Virudhunagar.
- Participated in the International Webinar on "**Mathematical Principles, Challenges and Innovations in Intelligent Systems**" organized by the Department of Mathematics, **Coimbatore Institute of Tachnology**, Coimbatore, India on 23rd and 24th February 2022.
- Participated in the National Webinar on "**Recent Advances in Mathematics and its Applications**" held during 10-11 March, 2022 organized by the Department of Pure Mathematics, **University of Calcutta**, India.
- Participated in the virtual national workshop on "**Invitation to the Theory of NP – Completeness**" organized by the Department of Mathematics, **Sri Sivasubramaniya Nadar College of Engineering**, Kalavakkam, India during 25-26, March 2022.
- Participated in the five days National level virtual faculty development programme entitled "**Achieving Excellence in Higher Education & Research**" conducted by **A.C.T. Academy**, Tamil Nadu & Academic and Research Conglomerate (AARC) from 26 December 2022 to 30 December 2022.
- Participated in the International Seminar / Webinar on "**Neoteric Applications in Mathematics**" organized by PG and Research Department of Mathematics, **Thiagarajar College**, Madurai on 8th and 9th November 2022.
- Participated in the one day interactive workshop on "**Art & Science of Methodical Scientific Writing and Publishing in a High-impact Journal**" organized by IQAC and Office of the Dean for Curriculum & Research, **The American College**, Madurai on 06.03.2023.
- Participated in the 2-day WordPress Website Development Workshop held on June 3rd and 4th, 2024
- Participated in a 3 day workshop on "**Unlocking the secrets of Scientific Writing and Publications**" organized by the centre for Women's studies [UGC supported] & Research and Development cell, Lady Doak College in collaboration with Madras Christian College Research Colloquium from 05th to 07th February 2025.
- Participated in the National Level Transdisciplinary Faculty Development Program on "**Mathematics in the Era of AIAdapting to Emerging Trends and Tools**" (Virtual Mode) organized by the Department of Mathematics, PSGR Krishnammal College for Women, Coimbatore, in association with V.O. Chidambaram College, Thoothukudi and Sri Sarada College for Women, Salem from 17th to 22nd February 2025.

- Participated in One-Week Faculty Development Programme on "**Cybersecurity Trends and Challenges in Higher Education Institutions(HEIs)**" organized by E&ICT Academy IIT Guwahati held from 24th to 28th March, 2025 in association with Lady Doak College, Madurai.

ORGANIZING COMMITTEE MEMBER:

- Served as a member of the organizing committee for the Workshop on "Effective Mathematical Techniques for Qualifying and Excelling in Competitive Examinations" organized by the Department of Mathematics, Lady Doak College, Madurai on 17th October 2024.
- Served as a member of the organizing committee for the One-Day International Seminar on "New Advances in Graph Theory-2025" organized by the Department of Mathematics, Lady Doak College, Madurai, on 28th February 2025.

COMMITTEES SERVED (COLLEGE LEVEL)

2023-2024

- Member, PED Band

2024-2025

- Member, AQAR
- Member, NSS
- Member, Discipline Committee