

**Name** : Ms. R. JOY SALOMI  
**Designation** : Assistant Professor  
**Department** : Mathematics  
**Date of Joining** : 11.08.2022  
**Phone with Extn. No** : 9597675744  
**Email** : joysalomi@americancollege.edu.in,  
prjoysalomi@gmail.com



**Educational Qualification:**

Degree	Subject	College / University & Place	Year Completed
M.Sc	Mathematics	Lady Doak College, Madurai	2018
B.Sc	Mathematics	Lady Doak College, Madurai	2016

**(Ph.D)**

**Status** : Thesis Submitted  
**Duration** : 03.05.2019 - 03.05.2022

**Specialisation in Teaching:** Differential Equations, Analysis

**Specialisation in Research:** Differential Equations

**Research Interests:** Differential Equations

**Other Work Experience:**

Designation	Institution / Company	Year - From (month/year) To (month/year)
Assistant Professor	Lady Doak College, Madurai	20.11.2018 - 10.04.2019
Part-Time Lecturer	Lady Doak College, Madurai	04.06.2018 - 31.10.2018

**Publications:**

**Articles Published in International Journals:**

1. **R. Joy Salomi**, S. Vinolyn Sylvia, L. Rajendran, Marwan Abukhaled, Electric potential and surface oxygen ion density for planar, spherical and cylindrical metal

- oxide grains, *Sensors & Actuators: B. Chemical*, 321 (2020) 128576. <https://doi.org/10.1016/j.snb.2020.128576> (SCI & Scopus Indexed, Impact Factor: 9.221).
2. S. Vinolyn Sylvia, **R. Joy Salomi**, L. Rajendran, M.E.G Lyons, Amperometric biosensors and coupled enzyme nonlinear reactions processes: A complete theoretical and numerical approach, *Electrochimica Acta*, 415 (2022) 140236. <https://doi.org/10.1016/j.electacta.2022.140236> (SCI & Scopus Indexed, Impact Factor: 7.336).
  3. **R. Joy Salomi**, S. Vinolyn Sylvia, L. Rajendran, M.E.G. Lyons, Transient current, sensitivity and resistance of biosensors acting in a trigger mode: Theoretical study, *Journal of Electroanalytical Chemistry*, 895 (2021) 115421. <https://doi.org/10.1016/j.jelechem.2021.115421> (SCI & Scopus Indexed, Impact Factor: 4.598).
  4. **R. Joy Salomi**, L. Rajendran, 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> (SCI & Scopus Indexed, Impact Factor: 4.598).
  5. S. Vinolyn Sylvia, **R. Joy Salomi**, L. Rajendran, Marwan Abukhaled, 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*, 59(5) (2021) 1332-1347. <https://doi.org/10.1007/s10910-021-01241-7> (SCI & Scopus Indexed, Impact Factor: 2.431).
  6. **R. Joy Salomi**, S. Vinolyn Sylvia, Marwan Abukhaled, Michael E.G. Lyons, L. Rajendran, Theoretical analysis of transient responses of amperometric biosensor based on the phenol–polyphenol oxidase model, *International Journal of Electrochemical Science*, 17 (2022) 22047. <https://doi.org/10.20964/2022.04.42> (SCI & Scopus Indexed, Impact Factor: 1.765).
  7. S. Vinolyn Sylvia, **R. Joy Salomi**, M.E.G. Lyons, L. Rajendran, Transient current of catalytic processes at chemically modified electrodes, *International Journal of Electrochemical Science*, 16 (2021) 210452. <https://doi.org/10.20964/2021.04.36> (SCI & Scopus Indexed, Impact Factor: 1.765).

8. S. Vinolyn Sylvia, **R. Joy Salomi**, L. Rajendran, Mathematical modeling of hydrogen evolution at a rotating disk electrode, AIP Conference Proceedings, 2277 (2020) 130012(1-11). <https://doi.org/10.1063/5.0025576> (**Scopus Indexed, Cite score: 0.7**).
9. **R. Joy Salomi**, S. Vinolyn Sylvia, Marwan Abukhaled, L. Rajendran, Kinetics of the catalytic combustion of ethanol and ethyl acetate with estimation of activation energy and rate constants: An analytical study, Current Catalysis, 10(2) (2021) 108-118. <https://doi.org/10.2174/2211544710666210903115735> (**UGC**).
10. S. Vinolyn Sylvia, **R. Joy Salomi**, L. Rajendran, M.E.G Lyons, Theoretical and numerical analysis of nonlinear processes in amperometric enzyme electrodes with cyclic substrate conversion, Electrochem, 3(1) (2022) 70–88. <https://doi.org/10.3390/electrochem3010005> (**MDPI**).
11. **R. Joy Salomi**, S. Vinolyn Sylvia, L. Rajendran, 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) (2021) 595-605. <https://doi.org/10.17762/turcomat.v12i1S.1935>.
12. **R. Joy Salomi**, S. Vinolyn Sylvia, D. Gowthaman, Nonlinear roll motion of ships using akbari-ganji method, International Journal of Advanced Science and Technology, 29(6s) (2020) 311-317.
13. S. Vinolyn Sylvia, **R. Joy Salomi**, L. Rajendran, Poisson–Boltzmann equation and electrostatic potential around macroions in colloidal plasmas: Taylor series approach, Solid State Technology, 63(6) (2020) 10090- 10106.
14. **R. Joy Salomi**, L. Rajendran, Analytical expression of substrate concentration in biofilm reactor using Taylor series method, AIP Conference Proceedings (2022) (**In press**). (**Scopus Indexed, Cite score: 0.7**)

#### **Book Chapter:**

**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**.

### Conference / Seminar Presentations:

1. Presented a 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.
2. Presented a 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 28<sup>th</sup> to 30<sup>th</sup> June 2021. **ISBN: 978-93-85434-84-6.**
3. Presented a 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 24<sup>th</sup> to 26<sup>th</sup> March, 2021.
4. Presented a 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 5<sup>th</sup> February 2021.
5. Presented a 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.**
6. Presented a 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 30<sup>th</sup> January to 1<sup>st</sup> February 2020, sponsored by Science and Engineering Research Board (DST-SERB), this paper communicated in ‘*AIP conference proceeding*’.

### **Awards / Fellowships:**

1. Awarded for exhibiting the exemplary qualities of Altruism, Inclusive Outlook, Creativity, Proactivity, Analytical Thinking, Team Spirit, Voluntarism and Perseverance during my Under Graduate study at Lady Doak College from 2013 to 2016.
2. Secured 3<sup>rd</sup> price for proficiency in Part-III (Mathematics) during the academic year 2016-2017 at Lady Doak College.
3. Secured 3<sup>rd</sup> price for proficiency in Part-III (Mathematics) during the academic year 2017-2018 at Lady Doak College.
4. Won 3<sup>rd</sup> prize in Aptitude competition in the Mathematical Club, Lady Doak College, Madurai during the year 2016-2017.
5. Got Rengasamy memorial prize for being a helpful, cheerful and responsible II. M.Sc. Mathematics student and maintaining good academic record at Lady Doak College on 23.03.2018.
6. Got Personal Meritorious Achievement prize for maintaining good academic record at Lady Doak College on 23.03.2018.
7. Awarded for exhibiting the exemplary qualities of Altruism, Inclusive Outlook, Creativity, Proactivity, Analytical Thinking, Interpersonal Skills, Endurance, Team Spirit, Voluntarism and Perseverance during my Post Graduate study at Lady Doak College from 2016 to 2018.

### **Other Activities / Academic Credentials:**

- Proposed a new analytical method named “**Rajendran-Joy method**” to solve nonlinear differential equations in the 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> (**SCI & Scopus Indexed, Impact Factor: 4.598**).
- Editor of the Proceedings of International Conference on Advanced Mathematical Modeling and Computational Techniques ICAMMCT-2021, **ISBN : 978-93-85434-84-6**.

### **Participations:**

1. 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**.
2. 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.
3. 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.
4. 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 28<sup>th</sup> to 30<sup>th</sup> December, 2020
5. 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**.
6. Participated in the webinar on “**Scopus & Web of Science - Beware of Fake Journals**” organized by Centre for Research, **AMET Deemed to be University, Chennai** on Wednesday, 14<sup>th</sup> July, 2021.