Curriculum Vitae

Basic Information

Date of Birth: *22.05.1991*
Gender: *Male*
Nationality: *Indian*
Marital Status: *Married*
Mobile: *+886 989852542*
E-mail: ***rajivkamaraj567@gmail.com***
*Google scholar Link:****https://scholar.google.com/citations?user=phZywSkAAAAJ&hl=en***
Research-gate Link: ***https://www.researchgate.net/profile/Rajiv-Kamaraj***

Research Overview

No. of Publications: 7
Cumulative Impact Factor: 24.2
Citations: 18 h - index: 3

Selected Technical Skills

polymer synthesis and testing using GPC, NMR, MALDI-TOF, F T -IR, UV-vis, UV spectroscopy, and TGA.
Microsoft Office, Maya, 3DS Max, Blender 3D, Adobe illustrator, Photo shop pro, Origin,

Key Publications

Title: "Organocatalysts for L-Lactide polymerization: 2-alkyl-and 2-aryl-1, 1, 3, 3-tetramethylguanidines"

Highlights: ▪ Here, we designed a highly efficient catalyst by incorporating ROP on PLA using Guanidine derivatives as an organo base catalysts for the PLA polymerzation.

▪ The organo base catalysts catalyst achieves an impressive reactivity in ROP efficiency ([Cat.] = 5 mM, conversion 94 %, in 4h. at 25 °C), high rate (12.6×103 min-1).

Graphical Abstract:

Dr. Rajiv Kamaraj

Education

- **B. S.** Chemistry **2012,** Thiruvalluvar University, Vellore, India
- **M. S.** Chemistry **2014,** Pondicherry University, India
- **Ph. D.** Chemistry **2025,** Medicinal and Applied Chemistry, Taiwan.

Professional Experience

- **Post-Doctoral Research Fellow,** Department of Medicinal and Applied Chemistry, Medicinal and Applied Chemistry**, Taiwan** (2025-Present)

Research Interests

- Design, Synthesizing and Characterization of organic base catalyst: High-performance catalysts (Ring-opening polymerization, copolymerization, depolymerization)
- Bio-degradable polymers, Biomedical applications, functional epoxy polymers, copolymers and biological and industrial applications.
- Polycarbonates, polyurethane, poly oxalates and acrylic polymers and their applications.
- Depolymerization of polyesters, polycarbonates and polyamides.

Awards and Fellowships

- Received Research awards and fellowships in 2021, 2022, 2023 and 2024 at Kaohsiung Medical University, Kaohsiung, Taiwan

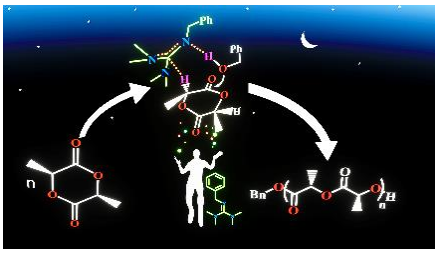
Supervising, Mentoring Activities

Work as a post-graduate assistant teacher (2015-2020). In India.

Demonstrated and assisted undergraduate chemistry lab experiments (2021 to 2023)

Guided 2 M. Sc. students for their project during my doctoral research in Prof. H Y Chen's research group at Kaohsiung Medical University, Taiwan.

Curriculum Vitae



Molecular Catalysis (Publication date: 2024/12/1) (I.F: 3.9)

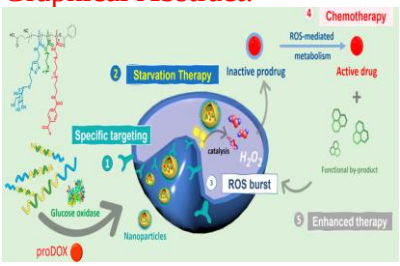
Title: "Combination of Mannoside-b-PCL and Phenylboronic acid-mPEG-t-PCL toward DOX-Encapsulated Polymersome Nanomedicine for MDA-MB-231 Cancer Cells"

Highlights:

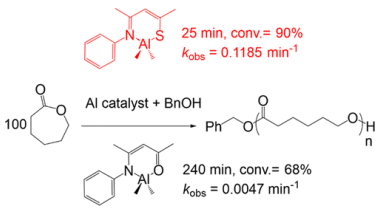
▪ Pure phase of $CuAl_2O_4$, $CuAl_{1.99}Ce_{0.01}O_4$ and $CuAl_{1.97}Ce_{0.03}O_4$ are observed. ▪ Reduction in average crystalline and bandgap energy are noticed with cerium doping till x=0.03.

▪ 99.50 % and 99.20 % degradation of MB and RhB in 90 min and 180 min, respectively, using $CuAl_{1.97}Ce_{0.03}O_4$ under visible light. ▪ $CuAl_{1.97}Ce_{0.03}O_4$ nanoparticles is found to have good photocatalytic activity, reusability and stability.

Graphical Abstract:



Drug Delivery and Translational Research (Just accepted) (I.F: 5.7)



Organometallics 2023, 42, 3405−3417

Ph.D Thesis Title

"Design and Synthesis of Guanidine Derivatives as Catalysts for Ring-Opening Polymerization, Depolymerization and Copolymerization"

Ph.D Thesis Abstract

This thesis investigates the ring-opening polymerization, copolymerization and depolymerization through guanidine catalyst. Moreover, the investigation of LA polymerization was studied via a kinetic approach.

In Chapter 1, an overview is presented on the disadvantages of non-biodegradable polymers, the significance of biodegradable polymers, their classification, the criticality of polylactic acid, its preparation methods, the drawbacks of metal catalysts, and the consideration of alternative organic catalysts, including guanidine organo-base catalysts.

In Chapter 2, the synthesis of a series of 2-alkyl- and 2-aryl-1,1,3,3-tetramethylguanidine derivatives is discussed, along with their application in L-lactide polymerization. Comparison of monoguanidine and diguanide derivatives through ring-opening polymerization (ROP). In addition, density functional theory was achieved for the ROP mechanism.

In Chapter 3, a detailed investigation of initiators (BnOH, NnBu4OBn, IPA, *t*-BuOH, 4-Cl-PhOH, 4-MeO-PhOH, PEG-4000 and HFIPA) in ROP of L-LA polymerization with 1,1,3,3-tetra methyl guanidine (TMG). The ring-opening mechanism of L-LA was explained through kinetic studies. Find that BnOH was the best initiator for LA polymerization with TMG catalyst.

In Chapter 4, the copolymerization reaction was done using TMG as a catalyst. Moreover, the controllability and polymer pattern were explained by gas permeation chromatography (GPC), ^{1}H and ^{13}C NMR experiments.

In Chapter 5, the depolymerization of biodegradable polyesters (PLA, PC, PET) was investigated using TMG as a catalyst. Moreover, the depolymerization was confirmed by 1H, and 13C, experiments.

List of Publications

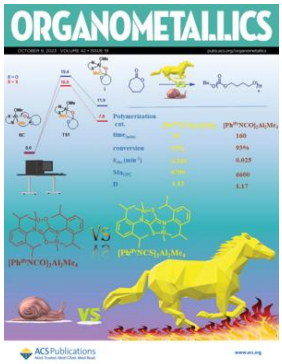
First author

1. Kamaraj R., Ganta, P. K.; Halima, T. B.; Huang, F.; Penki, V. S. S.; Tseng, H.-C.; Ding, S.; Chen, H.-Y.; Chen, H.-Y. Organocatalysts for L-Lactide polymerization: 2-alkyl-and 2-aryl-1, 1, 3, 3-tetramethylguanidines. **J. Mol. Catal.,** 2024, 569, 114580. **(I.F: 3.9)**

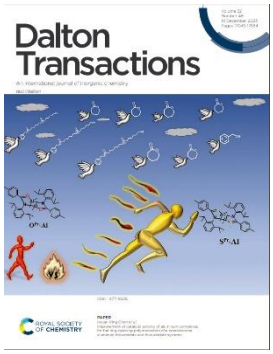
2. Kamaraj R.; Yung-H. H.; Govindan S.; Kai Y. L.; Yu-X. C, Cheng-Han Liu, Yi Cheng Wang, Hsuan-Ying Chen, Wong Tuck Whye, Yuan Wen Hau, Chian-Hui Lai. Combination of Mannoside-b-PCL and Phenylboronic acid-mPEG-t-PCL toward DOX-Encapsulated Polymersome Nanomedicine for MDA-MB-231 Cancer Cells. **Drug Deliv. Transl. Res.,** 2025 **(I.F: 5.7)**

Co-author

Curriculum Vitae



Organometallics 2023, 42, 2856–2866



Dalton Trans., 2023, 52, 17132–17147

Dalton Transactions., 2025, 54 (2), 511-532

3. Ganta, P. K.; Teja, M. R.; Kamaraj R.; Tsai, Y.-R.; Chu, Y.-T.; Sambandam, A.; Lai, Y.-C.; Ding, S.; Chen, H.-Y. Effects of Aluminum Complexes Bearing β-Thioketiminate and β-Ketiminates on ε-Caprolactone Ring-Opening Polymerization Reactivity

4. Sudewi, S.; Sai Sashank, P. V.; **Kamaraj R.;** Zulfajri, M.; Huang, G. G. Understanding Antibiotic Detection with Fluorescence Quantum Dots: A Review. **J. Fluoresc.,** 2024, 1-25. 602-615. **(I.F: 2.6)**

5. Ganta, P. K.; Huang, F.; Halima, T. B.; **Kamaraj R.;** Chu, Y.-T.; Tseng, H.-C.; Ding, S.; Wu, K.-H.; Chen, H.-Y. Evolution of aluminum aminophenolate complexes in the ring-opening polymerization of ε-caprolactone: electronic and amino-chelating effects. **Dalton Trans.,** 2025, 54, 511-532. **(I.F: 3.5)**

6. Ganta, P. K.; Chang, C.-J.; Chen, H.-Y.; **Kamaraj R.;** Sambandam, A.; Lai, Y.-C.; Chu, Y.-T.; Ding, S.; Chen, H.-Y. Comparative Study of Aluminum Complexes Bearing N, N′-Diaryldioxalamidate and N, N′-Diaryldithiooxalamidate Ligands in Ring-Opening Polymerization of ε-Caprolactone. Organometallics., 2023, 42, 3405-3417. **(I.F: 2.5)**

7. Ganta, P. K.; Teja, M. R.; Chang, C.-J.; Sambandam, A.; **Kamaraj R.;** Chu, Y.-T.; Ding, S.; Chen, H.-Y.; Chen, H.-Y. Improvement of catalytic activity of aluminum complexes for the ring-opening on ε-Caprolactone Ring-Opening polymerization of ε-caprolactone: aluminum thioamidate and thioureidate systems. **Dalton Trans.,** 2023, 52, 17132-17147. **(I.F: 3.5)**

List of Referees

Dr.Hsuan-Ying Chen, M.Sc., Ph.D.

Full Professor (Ph.D Supervisor)

Department of Applied and Medicinal Chemistry

Kaohsiung Medical University Kaohsiung 806,

Taiwan (R.O.C.). E-mail: hchen@kmu.edu.tw

2. Dr.K. Tharanikkarasu M.Sc., Ph.d.

Vice-Chancellor's (i/c)

(M.S Supervisor)

Department of Chemical Science

School of Physical, Chemical & Applied

Sciences. Pondicherry University-

Pondicherry, India.

Curriculum Vitae

Email:tharani.che@pondiuni.edu.in,thavasu@gmail.com

Dr. Sodio CN Hsu (Xu Zhizhi), M.Sc., Ph.d., full Professor (Dean)

College of Life Science Kaohsiung Medical University Kaohsiung 806, Taiwan (R.O.C.).

E-mail: sodiohsu@kmu.edu.tw

Journal of Fluorescence., 2024, doi.org/10.1007/s10895-024-03743-4

Declaration

I hereby declare that the above particulars furnished by me are complete and correct.

(Dr. Rajiv Kamaraj)