Dr. Archana Rajendran

Assistant Professor

archanaraj.89@gmail.com

UG: Anna University, India

PG: Anna University, India

PhD: Central Electrochemical Research Institute, Karaikudi, India

PDF: National Center for Cell Sciences, Pune, India

Area of Interest:

- Metallic Biomaterials (Ti & Ti alloys)
- 3D printing / Additive manufacturing
- Development of porous materials / scaffolds for biomedical applications
- Bioceramics – Synthesis and characterisation
- Biopolymers and polymer composite materials
- Surface modification of biomaterials
- Stem cells and Tissue Engineering
- Cell-biomaterials interaction
- Nano-biotechnology
- Anti-microbial materials

Professional Experience:

- Assistant Professor at SBCE (August 2023- Till date)
- National Post-doctoral Fellow (SERB - N-PDF) at National Centre for Cell Science, Pune, Maharashtra. March 2021- March 2023
- Assistant Professor at Roever College of Engineering & Technology (August 2020- March 2021)

- Project associate in DST sponsored project, Process Engineering Division, Central Electrochemical Research Institute (CSIR-CECRI), Karaikudi, INDIA. September 2013-March 2015

Awards and Recognitions

- SERB-**National Post-doctoral Fellowship** (N-PDF) to conduct research at NCCS, Pune, India
- AcSIR - Academy of Scientific & Innovative Research **Best Ph.D. Thesis Award**-2020 in Engineering Sciences from CSIR-Council for Scientific and Industrial Research.
- Prestigious "**Prime Minister's Fellowship for Doctoral Research**" supported by Science & Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India and Confederation of Indian Industry(CII), Hoganas India Pvt Ltd. along with Hoganas AB, Sweden.
- **UGC-Junior Research Fellowship**, in the year 2014-15 for conducting Doctoral Research at CSIR- Central Electrochemical Research Institute, Karaikudi, India.
- **Best paper award** at "National Science Day 2018" competitions held at CSIR- Central Electrochemical Research Institute, Karaikudi, India, 2018.
- **Best poster award** at "National Science Day & Noble Day Celebrations" held at CSIR-Central Electrochemical Research Institute, Karaikudi, India, 2017.
- **G. S. Tendolkar award** for best paper in International Conference on Powder Metallurgy & Particulate Materials (PM-14) for the paper titled "Silver Nanoparticle Incorporated Porous Nano-Structured Titania Layer On Ti Metal: A Candidate For Orthopedic Implant" held in Hotel Le Royal Meridien, Chennai from 23rd - 25th Jan 2014.
- **Best paper award** in National Seminar on Challenges in Biomaterials and research for the paper titled "Development of bioactive titanium metal with antibacterial property by simple chemical treatment approach", held in VIT university, Vellore on 23- 24th Dec. 2013.
- **Outstanding student award** for the performance during B.Tech & M.Tech studies from Anna University, Chennai, India.

Grants and funding

- Financial Assistance to Student Projects for the Government Engineering Colleges "**CERD** (Plan) 4181-6307-Innovative Student Project", 2024-'25 (Ongoing)
- SERB-National Post-doctoral Fellowship to conduct research at National Centre for Cell Science, Pune, India. 2021-23(Completed)

FDP/ WORSHOP CONDUCTED/ORGANISED

- International Conference on "Smart & Green Materials for Biotechnology, Biochemical and Mechanical Applications" (IC-SGMat), 30th -2nd Nov. 2023 at Sree Buddha College of Engineering, Pattoor, Alappuzha.
- International Conference on Biomaterials, Regenerative Medicine and Devices "BIO-Remedi 2022" from 16th Dec to 18th Dec 2022, IIT Guwahati, India.
- Preconference Workshop on "Advances in 3D Printing and Bioprinting" and

"Publishing, Scientific Writing and Communication" from 14th Dec to 15th Dec 2022, IIT Guwahati, India.

- 6th Asian Biomaterials Congress (ABMC6) held at Thiruvananthapuram, Kerala, India during 25-27, October 2017.
- International Conference on Biomaterials, Biodiagnostics, Tissue Engineering, Drug delivery and Regenerative medicine (BiTERM-2016) at IIT New Delhi from 15th to 17th April, 2016
- International conference on Powder Metallurgy and Particulate Materials (PM 16) during 18th – 20th Feb. 2016, Pune.
- International conference on Powder Metallurgy and Particulate Materials (PM 15) during 19-21st Jan 2015, IIT Bombay, Powai.
- Indo-Australian Conference on Biomaterials Tissue Engineering BiTERM-2015 during, 5-7th Feb 2015, Anna University Chennai.
- National conference on Advances in Tissue Engineering and Regenerative Medical Technology (TERMTech-2014), 12-13th Dec.2014, PSG College, Coimbatore.
- International Conference on "Powder Metallurgy and Particulate Materials (PM-14)" held in Hotel Le Royal Meridien, Chennai from 23rd - 25th Jan 2014.
- National Seminar on "Challenges in Biomaterials and Research" held in VIT University, Vellore on 23- 24th Dec. 2013.

Courses taught at SBCE

- Advanced Cell Culture Techniques
- Biomaterials, tissue engineering and stem cells
- Bioprocess Engineering
- Thermodynamics and heat transfer
- Industrial Safety Management
- Professional Ethics

Research Publications

1. H.G Patil, **A Rajendran**, N. Lenka, B.S Kumar, S. Murugesan, S. Anandhan, Probing the influence of strontium doping and annealing temperature on the structure and biocompatibility of hydroxyapatite nanorods, *Dalton Transactions*, 53 (2024) 7812-7827. https://doi.org/10.1039/D3DT04305C. IF:4.569
2. K. Venkatesan, A.G.K.Tchekep, V. C. Anadebe, A. M. Mathew, P.V Sreya, **A. Rajendran**, R.C Barik, D. K. Pattanayak, Development of bioactive and antimicrobial nano-topography over selective laser melted Ti6Al4V implant and its in-vitro corrosion behaviour, *Journal of the Mechanical Behavior of Biomedical Materials* 149, 106210 (2024). https://doi.org/10.1016/j.jmbbm.2023.106210 . IF:3.9

3. S. Aiswariya , V. S. Sharan , A. M. Daniel, **A. Rajendran,** *proceedings of the International Conference on "Smart & Green Materials for Biotechnology, Biochemical and Mechanical Applications" (IC-SGMat)* 2023, ISBN: 978-81-965345-2-3.
4. S. Aiswariya , V. S. Sharan , A. M. Daniel, **A. Rajendran**, Synthesis and characterization of calcium phosphate based bioceramics through a "waste-to wealth" approach for biomedical applications, *Indian Chemical Engineer* (2024)- (Under review)
5. V. L. Sahadevan, S. S. Varghese, Anjitha S, **A. Rajendran**, Gelatin-Alginate-Zinc Oxide Scaffold incorporated with *Coleus aromaticus* Extract for Diabetic Wound healing, *Indian Chemical Engineer* (2024)-(Under review)
6. K. Aadil, A. Nathani, **A. Rajendran**, C. S. Sharma, N. Lenka, P. Gupta, Investigation of human hair keratin-based nanofibrous scaffold for skin tissue engineering application, *Drug Delivery and Translational Research* (2023). https://doi.org/10.1007/s13346-023-01396-7 . IF:5.671
7. M.M Bahir, **A. Rajendran**, D.K. Pattanayak, N. Lenka, Fabrication and characterization of ceramic-polymer composite 3D scaffolds and demonstration of osteoinductive propensity with gingival mesenchymal stem cells, *RSC Adv.,* 13(2023) 26967-2698. https://doi.org/10.1039/D3RA04360F . IF:3.9
8. D. Upreti, S. Bose, **A. Rajendran**, N. Lenka, R. Srivastava, T.U. Patro, Designing a Robust Biocompatible Porous Polymeric Membrane Using Laponite and Graphene Oxide for Versatile and Selective Adsorption of Water Contaminants, *Chemical Engineering Journal*, 464 (2023) 142738. https://doi.org/10.1016/j.cej.2023.142738 IF: 13.273
9. S. D. Kumar, M. F. Anwar, **A. Rajendran**, Vanitha C, D. K. Pattanayak, The Effect of Porosity, Oxygen and Phase Morphology on the Mechanical Properties of Selective Laser Melted Ti-6Al-4V with Respect to Annealing Temperature, *Transactions of the Indian Institute of Metals*, 76 (2023) 1789–1798. https://doi.org/10.1007/s12666-023-02886-5 IF: 1.391
10. **A. Rajendran**, D. K. Pattanayak, Bioactive and antimicrobial macro-/micro-nanoporous selective laser melted Ti–6Al–4V alloy for biomedical applications, *Heliyon,* 8 (2022), e09122. https://doi.org/10.1016/j.heliyon.2022.e09122. IF: 2.85
11. K.Venkatesan, A. M. Mathew, P.V. Sreya, S. Raveendran, **A. Rajendran**, B. subramanian, D.K.Pattanayak , Silver - calcium titanate – titania decorated Ti6Al4V

powders: An antimicrobial and biocompatible filler in composite scaffold for bone tissue engineering application, *Adv. Powder. Technol.*, 32 (2021) 4576-4586). https://doi.org/10.1016/j.apt.2021.10.008. IF:4.83

12. **A. Rajendran**, D. K. Pattanayak, Titanium and titanium alloy with multi element substituted porous titania layer for biomedical application, Engineering Sciences (CSIR-CECRI), *Academy of Scientific and Innovative Research (AcSIR)* (2020). http://hdl.handle.net/10603/389299.
13. **A. Rajendran**, D.K. Pattanayak, Mechanistic studies of biomineralisation on silver incorporated anatase TiO_2, *J. Mater. Sci. Eng. C*, 109 (2020) 110558. https://doi.org/10.1016/j.msec.2019.110558. IF: 7.328
14. **A. Rajendran**, D.K. Pattanayak, Nanoporous, bioactive and cytocompatible TiO_2 encapsulated Ti particles as bone augmentation material, *Adv. Powder. Technol*., 31 (2020) 695-701. https://doi.org/10.1016/j.apt.2019.11.024. IF:4.833
15. S. Mandal, V.V. Das, M. Debata, A. Panigrahi, P. Sengupta, **A. Rajendran**, D. K. Pattanayak, S. Basu, Study of pore morphology, microstructure, and cell adhesion behaviour in porous Ti-6Al-4V scaffolds, *Emergent Mater*. 2(2019) 453. https://doi.org/10.1007/s42247-019-00055-3. IF: 1.67
16. **A. Rajendran**, U. Kapoor, J Nivedhitha, N.Lenka, D. K. Pattanayak, Effect of silver containing titania layers for bioactivity, antibacterial activity and osteogenic differentiation of human mesenchymal stem cells on Ti metal, *ACS Appl. Bio Mater.*, 2, 9 (2019) 3808-3819. https://doi.org/10.1021/acsabm.9b00420. IF: 3.25
17. **A. Rajendran**, G. Vinoth, J. Nivedhitha, K. M. Iyer, D. K. Pattanayak, Ca-Ag coexisting nano-structured titania layer on Ti metal surface with enhanced bioactivity, antibacterial and cell compatibility, *J. Mater. Sci. Eng. C*, 99 (2019) 440–449. https://doi.org/10.1016/j.msec.2019.01.097 . IF: 7.328
18. **A. Rajendran**, S. Sugunapriyadharshini, D. Mishra, D. K. Pattanayak, Role of calcium ions in defining the bioactivity of surface modified Ti metal, *J. Mater. Sci. Eng. C*, 98 (2019) 197-203. https://doi.org/10.1016/j.msec.2018.12.096. IF: 7.328
19. R. Karre, B. K. Kodli, **A. Rajendran**, J Nivedhitha, D. K. Pattanayak, K. Ameyama, S. R. Dey, Comparative study on Ti-Nb binary alloys fabricated through spark plasma sintering and conventional P/M routes for biomedical application, *J. Mater. Sci. Eng. C*, 94 (2019) 619 627. https://doi.org/10.1016/j.msec.2018.10.006. IF: 7.328
20. E. A. Ofudje, **A. Rajendran**, A. I. Adeogun , M. A. Idowu, S. O. Kareem , D. K. Pattanayak, Synthesis of organic derived hydroxyapatite scaffold from pig bone waste

for tissue engineering applications, *Adv. Powder. Technol*., 29 (2018) 1-8. https://doi.org/10.1016/j.apt.2017.09.008. IF:4.833

21. P. Narendran, **A. Rajendran**, M. Garhnayak, L. Garhnayak, J. Nivedhitha, K. C. Devi, D. K Pattanayak, Influence of pH on wet-synthesis of silver decorated hydroxyapatite nanopowder, *Colloids Surf. B*, 169 (2018) 143-150. https://doi.org/10.1016/j.colsurfb.2018.04.039. IF:5.268
22. E.Anbazhagan, **A. Rajendran**, D. Natarajan, M.S. Kiran, D. K. Pattanayak, Divalent ion encapsulated nano titania on Ti metal as a bioactive surface with enhanced protein adsorption, *Colloids Surf. B* 143 (2016) 213–223. https://doi.org/10.1016/j.colsurfb.2016.03.009. IF:5.268
23. V. Prabu, P. Karthick, **A. Rajendran**, D. Natarajan, M. S. Kiran and D. K. Pattanayak, Bioactive Ti alloy with hydrophilicity, antibacterial activity and cytocompatibility, *RSC Adv*., 5 (2015), 50767. https://doi.org/10.1039/C5RA04077A. IF:3.36
24. **A. Rajendran**, R. C. Barik, D. Natarajan, M.S. Kiran, D. K. Pattanayak. Synthesis, phase stability of hydroxyapatite–silver composite with antimicrobial activity and cytocompatability, *Ceramic International*, 40 (2014) 10831-10838. https://doi.org/10.1016/j.ceramint.2014.03.075. IF:3.83
25. **A. Rajendran** and D. K. Pattanayak. Silver incorporated antibacterial, cell compatible and bioactive titania layer on Ti metal for biomedical applications, *RSC Adv.*, 4 (2014) 61444. https://doi.org/10.1039/C4RA13107J. IF:3.36
26. **A. Rajendran**, G. Vinoth, V. Shanthi, R. C. Barik and D. K. Pattanayak. Silver nano particle incorporated Ti metal prepared by chemical treatment for antibacterial and corrosion resistance study, *Mater. Technol*.,29 (2014) B26-B34. https://doi.org/10.1179/1753555713Y.0000000113. IF:3.846
27. **A. Rajendran**, D. K. Pattanayak, Silver nanoparticle incorporated porous nano structured titania layer on Ti metal:A candidate for orthopedic implant*, Transactions of Powder Metallurgy Association of India*, 40(2) (2014) 14-20, Publisher: Powder Metallurgy Association of India (PMAI).

ROLES AND RESPONSIBILTIES

- Research Council Member
- Stream coordinator-Biotechnology
- UG coordinator
- Department research council coordinator

- NAAC criterion 3 coordinator
- NBA criterion 3 coordinator
- Timetable coordinator
- First year BT senior advisor

Website link:
https://scholar.google.co.in/citations?user=dzkVzwEAAAAJ&hl=en
https://vidwan.inflibnet.ac.in/profile/483312/NDgzMzEy