

Dr. JAYASHREE BARAL, Ph.D (Engineering)

Assistant Professor (G-I) Department of Materials and Metallurgical Engineering Maulana Azad National Institute of Technology, Bhopal, M.P, India-462003 Phone Number: +91-9437569034 Email: jayashree2k4@gmail.com ; jayashree@manit.ac.in https://www.webofscience.com/wos/author/record/JTU-4112-2023 https://www.scopus.com/authid/detailuri?authorId=55988617300 https://scholar.google.com/citations?user=h734H_kAAAAJ&hl=en https://orcid.org/0000-0001-7285-0811 Area of research- High temperature material, creep, FEM, failure analysis, Design and synthesis of lightweight Materials	
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1. Education Qualification

Degree	Discipline	University	CGPA / %	Year of Completion
Ph.D.	Metallurgical and Materials Engineering	Indian Institute of Technology Kharagpur	8.2	2017
M.Tech	Metallurgical and Materials Engineering	Indian Institute of Technology, Kharagpur	8.2	2011
B.Tech	Metallurgical and Materials Engineering	National Institute of Technology, Rourkela Odisha	6.9	2006

Ph.D. Thesis Titled: High Temperature Creep Behavior of Welded P91B Steel.

PhD Supervisor: Ex Chair Professor Rabindra Nath Gosh, and Professor Debalay Chakrabarti, IIT Kharagpur

M.Tech. Thesis Titled: Creep characterization of Boron added P91 steel in the temperature range 600-650 degree C

M. Tech Supervisor: Professor Rabindra Nath Gosh (Ex Chair Professor IIT Kharagpur), and Dr. Jaganath Swaminathan (Scientist G, NML Jamshedpur)

2. Experience

Name of the Organization	Position	Responsibility	Duration
Maulana Azad National Institute of Technology, Bhopal, India	Assistant Professor (G-I), Materials and Metallurgical Engineering	Teaching and Research, Design/Development of Mg alloys and composites	Since, Dec.2023
Maulana Azad National Institute of Technology, Bhopal, India	Assistant Professor (G-II), Materials and Metallurgical Engineering	Teaching and Research, Design/Development of Mg alloys and composites	2019-2023
National Institute of Technology, Srinagar, India	Assistant Professor (G-II), Materials and	Teaching and Research	2018-2019

	Metallurgical Engineering		
Maulana Azad National Institute of Technology, Bhopal, India	Temporary faculty, Materials and Metallurgical Engineering	Teaching and Research	2018 (for 4 months)
National Institute of Technology, Jamshedpur, India	Temporary faculty, Materials and Metallurgical Engineering	Teaching and Research	2017-2018
National Metallurgical Laboratory, Jamshedpur	JRF-GATE	Research	2009-2011
National Metallurgical Laboratory, Jamshedpur	Project Assistant	Research	2008-2009
EICS Pvt.Ltd Bilaspur Chhatish garh	Engineer	Metallurgical Engineer	2007-2008

3. Sponsored/Research Projects

1. Titled of the Project: Synthesis and analysis of cast Magnesium Alloy for Casing Application

PI: Dr. Jayashree Baral: **Rs.5Lakhs**

Duration: 2 Years (2019-2021)

Funding Agency: Seed Money, MANIT Bhopal

2. Titled of the Project: Training on operation of SEM with EDS for failure analysis

Co-PI: Dr. Jayashree Baral: **Rs. 1.77 Lakh**

Duration: 3 days (28th -30th April 2025)

Funding Agency: Jindal Steel and Power Ltd

4. Awards/Achievement/outreach Activities

A. Qualified GATE-2007 and all India Rank-145

B. Best poster presentation award in Research Scholar Day symposium 2012 of MME Dept., IIT Kharagpur

C. Best poster presentation award in Research Scholar Day symposium 2014 of MME Dept., IIT Kharagpur.

D. Best poster presentation award in Research Scholar Day symposium 2015 of MME Dept., IIT Kharagpur

5. A. Publications

Sl No	Journal Articles	Scopus/SCI	Impact Factor
1	Sharma, R., Baral, J. 2% Sn Addition Effect on Microstructural and Hardness of AZ91 Magnesium Alloy. <i>Metallogr. Microstruct. Anal.</i> 14, 959–967 (2025). https://doi.org/10.1007/s13632-025-01253-8	ESCI	1.6

2	Baral, J., Bamne, A., Sharma, R., Pathak, R., Sasikumar, C., & Das, S. (2025). Tensile creep behaviour of as-cast Mg-4Al-4RE (2.7 La-1.3 Ce) alloy. <i>Next Materials</i> , 9, 101238.	Scopus	
3	Sharma, R., & Baral, J. (2025). Effect of Heat Treatment on Microstructure and Wear Behavior of Bimodal Hybrid Mg Alloy-Based Composites. <i>Transactions of the Indian Institute of Metals</i> , 78(3), 69.	Scopus	1.5
5	Sharma, R., Baral, J. Synthesis and Characterization of Mg-Al-Zn Alloy-Based Bimodal Hybrid Composites with SiC and TiO ₂ . <i>J. of Materi Eng and Perform</i> 34 , 5212–5223 (2025). https://doi.org/10.1007/s11665-024-09476-6	SCI	2.2
6	Satyabati Das, Manila Mallik, Kalpana Parida, Nilotpala Bej, Jayashree Baral , Flexible PMN-PT/rGO/PVDF-TrFE based composites for triboelectric and piezoelectric energy harvesting, <i>Applied Surface Science Advances</i> , Volume 23, (2024), 100626, ISSN 2666-5239, https://doi.org/10.1016/j.apsadv.2024.100626	SCI	7.5
7	Rahul Sharma, C. Sasikumar, Jayashree Baral , Wear behaviour of Al-MWCNT composites by varying MWCNTs concentration, <i>Journal of Alloys and Metallurgical Systems</i> , Volume 7, (2024), 100104, ISSN 2949-9178, https://doi.org/10.1016/j.jalmes.2024.100104 .	SCI	NA
8	Baral, J. , Das, S. & Sarvesha, R. An Innovative Process for Synthesizing Mg–Al Alloy-Based Composites. <i>Metallogr. Microstruct. Anal.</i> 11 , 245–254 (2022). https://doi.org/10.1007/s13632-022-00853-y	ESCI	1.3
9	J. Baral , J. Swaminathan, D. Chakrabarti, R.N. Ghosh, Creep behavior of P91B steel in the presence of a weld joint, <i>Materials Science and Engineering: A</i> , Volume 631, (2015), Pages 220-229, ISSN 0921-5093, https://doi.org/10.1016/j.msea.2015.02.039 .	SCI	6.1
10	J. Baral , J. Swaminathan, D. Chakrabarti, R.N. Ghosh, Effect of welding on creep damage evolution in P91B steel, <i>Journal of Nuclear Materials</i> , Volume 490, 2017, Pages 333-343, ISSN 0022-3115, https://doi.org/10.1016/j.jnucmat.2017.04.056 .	SCI	2.8

E. International Conference Proceedings (Scopus Indexed)

1	Jayashree Baral , S. Das, Prudhvi Sukowsh, Effect of heat treatment on the precipitation of Mg ₁₇ Al ₁₂ in Mg-7Al alloy, <i>Materials Today: Proceedings</i> , Volume 78, Part 3, (2023), Pages 675-681, ISSN 2214-7853, https://doi.org/10.1016/j.matpr.2022.12.187
2	Sharma, R., Sasikumar, C., Baral, J. (2023). Layered Grain Growth of Aluminum Between MWCNT Layers During Sintering of Al–MWCNT Composites. In: Tewari, A., Dhawan, N., Agarwal, G., Das, S., Mishra, S., Karmakar, A. (eds) <i>Proceedings of the 3rd International Conference on Advances in Materials Processing: Challenges and Opportunities</i> . AMPCO 2022. Springer Proceedings in Physics, vol 293. Springer, Singapore. https://doi.org/10.1007/978-981-99-1971-0_4
3	J. Swaminathan, C.R. Das, Jayashree Baral , C. Phanira, R.N. Ghosh, S.K. Albert, and A.K. Bhaduri. (2014). Creep Strength Behavior of Boron Added P91 Steel and its Weld in the Temperature Range of 600–650°C. In: <i>Energy Materials 2014</i> . Springer, Cham. https://doi.org/10.1007/978-3-319-48765-6_11

4	Baral, J. , Chakrabarti, D., Ghosh, R. N., & Swaminathan, J. (2016). Modeling interaction between creep deformation and oxidation of P91B steel. In <i>Proceedings of the seventh international conference on creep, fatigue and creep-fatigue interaction</i> .
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8. Workshop/Conference Organized

Sl. No	Name of the workshop/conference	Duration
1.	National Conference on Failure Analysis of Metals and alloys (NCFAMA-2025)	27-28 th March 2025
2.	National Conference on Advances in Manufacturing Technology	18-19 th Oct. 2024
3.	Workshop on “High Temperature performance (HTPAA) of Aluminium alloys”	7 th –11 th Dec. 2020

9. PhD Guidance

Sl. No	Name of the Scholar	Title of the Thesis	Year of Completion
1.	Rahul Sharma	Synthesis, Characterization and Mechanical Properties Evaluation of Magnesium Based Alloys and Composites	Ongoing, Since 2020
2.	Rajendra Pathak	Development and characterization of next generation high temperature Ti alloys	Ongoing, Since 2024
3.	Abhishek Kaurav	Not Allotted yet	Ongoing 2025
4.	Dheeraj Jain	Not allotted yet	On going 2025

10. M.Tech Scholars (PG Guidance)

Sl. No	Name of the Scholar	Title of the Thesis	Year
1.	Abhishek Bamne, MANIT, Bhopal	Microstructure, Mechanical and Creep Behaviour of Mg-4Al-4RE(2.7La-1.7Ce)	2024
2.	Gaurav Jatav, MANIT, Bhopal	Bio corrosion behavior of Mg-4Al-4RE(2.7La-1.7Ce)	2024
3.	M. Prudhvi Sukosh MANIT, Bhopal	Synthesis and analysis of Magnesium based alloy	2022
4.	Hamsha Abhilash, MANIT, Bhopal	Synthesis and analysis of Aluminium based alloy (LM25) and its composites (LM25+10% SiC)	2022
5.	Piyush Mehta	Synthesis and Property Evaluation of Cast Magnesium Alloy and its Composite	2021
6.	Nishad Satya Ram	Wear and microstructure of Al-Si alloy reinforced with TiB ₂ Particles	2020

11. Administrative Responsibility

Sl. No	Name of the responsibility	Institute/ Department	Duration
1.	Coordinator, Central Library	Department Level	Feb 2019
2.	BOAC/Annual Reort coordinator	Department level	Feb 2019
3.	Faculty In charge of Metallography Lab	Department level	Feb.2019
4.	Warden, Hostel-12	Institute Level	2023-2024

12. Skills and Hands on Experience

Manufacturing Process Development

- Fabrication of Magnesium alloy and its composites, Alluminium alloy and it composite for automotive and aerospace industries

Material Characterization Techniques

- Field Emission Scanning Electron Microscopy (FESEM),Energy Dispersive X-ray (EDX) for elemental composition in materials
- X-Ray Diffraction (XRD) for phase characterization of materials
- Dynamic Light Scattering (DLS): For particle size and size distribution measurement in colloid
- Universal Testing machine (UTM- Instron): Tensile, three point bend test and effect of strain rate on strength of materials.
- Creep test: Rupture test, and high temperature creep test
- Impact test: Charpy and Izod Test
- Micro vickers and Rockwell hardness testing: To measure the hardness
- Microstructure evaluation with image analyser(Leica, inverted/Upright microscope)
- Surface Roughness Tester (Stylus)
- Surface morphology (Stereo microscope)

Modeling, simulation, Analytical Software Packages

- Operating Software: MS Office, Origin, Tec plot,
- Creep Modelling: FEM

13. Subject Teaching

Sl. No	Course	Subjects
1.	UG	➤ Non ferrous metal extraction ➤ Physical Metallurgy ➤ Failure analysis ➤ Metallography lab ➤ Process Metallurgy Lab ➤ Foundry and casting Lab
2	PG	➤ Advanced Physical Metallurgy ➤ Phase Equilibria and Phase Transformation

		➤ Mechanical behavior of metallurgy
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14. Outreach Activities

Sl. No	Activity	Place	Year
1.	Introduction to failure analysis of engineering components	MANIT Bhopal	April 2025

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