

SUBRAT KUMAR BARAL

Mob- +91-7978606704

E-mail: - subratbaral163@gmail.com

Address: - NB/174, Nuabazar, Paradeep, Jagatsinghpur, Odisha- 754142

DOB: 02/07/1992, Marital status: Unmarried



OBJECTIVE

I am looking forward to being part of an academic and research institution, which not only provides me with an educational environment to work and enhance my knowledge but also offers scope for growth.

ACADEMIC CREDENTIALS

Degree	Discipline/ Specialization	Institute/School	Board/ University	CGPA/ %	Year
Ph.D.	Mechanical Engineering	VNIT Nagpur Maharashtra	VNIT Nagpur Maharashtra	9.0	2021 - 2025
M.Tech.	Manufacturing Technology	NIT Jalandhar Punjab	NIT Jalandhar Punjab	8.45	2014 - 2016
B.Tech.	Mechanical Engineering	REC, Bhubaneswar Odisha	BPUT Odisha	8.24	2009 - 2013
12 th	Science	Kendriya Vidyalaya Paradeep	CBSE	74.8 %	2009
10 th	All subjects	N.A.C High School Paradeep	BSE Odisha	87 %	2007

Ph.D. RESEARCH WORK (Jan 2021 to June 2025)

Title: *An Investigation on Tribological and Corrosion Characteristics of Ball Burnished and Duplex Processed ZE41 Magnesium Alloy.*

Synopsis: Ball burnishing on ZE41 magnesium alloy was performed using different burnishing parameters, and their effect on surface integrity, hardness, and tribological performance was evaluated. A duplex process was designed by combining friction stir processing and ball burnishing, and its cross-sectional microstructure, hardness, wear, and corrosion performance were investigated for both structural and biomedical applications. (Published 5 SCI/SCIE Research Papers based on Ph.D. Research work)

WORK AND RESEARCH EXPERIENCE: (Teaching - 4 years and Research- 6 years)

S.No.	Institution/Organization	Designation	Nature of job	Period of service
1	Visvesvaraya National Institute of Technology (VNIT Nagpur)	Research Fellow	Research and Publication	Jan 2021 to June 2025
2	IGIT, Sarang, Odisha (Autonomous, Govt. of Odisha)	Asst. Professor (contract)	Teaching, Research, and guidance	Aug 2019 to Dec 2020
3	PMEC, Berhampur, Odisha (Govt. of Odisha)	Asst. Professor (contract)	Teaching Research, and guidance	July 2017 to June 2019
4	Gandhi Engineering College, Bhubaneswar	Asst. Professor	Teaching and guidance	Aug 2016 to April 2017

PUBLICATIONS:

SCI/SCIE AND SCOPUS JOURNALS (SCI/SCIE: 6, SCOPUS: 3)

1. **S. K. Baral**, M.M. Thawre, B. Ratna Sunil, R. Dumpala, A review on developing high-performance ZE41 magnesium alloy by using bulk deformation and surface modification methods, *Journal of Magnesium Alloys*, 11 (2023) 776-800.
2. **S. K. Baral**, M.M. Thawre, B.R. Sunil, R. Dumpala, Temperature-dependent wear characteristics of ZE41 magnesium alloy under air and inert environments, *Materialwissenschaft und Werkstofftechnik*, 54 (2023) 1736-1744.
3. **S. K. Baral**, M.M. Thawre, B.R. Sunil, R. Dumpala, effect of heat treatment on wear and corrosion behaviour of ZE41 magnesium alloy, *Canadian Metallurgical Quarterly*, 64 (2024) 1212-1224.
4. **S. K. Baral**, M. M. Thawre, B.R. Sunil, R. Dumpala, Effect of burnishing load on surface roughness and wear behaviour of ZE41 magnesium alloy, *Archives of Metallurgy and Materials*, 72 (2024) 1019-1025.
5. **S. K. Baral**, M. M. Thawre, B.R. Sunil, R. Dumpala, Synergetic effect of ball burnishing and friction stir processing on the sliding wear behaviour of ZE41 magnesium alloy, *Journal of Materials Engineering and Performance*, (2025).
6. AR Govande, **S. K. Baral**, R. Dumpala, Shrikant Joshi, Wear Characteristics of Thermally Sprayed Diamond-Reinforced Ni-P Coatings, *Journal of Thermal Spray Technology*, 34 (2025) 432-443.
7. A. Chaudhary, **S. K. Baral**, G. Tiwari, R. Dumpala, Finite element analysis of ball burnishing: evolution of residual stresses and surface profile in Ti-6Al-7Nb alloy, *Engineering Research Express*, 5 (2023) 045015.
8. A. Chaudhary, **S. K. Baral**, G. Tiwari, B.R. Sunil, R. Dumpala, Influence of surface finish on the dry sliding wear and electrochemical behaviour of 316L stainless steel, *Journal of Mines, Metals & Fuels*, 71 (2023) 1293.
9. M. N. Kumar, G. Tiwari, **S. K. Baral**, B. R. Sunil, Ravikumar Dumpala, Numerical investigation of the effect of laser peen forming process parameters on 1060 aluminium sheets under preload, *Engineering Research Express*, 6 (2024) 045528.

PATENT

Subrat Kumar Baral, Manjusha M. Thawre, Ravikumar Dumpala, “A method for developing multilayered bimodal refined grain structured metals for medical implant application” (**Status: Published, Application No. 202321038251**).

CONFERENCE PUBLICATIONS

1. **S. K. Baral**, P. Pallavi, A. Utkarshaa (2020), “Effect of Nichroloy Coated Electrode on Machining Performance of Electrical Discharge Machining using Inconel 625”, *Materials Today: Proceedings*, 45 (2021) 7894-7900.
2. **S. K. Baral**, P. Pallavi, A.K. Praharaj, A. Utkarshaa, Machining Performance Optimisation of Electrical Discharge Machining for Titanium Grade 5 Alloy using Taguchi Based TOPSIS, *Advances in Mechanical and Industrial Engineering*, (2022) 140-146.

3. A. Gurram, **S. K. Baral**, B.R. Sunil, R. Dumpala, Temperature dependent sliding wear behaviour of Stellite 6 alloy, *Materials Today: Proceedings*, 78 (2023) 514-519.
4. S. Sahoo, H. Sutar, P. Senapati, B. Mohanto, P. R. Dhal, **S. K. Baral**, Experimental investigation and optimization of the FDM process using PLA, *Materials Today: Proceedings*, 74 (2023) 843-847.
5. G Narasinga Rao, **S.K. Baral**, Y Madhavi, Sriram Vijayan, Ravikumar Dumpala, Effect of aging duration on the microstructure and corrosion characteristics of 17-4 PH stainless steel, *Procedia Structural Integrity*, 71 (2025) 317-324.

AREA OF INTEREST

- Manufacturing Engineering
- Surface Engineering
- Tribology and Corrosion
- Thermal Spray and Micro-Arc Oxidation Coating
- Material Characterization and Mechanical Testing

ACHIVEMENTS & AWARDS

- Best Paper Award at 2nd International Conference on Materials, Manufacturing and Machining for Industry 4.0 (ICMMM 2.0), BIT, Chennai.
- **Secured 598 score in GATE Exam.**

SKILLS AND PROFICIENCY

- Operation of Vickers microhardness Tester, Tribometer and Corrosion Setup
- Operation of Micro-arc oxidation coating (MAO) Setup.
- MS office (word, excel, power point)
- Programming Language- C, Python
- CAD Software: AUTOCAD, SOLIDWORKS
- Statistical Software: MINITAB, ORIGIN, DOE, Sigma Plot

FDP/STTP/STC WORKSHOPS

1. One week STC on “**Industry 4.0 and Smart Manufacturing: opportunities and challenges,**” by NIT Jalandhar.
2. One week STC on “**Material characterization Techniques**” by NIT Jalandhar.
3. One week STC on “**Electronic System for Mechanical Automation and Robotic Technology (eSMART-2020)** by NIT Silchar.
4. One week FDP on “**Optimization Techniques for mechanical engineers**” by VITS, Hyderabad.
5. One week Workshop on “**Intellectual Property Rights and Entrepreneurship Development**” by NIT Silchar.