RITUKESH SHARMA

Permanent Address: Maligaon Chariali, Near Over Bridge, Guwahati-781012, Assam.

Present Address: Room No. 105, School of Mechanical Sciences, Indian Institute of Technology, Bhubaneswar- 752050, Odisha.

Contact: 9706671250/ 6370627568; **Email:** rs29@iitbbs.ac.in

Objective

Having 5+ years of research experience in **Advanced Materials Development** in addition to **Friction Stir Welding and Processing**, **Microstructural Characterization**, **Mechanical Testing** and **Corrosion Control**. Currently, looking forward to work in an organization that will enable me to use my knowledge of the subject and research experience in a consistently stable and positive atmosphere. Producing the best result for the organization through hard work and innovative thinking will be the foremost goal.

Educational credentials

COURSE	INSTITUTION	BOARD /UNIVERSITY	CGPA /PERCENTAGE
Ph.D.	IIT Bhubaneswar	IIT Bhubaneswar (2016)	To be submitted
M.Tech. (Materials Science & Engineering)	IIT Bhubaneswar	IIT Bhubaneswar (2013)	8.78
B.Tech. (Mechanical Engineering)	Tezpur University	Tezpur University (2009)	8.14
H.S.	Cotton College	A.H.S.E.C (2007)	64.3%
H.S.L.C	Pragjyotish English Medium High School	S.E.B.A (2005)	85%

Areas of research

- Aluminum composites
- High Entropy Alloys
- Superalloys
- Friction Stir Welding and Processing
- Corrosion control

Research Experience

- **Project title:** Development of Aluminum based hybrid composite for structural application

  Organization: IIT Bhubaneswar

  Period: August 2016 – present

  Summary: The project aims at development of a light weight composite with good strength and corrosion resistance for aero-space and automobile applications. Design and fabrication of Al-TiB_2 metal matrix composite is done whose properties are further attempted to be enhanced by the addition of High Entropy Alloy and subsequent Friction Stir Processing. The characterization is carried out for structural, physical, mechanical and corrosion properties.

- **Project title:** Development of material to be used in rollers.

  Organization: IIT Bhubaneswar, Deem Roll-Tech

  Period: October 2021-present

  Summary: The target of the project is to develop a hardened material to be used in rollers or roll testing machines. A systematic ageing treatment of the material is carried out with subsequent microstructural and mechanical characterization.

- **Project title:** Effect of aging on the precipitate transformation of a Ni-based superalloy

  Organization: NIT Jamshedpur, IIT Bhubaneswar & CSIR- IMMT

  Period: July 2015- May 2016

  Summary: The microstructure evolution of a Ni- based superalloy was carried out during continuous aging with cumulative aging periods of 100 and 250 hours. The results were further compared with cyclic heat treatment conditions. The work featured a classical example of microstructure variations with annealing conditions which contributed to the understanding of the phase transformation in a Ni- based superalloy.

- **Project title:** Microstructural analysis of LPTR blades of an aero engine

  Organization: IIT Bhubaneswar & CSIR- IMMT

  Period: July 2014- May 2015

  Summary: A systematic microstructural analysis of an LPTR blade was carried to understand its cause of failure. The blade composed of Ni-based superalloy was annealed cyclically for 100, 250 and 312 hours to mimic its service condition. The study presented an understanding on the precipitate transformation which can be utilized to project the service condition of an aero engine's turbine blade.

- **Project title:** Finite Element Modelling and Analysis of Laser Forming Process

  Organization: Tezpur University

  Period: August 2012- May 2013

  Summary: In this project a mathematical model was used to predict the thermal and structural conditions of D36 steel at different environmental conditions. Finite element modelling was used to develop the mathematical model in Ansys software.

Professional Experience

- Ad-hoc faculty in National Institute of Technology, Jamshedpur, 27th July, 2015 to 26th July, 2016.

Publications

- **R. Sharma**, A. Singh, A. Arora, S. Pati, P.S. De, Effect of friction stir processing on corrosion of Al-TiB_2 based composite in 3.5 wt.% sodium chloride solution, Transactions of Nonferrous Metals Society of China, 2019, 29(7), 1383-1392.
- **R. Sharma**, A. Roy, P.S. De, Equimolar AlCuFeMn alloy: a novel oxidation resistant alloy, Intermetallics, 2021, 135, 107215.
- **R. Sharma**, S. Anwar, A. Roy, P.S. De, Corrosion and indentation studies of aged AlCuFeMn alloy, Journal of Materials Research and Technology *(Submitted)*.
- **R. Sharma,** D. Mahato, A. Roy, P.S. De, Effect of High Entropy Alloy on the strengthening of Friction Stir Processed Al-TiB_2 based composite, Journal of Alloys and Compounds *(Submitted)*.
- A. Dutta, T. Sivaji, M. Ghosh, R. Fernandes, P.S. De, D. Nayak, **R. Sharma**, Corrosion behavior of AlCuFeMn in aqueous sodium chloride solution, Materials Chemistry and Physics, 2021, 276, 125397.
- A. Dutta, **R. Sharma**, P.S. De, Numerical Thermal Analysis of Aluminum-Copper Dissimilar Friction Stir Welding, Transactions of Indian Institute of Metals *(Submitted)*.
- P.S. De, **R. Sharma**, Friction Stir Welding of Aluminum alloys: opportunities and potential, Aluminum Association of India, 2020, 12.

Conferences attended

- R. Sharma, A. Sonwane, A. Roy, P.S. De, Microstructure and corrosion property of annealed Al-Fe based high entropy alloy, 3rd International Workshop on High Entropy Alloy, 2020.
- R. Sharma, A. Roy, P.S. De, High Temperature Oxidation Behavior of Annealed AlCuFeMn High Entropy Alloy, 19th National Conference on Corrosion Control, 2018.
- R. Sharma, P.S. De, Precipitate coarsening in a Ni based superalloy during cyclic aging, International conference in microscopy and 39th Annual Meeting of Electron Microscope Society of India, 2018.
- R. Sharma, R. Sahoo, B.B. Jha, T. Sahoo, P.S. De, Study of growth kinetics of thermally aged LPTR blade on application of load at high temperature, International Conference of Material Science and Technology, 2016.
- R. Sharma, R. Sahoo, B.B. Jha, P.S. De, Microstructural analysis of thermally aged LPTR blade of an Aero engine, National Conference on Emerging Technologies in Aerospace Applications, 2015.
- R. Sharma, D. Kalita, D. Das, P. Dutta, Finite Element Modelling and Stimulation on Laser bending of D36 Shipbuilding Steel Sheet, National Conference on Theoretical Physics, 2013.

Membership

- Life time member, Electron Microscopy Society of India.

Accolades

- Recipient of MHRD scholarship M. Tech & Ph.D.
- Recipient of Assam Chief Minister Scholarship, 2013-2015.
- Recipient of State Merit scholarship, 2005-2007.
- Second best paper awarded at 19th National Conference on Corrosion Control, 2018.

References

Dr. Partha Sarathi De
Assistant Professor
Indian Institute of Technology, Bhubaneswar
Phone No.: 0674-2576171
Email: parthasarathi.de@iitbbs.ac.in

Dr. Ranjeet Kumar Singh
Principal Scientist
CSIR- National Metallurgical Lab
Phone No.: 8789072069
Email: kranjeet@nmlindia.org