Ritukesh Sharma

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SUMMARY

Results-oriented and highly skilled professional with ~8 years of technical expertise in **metallurgy materials**, applications, and processes. Proven ability to provide technical support, develop innovative applications, and manage high-impact projects. Strong track record in collaborating with customers, manufacturing teams, and automotive industry stakeholders to drive advancements in metal components. Committed to delivering value-driven solutions and fostering long-term client relationships.

KEY SKILLS

- **Metallurgical Materials and Processes Development**
- **Material Selection and Performance Evaluation**
- **Project and Technology Roadmap Management**
- **Automotive Industry and Component Manufacturing**
- **Cross-functional Collaboration and Leadership**
- **Exhibitions and Technical Conference Representation**

TECHNICAL SKILLS

- **Fabrication:** Die casting, ball milling, heat treatment
- **Analytical instruments:** Scanning Electron Microscopy, pXRD, DSC-TGA, EDS, EBSD, Electrochemical testing, Mechanical testing
- **Software:** Ansys, SolidWorks

EXPERIENCE

Aluminum Expert

Chakr Innovations Pvt. Ltd. **November 2022 - June 2024, Gurgaon**

- Design and development of Aluminum alloy as anode material for battery development
- Implementation of these methods for certification through ICAT/ARAI
- Establish MOUs with Tier I universities
- Budget allocation
- Supported senior team members in defining and applying policies and procedures to ensure data consistency

Research Engineer

IIT Bhubaneswar **August 2016 - August 2021, Bhubaneswar**

- Development of hybrid Aluminum alloy and composite with good strength and corrosion resistance
- Fabrication of lightweight high temperature material for nuclear application
- Finite Element Modelling of Thermo-mechanical process
- Developed taxonomies and maintained accuracy in research data related to composite material properties
- Conducted extensive research and data analysis, consistently upholding QA standards and presenting findings effectively

Adhoc Faculty

NIT Jamshedpur **July 2015 - July 2016, Jamshedpur**

- Provide solution to understand the effect of creep on the precipitate transformation of a Ni-based superalloy
- Assisted in developing research methodologies and operated analytical tools to ensure data reliability

PROJECTS

Development of material chemistry for battery development

Chakr Innovations Pvt. Ltd. • November 2022 - June 2024

- The project aims at optimizing cathode and anode materials for battery development. Successful implementation of these methods for enhancing Power density and Energy density has led to battery standards certification by ARAI and ICAT.

Development of Aluminum based hybrid composite for structural application.

IIT Bhubaneswar • August 2016 - November 2022

- The project aims at the development of a lightweight composite through powder metallurgy route with good strength and corrosion resistance for aero-space and automobile applications. Design and fabrication of Al-TiB2 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.

Feasibility of composite rolling materials.

Deem Roll-Tech • October 2021 - March 2022

- 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.

Finite Element Modelling of Thermo-mechanical process.

Defense Metallurgical Research Laboratory • August 2018 - May 2020

- In this project a mathematical model was used to predict the thermal and structural conditions in joining two dissimilar materials. Finite element modelling was used to develop the mathematical model in Abaqus software.

Effect of aging on the precipitate transformation of a Ni-based superalloy

NIT Jamshedpur • July 2015 - June 2016

- 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 classic example of microstructure variations with annealing conditions which contributed to the understanding of the phase transformation in a Ni- based superalloy.

Microstructural analysis of LPTR blades of an aero engine

CSIR- IMMT • May 2014 - May 2015

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

EDUCATION

Ph.D.

Metallurgical and Materials Engineering • IIT Bhubaneswar • Bhubaneswar • 2022

M.Tech.

Material Science and Engineering • IIT Bhubaneswar • Bhubaneswar • 2015

B.Tech.

Mechanical Engineering • Tezpur University • Tezpur • 2013

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.
- A. Dutta, **R. Sharma**, T. Sivaji, M. Ghosh, R. Fernandes, P.S. De, D. Nayak, Corrosion behavior of AlCuFeMn in aqueous sodium chloride solution, Materials Chemistry and Physics, 2021, 276, 125397.
- P.S. De, **R. Sharma**, Friction Stir Welding of Aluminum alloys: opportunities and potential, Aluminum Association of India, 2020, 12.
- **R. Sharma**, A. Singh, P.S. De, Aluminum based composites with TiB_2 and multicomponent alloy reinforcements: Processing, microstructure and property enhancement, CRC Press, 2004.

PATENTS

- **R. Sharma**, G.K. Shukla, Etchant for Aluminum alloys >99wt.%, Indian Patent ID: 202311055406.
- **R. Sharma**, G.K. Shukla, A. Pal, H. Lahan, Aluminum alloy, Indian Patent Id: 202311060220.
- **R. Sharma**, Harinivasan G., S. Mahajan, Electrolyte Additive for Metal Air Battery, Indian Patent Id: 202311061793.

CONFERENCES

- **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, T. Sahoo, P.S. De, Microstructural analysis of thermally aged LPTR blade of an Aero engine, National Conference on Emerging Technologies in Aerospace Applications, 2015.

CERTIFICATION

- Welding Technology for Engineers-CWI (Ozis Academy)
- Professional Project Management (Google, Coursera)
- Virtual automation under Centre of Excellence (National Instruments Innovation Centre)
- Material Testing (MSME)

MEMBERSHIP

- Lifetime member, Electron Microscopy Society of India.

ACOLADES

- 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.

REFEREES

Dr. Partha Sarathi De

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