Researchgate Webpage: https://www.researchgate.net/profile/Anshuman_Patra

Name : Prof. Anshuman Patra

Designation : Assistant Professor-Grade I

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a) Present : Department of Metallurgical and Materials Engineering National Institute of Technology Rourkela, Rourkela– 769008, Odisha, India

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ACADEMIC QUALIFICATION

Degree	Institute/ Board	Period	Branch	Specialization	CGPA/ %Marks
Ph. D	NIT, Rourkela	2014-2017	Metallurgical and Materials Engineering	Oxide dispersion strengthened W alloys	9.54/10
M. Tech	IIT Kharagpur	2007- 2009	Metallurgical and Materials Engineering	Oxidation resistant W alloys	9.48/10
B. E	Bengal Engineering and Science University, Shibpur	2002-2006	Metallurgical and Materials Engineering	Al_2O_3 reinforced Cu alloys	81.45%

PROFESSIONAL EXPERIENCE

Employer	Position	Period	Nature of Work
National Institute of Technology, Rourkela	Assistant Professor	28.05.2014 to till date	Teaching & Research work
Hindalco Industries Limited	Assistant Manager	25.07.2011 to 24.05.2014	Quality control & development of rolled products
Electrosteel Castings Limited	Assistant Manager	01.07.2009 to 18.07.2011	Production & Quality Control of centrifugally casted Ductile Iron pipes
Cognizant Technology Solutions	Programmer Analyst	21.08.2006 to 13.07.2007	Production support and abend control.

RESEARCH AREAS

- Nanostructured Materials : Synthesis and Characterization
- Nonconventional consolidation and sintering.
- High Temperature Materials.
- Oxide dispersed strengthened alloys.
- High entropy alloys

COURSES TAUGHT

- Iron Making (UG, PG)
- Steel Making (UG, PG)
- Principle and Practice of Heat Treatments (UG, Int. M. Sc)
- Casting and solidification (UG)
- Manufacturing Process (UG)
- Value Education and Ethics (UG)

LABORATORY COURSES TAUGHT

- Thermodynamics and Kinetics Laboratory (PG).
- Product Development Laboratory (UG).
- Thermodynamic Modeling of Metallic Materials Laboratory (UG)
- Computational Metallurgy Laboratory (UG)
- Mineral Dressing Laboratory (UG)

THESIS SUPERVISON

Ph. D

Sl. No.	Name	Current Status
1	Sambit Swain	Ongoing
2	Atiqur Rahman Khan	Ongoing

M. Tech

Sl. No.	Name	Year
1	Akash Adinath Borate	2022-23
2	Akhil M	2021-22

3	Ahmed Faraaz Manzoor Ahmed Siddiqui	2020-21
4	Bappa Das	2019-20
5	Gotivada Maheswara Rao	2018-19
6	Vikram Rambhau Talekar	2017-18
7	Rasmiranjan Sahoo	2016-17
8	Rishabh Saxena	2015-16

B. Tech, B. Tech and M. Tech Dual Degree

Sl. No.	Name	Degree	Year
1	Ashish Kumar Mallick Sumit Kumar Thangavel Lokesh	B. Tech	2021-22
2	Nitin Srivastava Sivarathri Pavan Kumar Soumya Ranjan Behera	B. Tech	2020-21
3	Kanduri Surya Sreerama Mrunal Vishal Sharma	B. Tech	2019-20
4	Darshan Kumar Gardia	B. Tech	2018-19
5	Rajib Sahoo	Dual Degree	2017-18
6	Gopal Krishna Behera	Dual Degree	2017-18
7	Sradha Suman Khuntia Suprit Behera	B. Tech	2017-18
8	Himanshu Mohanty Abhishek Mandal	B. Tech	2016-17
9	Atul Anand	B. Tech	2016-17
10	Prajnadatta Meher T Chaitanya Kiran	B. Tech	2015-16
11	Sonu Kumar Prajapati	B. Tech	2014-15

AWARDS & ACHIEVEMENTS

- University Medal for **1st Rank** in Metallurgical and Materials Engineering (B.E) (2007).
- State Scholarship in High Secondary.
- Qualified State Level Eligibility Test (WBJEE 2002).
- Merit Scholarship in B.E.
- Qualified National Level Test (GATE) in 2006.
- Indranil Award From Mineral Geological & Metallurgical Institute of India (MGMI)

- M.H.R.D scholarship in Master of Technology (M. Tech).
- Gold Certification from Aditya Birla Gyanodaya.
- Zero Abnormality Monitoring (ZAM) and Kaizen Award from Hindalco Industries Ltd.
- Research Grant from TEQIP, NIT Rourkela.
- Biographical note listed in Asia Pacific who's who.
- Associate Editor (Guest) : Journal of Materials Engineering and Performance (Springer) (2022-23).
- Section Editor : Materials Chemistry (Scientific Reports: Nature)
- Faculty Advisor Appreciation Award from NIT Rourkela (2022).

PROFESSIONAL AFFILATIONS

- Life Member of Indian Institute of Metals (IIM)
- Life Member of Powder Metallurgical Association of India (PMAI).
- Life Member of Indian Science Congress (ISCA).

JOURNAL REVIEWER

- Scientific Reports (Nature)
- Materials and Design
- Journal of Alloys and Compounds
- Materials Chemistry and Physics
- Ceramic International
- Journal of Materials Engineering and Performance
- JOM
- International Journal of Refractory Metals and Hard Materials
- Materials Today Communications
- Transactions of Indian Institute of Metals

ACADEMIC AND ADMINISTRATIVE RESPONSIBILITY

- Core Committee Member of Accreditation and Ranking, NIT Rourkela.
- Member of Institute Write up committee.
- Co-PIC: Physical Education.
- Faculty advisor of B. Tech and B. Tech+ M. Tech Dual degree.
- PIC- Accreditation (UG) (Metallurgical and Materials Engineering)
- PIC of departmental student society.
- Member of department purchase committee.

LABORATORY DEVELOPMENT

Developed a nanomaterials research laboratory for synthesis of commercial powders and consolidation by powder metallurgy route funded by ARMREB (DRDO).

OTHER ASSIGNMENTS AND ACADEMIC OUTREACH

1. Chairperson of 6th International Conference on Processing and Characterization of Materials (ICPCM2024) at NIT Rourkela.
2. Co-ordinator of 5 days short term course (online) on "Roadmap for Green Steel Production : Industry 4.0", from 1-5th July 2024 at NIT Rourkela.
3. Secretary of 5th International Conference on Processing and Characterization of Materials (ICPCM2023) at NIT Rourkela.
4. Coordinator of Vedanta Aluminium and NIT, Rourkela Campus Connect event, (2021).
5. Coordinator of online Diamond Jubilee event (18-19th September, 2021) organized by Metallurgical and Materials Engineering, NIT Rourkela.
6. Co-Convener of Conference on Processing and Characterization of Materials (CPCM 2020) at NIT Rourkela.
7. One of the top ranking reviewers Certified by Transactions of Indian Institute of Metals, Springer.
8. Co-Convener of 2nd International Conference on Processing and Characterization of Materials (ICPCM 2019) at NIT Rourkela.
9. Co-Coordinator of 5 days short term course on "Short Term Course on Powder Metallurgy: Fundamentals, Applications and Advancement" from 1st- 5th July 2019 at NIT Rourkela.
10. Treasurer of 1st International Conference on Processing and Characterization of Materials (ICPCM 2018) at NIT Rourkela.
11. Outstanding Reviewer for Ceramic International and Journal of alloys and Compounds, Certified by Elsevier.

INVITED TALKS

1. Invited Speaker at 4th Global Ceramic Leadership Roundtable Ceramics for Frontier Sectors: Emerging Advances and Prospects (CerAP2024), during 11-12th March 2024, organized by Centre for Space Science and Technology, IIT Roorkee, in association with iHUB DivyaSampark IIT Roorkee and Northeast India Chapter of the American Ceramic Society (ACerS).
2. Invited Speaker at International Conference on "Reducing Carbon Footprint in Metal Industries", during 3-4th February 2023, organized by IIM Rourkela Chapter in association with SAIL-RSP and NIT Rourkela.
3. Invited Speaker at Short-Term Course on "Fundamentals and Advances in Powder Metallurgy (15th-20th March, 2021) organized by Metallurgy Engineering and Materials Science, IIT Indore.
4. Invited Speaker at Short-Term Course on "Fundamentals and Advances in Powder Metallurgy (8th-10th December, 2020) organized by Metallurgy Engineering and Materials

Science, IIT Indore.

5. Invited speaker at ICN:3I-2017 at IIT Roorkee and Session Chairperson for Synthesis and Characterization.

RESEARCH PUBLICATIONS

1. Atiqur Rahman Khan, Sambit Swain, **Anshuman Patra**, D. Arvindha Babu, Bhaskar Majumdar,. Effect of Y_2O_3, TiO_2, ZrO_2 dispersion on oxidation resistance of W–Ni–Nb–Mo alloys, International Journal of Materials Research, 2025, DOI : doi.org/10.1515/ijmr-2024-0064
2. Malaya Kumar Debta, **Anshuman Patra**, Santosh Kumar Sahoo, Manoj Masanta, TiC-NiCoCrFeTi high entropy alloy (HEA) composite coating fabricated by TIG arc scanning for improved tribological performance, Surface and Coatings Technology, 496 (2025) 131699. DOI : doi.org/10.1016/j.surfcoat.2024.131699
3. Atiqur Rahman Khan, **Anshuman Patra**, Debasis Chaira, Santosh Kumar Sahoo, Diraviam Arvindha Babu, Investigation of Microstructure, Mechanical, and Tribological Behavior of Nano-Y_2O_3, TiO_2, ZrO_2-Dispersed W–Ni–Nb–Mo–Zr Alloys Fabricated by Spark Plasma Sintering, Advanced Engineering Materials, (2024) 2400819. DOI: doi.org/10.1002/adem.202400819.
4. B. Das, V. Suman, **A. Patra**, Comparative Study of Oxidation Behavior of Cr_2O_3 Dispersed W-Zr Alloys at 800°C, 1000°C and 1200°C Fabricated Using Powder Metallurgy, JOM (2024). DOI : 10.1007/s11837-024-06515-4.
5. A.R. Khan, **A. Patra**, D. Chaira, D. Arvindha Babu, Bhaskar Majumdar, Study of microstructure, thermodynamic and powder properties of nano Y_2O_3, TiO_2, ZrO_2 dispersed W–Ni–Nb–Mo–Zr alloys, Materials Chemistry and Physics, 311 (2024) 128567. DOI : doi.org/10.1016/j.matchemphys.2023.128567.
6. A. R. Khan, **A. Patra**, D. Chaira, D. Arvindha Babu, V. Srinivas, Nano-indentation, Residual Stress, and Oxidation Study of Spark Plasma-Sintered Tungsten Alloys. Journal of Materials Engineering and Performance, (2023), DOI : doi.org/10.1007/s11665-023-08358-7.
7. Bappa Das, Atiqur Rahman Khan, **Anshuman Patra**, Effect of Nano-Cr_2O_3 Dispersed W-Zr Alloys by Mechanical Alloying and Pressureless Conventional Sintering, Journal of Materials Engineering and Performance, (2023), DOI : doi.org/10.1007/s11665-023-08357-8.
8. G. M. Rao, M. Akhil, B. Das, A.R. Khan, **A. Patra,** D. Chaira, Development and Characterization of Nano-Al_2O_3, Cr_2O_3, and TiO_2 Dispersed Mo Alloys Fabricated by Powder Metallurgy, Journal of Materials Engineering and Performance, 32 (2023) 1683–1706. DOI : doi.org/10.1007/s11665-022-07215-3
9. A. R. Khan, **A. Patra**, B. Majumdar, Synthesis of nano Y_2O_3, TiO_2, ZrO_2 dispersed W-Ni- Nb-Mo alloys by mechanical alloying, International Journal of Refractory Metals and Hard Materials, 103 (2022) 105753. DOI : doi.org/10.1016/j.ijrmhm.2021.105753.
10. G. K. Behera, **A. Patra**, Stepwise Microstructure Development and Investigation of Mechanical Behavior of Pure Mo, Mo-Ni, and Nano-Y_2O_3-Dispersed Mo-Ni Alloys Fabricated by Mechanical Alloying and Pressureless Sintering, Journal of Materials Engineering and Performance, 30 (2021) 6039–6048. DOI : doi.org/10.1007/s11665-021-05808-y.
11. V. R. Talekar, **A. Patra**, S.K. Sahoo, Oxidation Behavior of Oxide Dispersion-Strengthened W-Ni Alloys, Oxidation of Metals, 93 (2020) 17-28. DOI : doi.org/10.1007/s11085-019-09942-w.
12. V. R. Talekar, **A. Patra**, S. K. Sahoo, S. K. Karak, B. Mishra, Fabrication and characterization of nano-Y_2O_3, Al_2O_3, La_2O_3 dispersed mechanically alloyed and liquid phase sintered W-Ni for structural application, International Journal of Refractory Metals and Hard Materials, 82

(2019) 183-198. DOI : doi.org/10.1016/j.ijrmhm.2019.03.027.

13. Anand Babu Kotta, **Anshuman** Patra, Mithilesh Kumar, Swapan Kumar Karak, Effect of molasses binder on the physical and mechanical properties of iron ore pellets, International Journal of Minerals, Metallurgy, and Materials, 26 (1) (2019) 41-51. DOI : doi.org/10.1007/s12613-019-1708-x.
14. R. Saxena, **A. Patra**, S.K. Karak, L. Ciupinski, Fabrication and characterization of nano- Y_2O_3 dispersed W-Ni-Nb alloys, International Journal of Refractory Metals and Hard Materials, 71 (2018) 70-81. DOI : doi.org/10.1016/j.ijrmhm.2017.11.004.
15. **A. Patra**, R. Saxena, R. R. Sahoo, S. K. Karak, T. Laha, Evaluation of Thermal, Fracture, and High Temperature Behavior of Mechanically Alloyed and Spark Plasma Sintered Nano- Y_2O_3 Dispersed W-Ni-Mo and W-Ni-Ti-Nb Alloys, Materials Performance and Characterization, 7(1) (2018) 515-531. DOI: 10.1520/MPC20170077.
16. S. K. Karak, **A. Patra**, F. Dąbrowski, L. Ciupinski, S. Sarkar, Development of nano-Y_2O_3 dispersed Zr alloys synthesized by mechanical alloying and consolidated by pulse plasma sintering, Materials Characterization, 136 (2018) 337-345. DOI : doi.org/10.1016/j.matchar.2017.12.038
17. **A. Patra**, R.R. Sahoo, S. K. Karak, S. K. Sahoo, Effect of nano Y_2O_3 dispersion on thermal, microstructure, mechanical and high temperature oxidation behavior of mechanically alloyed W-Ni-Mo-Ti, International Journal of Refractory Metals and Hard Materials, 70 (2018) 134-154. DOI : doi.org/10.1016/j.ijrmhm.2017.09.015.
18. **A. Patra**, R. Saxena, S.K. Karak, T. Laha, S.K. Sahoo, Fabrication and characterization of nano-Y_2O_3 dispersed W-Ni-Mo and W-Ni-Ti-Nb alloys by mechanical alloying and spark plasma sintering, Journal of Alloys and Compounds, 707 (2017) 245-250. DOI : doi.org/10.1016/j.jallcom.2016.11.424.
19. **A. Patra**, R Saxena, S K Karak, Combined effect of Ni and nano- Y_2O_3 addition on microstructure, mechanical and high temperature behavior of mechanically alloyed W- Mo, International Journal of Refractory Metals and Hard Materials, 60 (2016) 131-146. DOI : doi.org/10.1016/j.ijrmhm.2016.07.017.
20. **A. Patra**, Md. Meraj, S. Pal, N. Yedla and S. K. Karak, Experimental and atomistic simulation based study of W based alloys synthesized by mechanical alloying, International Journal of Refractory Metals and Hard Materials, 58 (2016) 57–67. DOI : doi.org/10.1016/j.ijrmhm.2016.04.002.
21. **A. Patra**, S. K. Karak, S.Pal, Effects of mechanical alloying on solid solubility, Advanced Engineering Forum, 15 (2016) 17-24. DOI: www.scientific.net/AEF.15.17.
22. Suresh Telu, **A. Patra**, M. Sankaranarayana, R. Mitra and S. K. Pabi, Microstructure and Cyclic Oxidation Behavior of W-Cr Alloys Prepared by Sintering of Mechanically Alloyed Nanocrystalline Powders, International Journal of Refractory Metals and Hard Materials, 36 (2013) 191-203. DOI : doi.org/10.1016/j.ijrmhm.2012.08.015.

SELECTED CONFERENCE PROCEEDINGS

1. Bappa Das, **Anshuman Patra**, Fabrication of nano-La_2O_3 dispersed W-Zr alloy by mechanical alloying and conventional sintering, Materials Today: Proceedings, 62 (Part 10) (2022) 6055-6060.
2. D. K. Gardia, A. R. Khan, **A. Patra**, Microstructure, mechanical and wear properties of mechanically alloyed and conventionally sintered Nb-W and Nb-Mo alloys, Materials Today: Proceedings, 62 (10) (2022) 6204-6209.

3. Bappa Das, **A. Patra**, Fabrication of W-Ti-Mo alloys and its microstructure, mechanical properties prepared by mechanical alloying, Materials Today: Proceedings, 26 (Part 2) (2020) 2845-2852.
4. Bappa Das, **A. Patra**, Fabrication and characterization of nano-Cr_2O_3 dispersed mechanically alloyed and conventional sintered W-Zr alloys, Materials Today: Proceedings, 33 (Part 8) (2020) 5109-5115.
5. P. Meher, C. Kiran, **A. Patra**, R. Saxena, S. K. Karak, Effect of Ni on microstructure, mechanical property of mechanically alloyed W-Ni-Nb, Materials Today: Proceedings, 18 (Part 3) (2019) 765-773.
6. V. R. Talekar, **A. Patra**, S. K. Karak, Fabrication and characterization of nano Y_2O_3 and Al_2O_3 dispersed W-Ni alloys by mechanical alloying and pressureless conventional sintering, IOP Conf. Series: Materials Science and Engineering, 338 (2018) 012037, DOI: 10.1088/1757-899X/338/1/012037.
7. **A. Patra**, S. K. Karak, R. Saxena, Fabrication and characterization of nano-ZrO_2 dispersed W-based alloy by mechanical alloying and conventional sintering, Materials Today: Proceedings, 4(2A) (2017) 3891-3902.
8. R .R. Sahoo, **A. Patra**, S. K. Karak, Fabrication of nano ZrO_2 dispersed novel $W_{79}Ni_{10}Ti_5Nb_5$ alloy by mechanical alloying and pressureless sintering, IOP Conf. Series: Materials Science and Engineering, 178 (2017) 012015, DOI:10.1088/1757-899X/178/1/012015.
9. R. Saxena, A. Patra, S. K. Karak, A. Pattanaik, S. C. Mishra, Fabrication and Characterization of novel $W_{80}Ni_{10}Nb_{10}$ alloy produced by mechanical alloying, IOP Conf. Series: Materials Science and Engineering, 115 (2016) 012026, DOI:10.1088/1757-899X/115/1/012026.
10. **Anshuman Patra**, Swapan Kumar Karak and Shyamal Kumar Pabi, "Synthesis and Characterization of Nanostructured Tungsten-30 atomic % Chromium produced by Mechanical attrition and Hydrogen sintering", Materials Science Forum, Vols. 830-831 (2015)59-62.
11. **A. Patra**, S. K. Karak, S. Pal, "Synthesis and Characterization of $W_{80}Ni_{10}Nb_{10}$ alloy produced by mechanical alloying", IOP Conf. Series: Materials Science and Engineering, 75 (2015) 012032, DOI:10.1088/1757-899X/75/1/012032.

TECHNICAL REPORTS

1. Atul Anand, **Anshuman Patra**, Swapan Kumar Karak, Characterization of novel W-Ni-Ti ternary alloys by XRD and SEM, Microscopy and analysis, John Wiley & Sons Ltd., 31 (6) (2017) 22-27.
2. **Anshuman** Patra, Swapan Kumar Karak, Snehanshu Pal, "Evolution of phase and mechanical, high temperature properties of nano tungsten-5 wt. % molybdenum alloy by mechanical alloying and argon purged Sintering", Microscopy and analysis, John Wiley & Sons Ltd, 29 (4), (2015) 18-22 (EU).
3. **Anshuman Patra**, "Prospect of Unleashing Value Engineering for Industrial Growth", International Journal of Advanced Research, 2(11), (2014) 80-90.
4. **Anshuman Patra**, Sandipan Chatterjee, Indranil Ganguly, "Unleashing Innovation across the value chain-A motto for Growth", Journal of Innovation and Sustainability, 4 (2) (2013) 47-59.
5. **Anshuman Patra**, "Improvement of Oxidation Resistance of Nanostructured Tungsten by Alloying: Analysis by SEM, TEM and XRD", Microscopy and Analysis, John Wiley & Sons Ltd, 26(5) (2012) 14-19.

BOOK PUBLISHED

1. **Anshuman Patra**, Oxide Dispersion Strengthened Refractory Alloys, CRC Press, (2022), ISBN : 9781003201007.
2. S. Pal, **A. Patra**, P. R. Padhee, Process Modeling for Steel Industry, IK International Publishing, (2018), ISBN : 9789385909399.
3. **Anshuman Patra**, Aluminium Alloys: From Casting to Customer, Studium Press (2017), ISBN: 978-93-85046-00-1.

BOOK CHAPTER PUBLISHED

1. **Anshuman Patra**, Powder Characterization Methods, In Powder Metallurgy and Additive Manufacturing: Fundamentals and Advancements, Shashanka Rajendrachari; Debasis Chaira (eds.), 2024, pp. 27-49. DOI : doi.org/10.31399/asm.tb.pmamfa.t59400027.
2. **A. Patra**, Nano-structured Materials in Additive Manufacturing: Synthesis, Properties, and Applications. In: Rajendrachari, S. (eds), Practical Implementations of Additive Manufacturing Technologies. Materials Horizons: From Nature to Nanomaterials, (2024) Springer, Singapore. https://doi.org/10.1007/978-981-99-5949-5_3.
3. **A. Patra**, S. K. Karak, T. Laha, Synthesis and Characterization of Oxide Dispersion Strengthened W-based Nanocomposite, In: S. Sidhu, P. Bains, R. Zitoune, M. Yazdani, (eds) Futuristic Composites. Materials Horizons: From Nature to Nanomaterials, (2018), Springer, Singapore. https://doi.org/10.1007/978-981-13-2417-8_13.

SPONSORED PROJECTS

Title	Sponsoring Agency	PI/Co-PI	Sanction Amount (Lakhs)	Duration (in months)	Status
Fabrication of Nano-Oxide Dispersed Tungsten Alloys by Mechanical Alloying for Armaments Application	ARMREB (DRDO)	Principal Investigator (P.I)	42.76254	48	Completed

CONSULTANCY PROJECTS

Title	Sponsoring Agency	Consultant /Co-Consultant	Duration (in months)	Status
Feasibility to use Indigenous Coke for manufacturing Ferrochrome with low-phosphorous	Indian Metals and Ferroalloys	Co-Consultant	1	Completed