

Curriculum Vitae

Ratnesh Kumar Gupta

Assistant Professor

Department of Metallurgical & Materials Engg.,
National Institute of Foundry and Forge Technology,
Ranchi.

Education:

Ph.D., Materials Science and Engineering, Brown University, USA, 2014

Thesis: Dynamic Deformation Behavior of Ni-containing High Strength Steels.

M.S., Materials Science and Engineering, Brown University, USA, 2010

M. Tech., Metallurgical Engg. & Mat. Sc., Indian Institute of Technology, Bombay, 2006

B. Tech., Metallurgical Engg. & Mat. Sc., Indian Institute of Technology, Bombay, 2006

Professional Appointments:

January 2015 – November 2015: **Assistant Professor, Dept. of Materials & Metallurgical Engg.**, Punjab Engineering College, Chandigarh.

December 2015 - Present: **Assistant Professor, Dept. of Materials & Metallurgical Engg.**, National Institute of Foundry and Forge Technology, Ranchi.

Honors and Awards:

1. Brown University Fellowship, 2006.
2. IIT Bombay Academic Performance Award for the year 2002-03.

Selected Publications and Presentations:

1. R. Gupta and K.S. Kumar, "Dynamic Deformation Response of a Fe-10Ni-0.1C Steel", EuroDymat, September 2009, Brussels.
2. R. Gupta and K.S. Kumar, "Dynamic Deformation Response of High-Strength Ni containing Steels", TMS Annual Meeting, 2011, San Diego.
3. Sung-Il Baik, Dieter Isheim, Divya Jain, R. K. Gupta, K.S. Kumar, David N Seidman, "An Experimental and Simulation Studies of a High Strain-Rate Deformation Shear Band in a High-Nickel Steel", Microsc. Microanal. 21 (Suppl 3), 2015
4. V. Kumar, R. Gupta and G. Das, "Effect of deformation on corrosion behavior of austenitic stainless steel: a review", International journal of recent scientific research, 2018.

5. Viranshu Kumar, Ratnesh Kumar Gupta, Ghanshyam Das, "Pitting and electrochemical behavior of 316L austenitic stainless steel subjected to warm deformation", IOP conference series: material science and engineering 653 (2019) 012038
6. Viranshu Kumar, Ratnesh Kumar Gupta, Ghanshyam Das, "Effect of Warm Forging on the Microstructure and Corrosion Behavior of Austenitic Stainless Steel 316LN", Materials Performance and Characterization, vol 9, no. 1 (2020): 94-106.
<https://doi.org/10.1520/MPC20190228>
7. Viranshu Kumar, Ratnesh Kumar Gupta, Ghanshyam Das, "Influence of Forging and Annealing on the Microstructure and Corrosion Behavior of Austenitic Stainless Steel", J. Inst. Eng. India Ser. D (2020).
<https://doi.org/10.1007/s40033-020-00209-2>
8. Viranshu Kumar, Ratnesh Kumar Gupta, Ghanshyam Das, "Influence of Deformation and Annealing on Microstructure and Corrosion Behavior of Austenitic Stainless Steel", Materials today : Proceedings 22P4 (2020) pp. 3347-3352
9. S. Baik, R.K. Gupta, K.S. Kumar, D.N. Seidman, Temperature increases and thermoplastic microstructural evolution in adiabatic shear bands in a high-strength and high-toughness 10 wt% Ni steel, Acta Mater. 205 (2021), 116568.
<https://doi.org/10.1016/j.actamat.2020.116568>
10. Serfaj Alam, Ratnesh Kumar Gupta, Ghanshyam Das, Vinod Kumar, B.K. Jha (2021). Development of High Strength Low Carbon Lean Micro-alloyed Steel with Optimized Toughness. In: Bag, S., Paul, C.P., Baruah, M. (eds) Next Generation Materials and Processing Technologies. Springer Proceedings in Materials, vol 9. Springer, Singapore.
https://doi.org/10.1007/978-981-16-0182-8_1
11. Ishwari Narain Choudhary, Vikash Kumar, Ratnesh Kumar Gupta, Nitesh Kumar Sinha, Jayant Kumar Singh, "Development and characterization of Fe500S TMT rebars", Indian Journal of Engineering & Materials Sciences, Vol. 31, April 2024, pp. 270-275.
[DOI: 10.56042/ijems.v31i2.1515](https://doi.org/10.56042/ijems.v31i2.1515)
12. Somnath Kumar, Ratnesh Gupta, Bimal Kumar Jha, "An Improved Inclusions Modification Strategy Through Barium-Alloyed Cored Wire Injection in Steel Refining", Journal of Failure Analysis and Prevention, Volume 24, Issue 4, June 2024, Pages 1828-1842.
<https://doi.org/10.1007/s11668-024-01966-y>

13. Somnath Kumar, Ratnesh Gupta, Bimal Kumar Jha, “Synergistic Effect of Calcium and Barium on Non-metallic Inclusions Modification and Improvement in Steel Cleanliness”, Transactions of the Indian Institute of Metals, Volume 77, Issue 9, May 2024, Pages 2601-2612.
<https://doi.org/10.1007/s12666-024-03351-7>

Leadership and Organizational Experience:

1. Vice president of social events at Brown University Graduate Student Council.
2. Treasurer of National Conference on Advances in Structural Materials, organized by department of MME, NIFFT Ranchi.
3. Joint Secretary of International Conference on Advances in Materials and Manufacturing, organized by NIFFT Ranchi.
4. Member of Entrepreneurship development cell at NIFFT Ranchi.
5. Warden of Nirala Hostel from 2022 to 2024.
6. Chairman of Security Management committee at NIAMT Ranchi from July 2024 to currently serving.

Teaching Experience

1. Heat and Mass Transfer
2. Material Science & Engg.
3. Manufacturing Technology
4. Advanced Materials
5. Characterization of Materials

Research Experience

Brown University

1. Dynamic Deformation Response of Fe-Ni steels: During PhD worked on understanding the dynamic deformation response of low-carbon, Fe-Ni steels. These steels were developed for high performance applications and have excellent combination of toughness and strength but they were found to be prone to acute shear localization at high strain rates at the highest strength levels. However, tempering to a somewhat lower strength level appears to increase the resistance to this localization phenomena. Thus, the scope of this project is to understand the effect of heat treatment (and corresponding microstructure) on dynamic deformation response so that we can

design alloys (composition by the way of Ni content, and heat treatment schedules) for improved ballistic resistance.

Indian Institute of Technology (IIT)-Bombay

- Fabrication of Micromorph thin film solar cell using hot wire chemical vapor deposition

method: Undertaken with the collaboration of Indian Space Research Organization. The goal of the project was to make high efficiency micromorph solar cell. These consist of a bottom microcrystalline silicon solar cell which absorbs the long wavelength light and a top amorphous silicon solar cell which absorbs the short wavelength light from the sun i.e. the so called n-i-p/n-i-p structure. The project involves working on various aspects of fabrication of such solar cells for its development and performance characterization.

Masters thesis supervised

1. Priyabrata Maji - Processing & characterization of low carbon SAE 1008 steel for wire rod application.
2. Ishwari Narain Choudhary – Study of process technology and effect of rolling parameters on quality of IS 1786 Fe500S rebar.
3. Rohit Kumar Mandal – Effect of heat treatment on corrosion behavior of ASS 304 in mild acid medium.
4. Udit Kumar – Heat treatment of 2507 super duplex stainless steel and its corrosion behavior
5. Abhinav Krishna – Heat treatment of F55 super duplex stainless steel and its corrosion behavior
6. Ajay Kumar singh – Heat treatment of 2205 duplex stainless steel and its corrosion behavior

Doctoral thesis Supervised

1. Mr. Viranshu Kumar - Effect of Deformation on Microstructure and Corrosion Behavior of Austenitic Stainless Steel – Awarded in 2023.

Doctoral thesis currently under supervision

2. Mr. Somnath Kumar – Development of third generation advanced high strength steel (AHSS) through quenching and partitioning (Q&P) heat treatment process
3. Md Serfraz Alam – Structure property co-relation on HARDON steel

Membership in Professional and Honorary Societies

- The Indian Institute of Metals (Life Member)

CV Updated: June 2025