Dr. Sai Ramudu Meka
Professor
Department of Metallurgical and Materials Engineering
Indian Institute of Technology Roorkee,
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EDUCATION

2007-2011 Ph. D from University of Stuttgart, Stuttgart, Germany
Max Planck Institute for Intelligent Systems, Stuttgart, Germany
2005-2007 Master of Technology (M. Tech) in Materials and Metallurgical Engineering from Indian Institute of Technology, Kanpur, India.
1998-2002 Bachelor of Engineering (B.E) in Metallurgy from National Institute of Technology Karnataka, Surathkal, India.

PROFESSIONAL EXPERIENCE

2025 Professor, Indian Institute of Technology Roorkee.
2021-2025 Associate Professor, Indian Institute of Technology Roorkee.
2015-2021 Assistant Professor, Indian Institute of Technology Roorkee.
2011-2015 Research Scientist, Max Planck Institute for Intelligent Systems, Germany
2002-2004 Junior Manager, Jindal South West Steel Ltd., Toranagallu, Karnataka, India.

ADMINISTRATIVE RESPONSIBILITIES

- Associate Dean Innovation and Incubation (from 4th June 2025)
- Coordinator, IPR Cell, IIT Roorkee (from 4th June 2025)
- Associate Dean Corporate Interaction (25th July 2022-04th June 2025)
- Acting CEO, AARTI Foundation, a section 8 company of IIT Roorkee (16th November 2024 to 11th September 2025)
- ABN society nominee to the ABN school management committee
- PI for Ministry of Education program "Capacity Building for Design and Entrepreneurship"
- Chairperson, Institute Lecture Series Committee
- Member of the Institute Research Day committee
- Wellness Warden
- Mentor for NIT Jalandhar for "Capacity Building for Design and Entrepreneurship" program
- Coordinator for X-ray diffractometers, Institute Instrumentation Center
- Member, Center Administrative Committee, Institute Instrumentation Center
- Member Secretary, Department Faculty Committee, MMED
- Member, Departmental Faculty Search Committee
- O.C. for (i) Welding laboratory, (ii) Vacuum Arc Melting Laboratory and (iii) Case-Study Course
- Addl. O.C. SEM laboratory, B-Tech Project

JOURNAL PUBLICATIONS

1. A. Kashyap, B. Vishwanadh, V. Singh, and **S.R. Meka***, Realizing enormous grain refinement together with vanadium carbides dispersion after carburization of ferritic Fe-4 wt. %V alloy, ***Metallurgical and Materials Transactions A***, 2025.
2. A. Kashyap, B. Vishwanadh, A. Chauhan, **S.R. Meka***, Unusual plate-type iron-carbonitrides development in nitrocarburized Fe-4 wt.% V alloy, ***Acta Materialia***, Vol. 263, 2024, p. 119523.

3. S. A. R Qadri, K. N. Sasidhar, B. Vishwanath, **S.R. Meka***, Discontinuous phase separation, interstitial ordering and recrystallization during nitriding of FeNiCo medium entropy alloy, ***Acta Materialia***, Vol. 263, 2024, p. 119532.
4. N. Jagadeesh, G.P. Chaudhari, **S.R. Meka***, Combined application of mechanical deformation and nitriding to realize optimal mechanical and anticorrosion properties for 316 stainless steel, ***JOM***, Vol. 76, 2024, p. 7146.
5. Y.Y. Chen, Z. Liu, **S.R. Meka**, Y. Huang, Z.M. Wang, Effect of interface structure on advanced bonding between tungsten-based materials and Cu alloys: a review, ***Tungsten***, 2025.
6. N. Jagadeesh, N. Kumar, K. N. Sasidhar, **S.R. Meka***, Role of dislocations and deformation induced martensite on salt bath nitriding response of austenitic stainless steel, ***Trans. Indian Inst. Met***, Vol. 76, 2023, p. 2835.
7. S.A.R. Qadri, K.N. Sasidhar, E. Jaegle, G. Miyamoto and **S.R. Meka*,** Nitrogen-Induced Phase Separation in Equiatomic FeNiCo Medium Entropy Alloy, ***Metallurgical and Materials Transactions A***. Vol. 53, 2022, p 3216-3233.
8. A.S. Yadav and **S.R. Meka*,** Aluminium nitride dispersion strengthened steel, ***International Journal of Materials Research***, Vol. 113, 2022, p 615-625.
9. Nitin Kumar, A.S. Yadav, G.P. Chaudhari, **S.R. Meka***, Effect of severe plastic deformation on pre-and post-nitriding conditions of 316 stainless steel, ***Transactions of the Indian Institute of Metals***, Vol. 75, 2022, p. 2787-2795.
10. Nitin Kumar, G.P. Chaudhari, **S.R. Meka***, Influence of Ultrasonic Shot Peening on Microstructure, Mechanical, and Electrochemical Behavior of 316 Stainless Steel, ***Journal of Materials Engineering and Performance***, Vol. 31, 2022, p. 2364-2380.
11. K.N. Sasidhar, M.P. Gururajan and **S.R. Meka***, Concentration-gradient-driven anisotropic spinodal decomposition kinetics: nitriding of metallic alloys, ***Philosophical Magazine Letters***, Vol. 101, 2021, p 432-443.
12. A.S. Yadav, P. Kurnsteiner, E. Jaegle, K.N. Sasidhar and **S.R. Meka***, Nitride Dispersion Strengthened Steel Development after Sintering of Nitrided Fe-4.6 at% Al Alloy Powder, ***Steel Research International***. Vol. 92, 2021, p 2100174.
13. S.A.R. Qadri, K.N. Sasidhar and **S.R. Meka***, High nitrogen alloying of AISI 316L stainless steel powder by nitriding, ***Powder Technology***. Vol. 390, 2021, p 456-463.
14. K.N. Sasidhar and **S.R. Meka***, Natural air atmosphere induced surface directed spinodal decomposition in stainless steel, ***Corrosion Science***, Vol. 166, 2020, 108433.
15. **S.R. Meka***, A.Schubert, E.Bischoff and E.J. Mittemeijer, Unusual iron-nitride formation upon nitriding Fe-Si alloy, ***Metallurgical and Materials Transactions A***. Vol. 51, 2020, p 3154-3166.
16. A.S. Yadav, P.Kurnsteiner, E. Jaegle and **S.R. Meka***, Nitridation and hydrogen reduction of Fe-2.3 wt% Al alloy powder, ***Powder Technology***. Vol. 374, 2020, p 527-533.
17. V.M.Rajavel Muthaiah, **S.R. Meka**, B.Venkata Manoj Kumar*****, Development of Dual Phase SiC/Si3N4 Nanostructures on Nanosized SiC particles, ***Philosophical Magazine Letters*****,** Vol. 100, No.2, 2020, p 74-85.
18. Nitin Kumar, G.P. Chaudhari, **S.R.Meka***, Investigation of low temperature liquid nitriding conditions for 316 stainless steel for improved mechanical and corrosion response, ***Transactions of the Indian Institute of Metals***, Vol. 73, 2020, p. 235-242.

19. K.N. Sasidhar and **S.R. Meka***, Thermodynamic reasoning for colossal N supersaturation in austenitic and ferritic stainless steels during low-temperature nitridation, ***Scientific Reports*****,** Vol. 9, Article number: 7996 (2019)
20. K.N. Sasidhar and **S.R. Meka*,** What causes the colossal C supersaturation of δ-ferrite in stainless steel during low-temperature carburization? ***Scripta Materialia***, Vol. 162, 2019, p. 118-120.
21. K.N. Sasidhar and **S.R. Meka*,** Immiscibility regions in iron based ferritic solid solutions and their relevance to thermodynamics and kinetics of nitriding, ***Philosophical Magazine***, Vol. 99, 2019, p 2152-2168.
22. V.M.Rajavel Muthaiah, **S.R.Meka**, B.Venkata Manoj Kumar*****, Processing of heat treated silicon carbide reinforced aluminium alloy composites, ***Materials and Manufacturing Processes***, Vol. 34:3, 2019, p. 312-320.
23. K.N. Sasidhar and **S.R. Meka*,** Spinodal decomposition during isothermal gas-solid equilibration – Its effects and implications, ***Acta Materialia***, Vol. 161, 2018, p. 266-272.
24. S. Sharma, A. Kashyap, V. Pancholi and **S.R. Meka**, Crystal structure and morphology of carbides developing upon heat-treating Carbon alloyed Cantor alloy, Materials Today Communications, Vol. 47, 2025, p. 113041.
25. Z. Hegedus*, **S.R. Meka** and E.J. Mittemeijer. Insitu consolidation of ball milled metals, ***Journal of Alloys and Compounds***, Vol. 695, 2017, p. 721-725.
26. T. Steiner*, **S.R. Meka**, H. Goehring and E.J. Mittemeijer. Alloying element nitride stability in iron-based alloys; denitriding of itride Fe–V alloys, ***Materials Science and Technology*****,** Vol. 33, 2017, p 23-32.
27. Z. Hegedus*, **S.R. Meka** and E.J. Mittemeijer. Crystallite growth in nanocrystalline tungsten; rate determining mechanism and the role of contaminations, ***Acta Materialia*****,** Vol. 105, 2016, p 232-243.
28. M. Akhlaghi*, **S.R. Meka,** E.A. Jaegle, S.J.B. Kurz, E. Bischoff and E.J. Mittemeijer. Formation mechanisms of alloying element nitrides in recrystallized and deformed ferritic Fe-Cr-Al alloy, ***Metallurgical and Materials Transactions A*****.** Vol. 47, 2016, p. 4578-4593.
29. M. Jung, **S.R. Meka*** and E.J. Mittemeijer. Incubation time for iron-nitride layer formation upon gaseous nitriding of iron-based alloys, ***Philosophical Magazine*****.** Vol. 96, 2016, p. 1369-1385.
30. T. Steiner*, **S.R. Meka,** B. Rheingans, E. Bischoff, T. Wadenmaier, G. Yeli, T.L. Martin, P.A.J. Bagot, M.P. Moody and E.J. Mittemeijer. Continuous and discontinuous precipitation in Fe-1 at.%Cr-1 at.%Mo alloy upon nitriding; crystal structure and composition of ternary nitrides, ***Philosophical Magazine.*** Vol. 95, 2016. P 1509-1537.
31. T. Steiner*, **S.R. Meka,** E. Bischoff, T. Waldenmaier and E.J. Mittemeijer. Nitriding of ternary Fe-Cr-Mo alloys; role of the Cr/Mo ratio, ***Surface and coatings technology.*** Vol. 291, 2016, p 21-33.
32. M. Akhlaghi*, T. Steiner, **S.R. Meka** and E.J. Mittemeijer. Misfit induced changes of lattice parameters in two-phase systems: Coherent/incoherent precipitates in a matrix, ***Journal of Applied Crystallography,*** Vol. 49, 2016, p 69-77.
33. M. Jung*, **S.R. Meka**, B. Rheingans and E.J. Mittemeijer. Coupling inward diffusion and precipitation kinetics; the case of nitriding iron-based alloys, ***Metallurgical and Materials Transactions A*****.** Vol. 47A, 2016, p 1425-1439.
34. **S.R. Meka***, A. Chauhan, T. Steiner, E. Bischoff, P.K. Ghosh and E.J. Mittemeijer. Generating duplex microstructures by nitriding; the nitriding of iron-based Fe-Mn alloy, ***Materials Science and Technology*****,** Vol. 32, 2016, p 883-889.

35. C.W. Kang, **S.R. Meka***, T. Steiner, R.E. Schacherl and E.J. Mittemeijer. Microstructural evolution of 31CrMoV9 steel upon controlled gaseous nitriding treatment, ***HTM Journal of Heat Treatment and Materials***, Vol. 71, 2016, p. 181-190.
36. M. Akhlaghi, T. Steiner, **S.R. Meka***, A. Leineweber and E.J. Mittemeijer. Lattice-parameter change induced by accommodation of precipitate/matrix misfit; misfitting nitrides in ferrite, ***Acta Materialia,*** Vol. 98, 2015, p 254-262.
37. S.J.B. Kurz*, **S.R. Meka**, N. Schell, W. Ecker, J. Keckes, E.J. Mittemeijer. Residual stress and microstructure depth gradients in itride iron-based alloys revealed by dynamical cross-sectional transmission X-ray microdiffraction, ***Acta Materialia***, Vol. 87, 2015, p 100-110.
38. M. Akhlaghi*, M. Jung, **S.R. Meka**, M. Fonovic, A. Leineweber and E.J. Mittemeijer. Dependence of the nitriding rate of ferritic and austenitic substrates on the crystallographic orientation of surface grains; gaseous nitriding of Fe-Cr and Ni-Ti alloys, ***Philosophical Magazine.*** Vol. 95, 2015, p 4143-4160.
39. T. Steiner, M. Akhlaghi, **S.R. Meka***and E.J. Mittemeijer. Diffraction-line shifts and broadenings in continuously and discontinuously coarsening precipitate-matrix systems; coarsening of initially coherent nitride precipitates in a ferrite matrix, ***Journal of Materials Science.*** Vol. 50, 2015, p 7075-7086.
40. S. Loewy*, B. Rheingans, **S.R. Meka** and E.J. Mittemeijer. Modulated martensite-formation behavior in Fe-Ni based alloys; athermal and thermally activated mechanisms, ***Journal of Materials Research***, Vol. 30, 2015, p 2101-2107.
41. C.W. Kang, **S.R. Meka***, R.E. Schacherl and E.J. Mittemeijer. Nitriding response of a quaternary iron-based Fe-2.82at.%Cr-0.13at.%Mo-0.18at.%V alloy, ***Metallurgical and Materials Transactions A*****.** Vol. 46A, 2015, p 328-336.
42. B. Schwarz, **S.R. Meka***, R.E. Schacherl, E. Bischoff and E.J. Mittemeijer. Nitriding of Iron-based Ternary Fe-V-Si Alloy; The Precipitation Process of Separate Nitrides, ***Acta Materialia***, Vol. 76, 2014, p 394-403.
43. S. Loewy*, B. Rheingans, **S.R. Meka** and E.J. Mittemeijer. Unusual martensite-formation kinetics in steels: observation of discontinuous transformation rates, ***Acta Materialia***, Vol. 64, 2014, p 93-99.
44. B. Schwarz,H. Göhring, **S.R. Meka***, R.E. Schacherland E.J. Mittemeijer. Pore formation upon nitriding iron and iron-based alloys; the role of alloying elements and grain boundaries, ***Metallurgical and Materials Transactions A***, Vol. 25A, 2014, p 6173-6186.
45. **S.R. Meka***, E. Bischoff, S.S. Hosmaniand E.J. Mittemeijer. Interrelationships of defects, nitride modification and excess nitrogen in itride Fe-4.75 at.% Al alloy, ***International Journal of Materials Research,*** Vol. 105, 2014, 11, p 1057-1066.
46. B. Schwarz, P.J. Rossi, L. Straßberger, F. Jörg, **S.R. Meka***, E. Bischoff, R.E. Schacherl, and E.J. Mittemeijer. Coherency strain and precipitation kinetics; crystalline and amorphous nitride formation in ternary Fe-Ti/Cr/V-Si alloys, ***Philosophical Magazine***, Vol. 94, 2014, 27, p 3098-3119.
47. G.K. Rane, U. Welzel, **S.R. Meka*** and E.J. Mittemeijer. Non-monotonic lattice parameter variation with crystallite size in nanocrystalline solids, ***Acta Materialia,*** Vol. 61, 2013, p 4524-4533.
48. H. Selg, E. Bischoff, **S.R. Meka**, R.E. Schacherl*, T. Waldenmaier and E.J. Mittemeijer. Molybdenum-nitride precipitation in recrystallized and cold rolled Fe-1at.%Mo alloy, ***Metallurgical and Materials Transactions A***, Vol. 44A, 2013, p 4059-4070.
49. J. Stein, R.E. Schacherl*, M. Jung, **S.R. Meka**, B. Rheingans and E.J. Mittemeijer. Solubility of nitrogen in ferrite; the Fe-N phase diagram, ***International Journal of Materials Research*****,** Vol. 104,2013, 11, p 1053-1065.
50. **S.R. Meka*** and E.J. Mittemeijer. Abnormal nitride morphologies upon nitriding iron-based substrates, ***JOM***, Vol. 65, 2013, p 769-775.

51. H. Selg, E. Bischoff, I. Bernstein, T. Woehrle, **S.R. Meka**[*], R.E. Schacherl, T. Waldenmaier and E.J. Mittemeijer. Defect-dependent nitride surface-layer development upon nitriding of Fe-1 at.%Mo alloys, ***Philosophical Magazine,*** Vol. 93, 2013, p 2133-2160.
52. H. Selg, **S.R. Meka**[*], M. Kachel, R. Schacherl, T. Waldenmaier and E.J. Mittemeijer. Nitriding behaviour of maraging steel: experiments and modelling, ***Journal of Materials Science***, Vol. 48, 2013, p 4321-4335.
53. **S.R. Meka**[*], E. Bischoff, B. Rheingans and E.J. Mittemeijer. Octapod-shaped, nanosized, amorphous precipitates in a crystalline ferrite matrix, ***Philosophical Magazine Letters,*** Vol. 93, 2013, p 238-245.
54. **S.R. Meka**[*], E. Bischoff, R.E. Schacherl and E.J. Mittemeijer. Unusual nucleation and growth of γ′ iron nitride upon nitriding Fe-4.75at.%Al alloy, ***Philosophical Magazine,*** Vol. 92, 2012, p 1083-1105.
55. **S.R. Meka**[*], K.S. Jung, E. Bischoff and E.J. Mittemeijer. Unusual precipitation of amorphous silicon nitride upon nitriding Fe-2at.%Si alloy, ***Philosophical Magazine***, Vol. 92, 2012, p 1435-1455.
56. K.S. Jung, **S.R. Meka**, R.E. Schacherl[*], E. Bischoff and E.J. Mittemeijer. Nitride formation and excess nitrogen uptake upon nitriding ferritic Fe-Ti-Cr alloys, ***Metallurgical and Materials Transactions A***, Vol. 43A, 2012, p 934-944.
57. **S.R. Meka**[*], R.E. Schacherl, E. Bischoff and E.J. Mittemeijer. Ideally weak nitriding kinetics during gaseous nitriding of Fe-2at.%Si alloy, ***HTM Journal of Heat Treatment and Materials***, Vol. 66, 2011, p 103-108.
58. **S.R. Meka**, S.S. Hosmani, A.R. Clauss and E.J. Mittemeijer[*]. The emergence and disappearance of a high density of microcracks in itride Fe-4.65at.%Al alloy, ***International Journal of Materials Research***, Vol. 99, 2008, p 808-814.

EDITORIAL ACTIVITY

S.R. Meka and G.P. Chaudhari, Editors, proceedings of International conference on *Advances in Materials & Processing: Challenges & Opportunities" (AMPCO-2017).* Published by Elsevier in Materials Today: Proceedings.

UG/PG COURSES TAUGHT

Metallurgical Thermodynamics, Materials Characterization, Metallography Laboratory, Heat Treatment Practicals, X-ray Diffraction Techniques.

NPTEL COURSES

- Offered 10 lectures in the NPTEL course named "Thermo-mechanical and Thermo-chemical processes". This course was offered jointly together with Prof. Vivek Pancholi, Metallurgical and Materials Engineering Department, IIT Roorkee.
- Offered 2 lectures in in the NPTEL course named "Plasma Physics and Applications" in which majority of lectures are by Prof. M.V. Sunil Krishna, Department of Physics, IIT Roorkee.

CONSULTANCY PROJECTS AS PI/Co-PI

Title	Sponsoring agency	Amount	Start date	End date (expected)	PI and Co-Pis
Efficacy of different coatings and surface modifications for bipolar plates of electrolyzers	BHEL	22.8 Lakhs	01st August 2024	30th April 2025	**PI: S.R. Meka** Co-PI: Prof. G. P. Chaudhari
Technical study on corrosion failure of grade 430 stainless steel	Jindal Steels Ltd	17 Lakhs	04th July 2024	31st January 2025	PI: Prof. G.P. Chaudhari **Co-PI: S.R. Meka**

RESEARCH PROJECTS AS PI

Title of the project	Sponsoring agency	Amount	Start date	End date	Co-PI/remarks
Max Planck partner group: Stress and Defects Driven Phase Transformations	Max Planck Society, Germany	≈ Rs. 80,00,000	16th May 2017	29th February 2022	completed
Design of stainless-steel chemistry for realization of colossal nitrogen supersaturation upon low temperature nitriding	DST-SERB	Rs. 67,91,400	28th December 2020	31st May 2024	completed
Thermal Conductivity and Specific Heat measurements for different metal alloys from 20K to 1000K	ISRO	Rs. 21,67,920	30th October 2024	30th October 2026	Co-Pis: Prof. Vivek Kumar Malik Prof. S.C. Sharma
Nitride dispersion strengthened steels	Grant of IIT Roorkee	Rs. 10,00,000	27th January 2017	26th January 2019	completed
Hydrogen Reduction of Mill Scale-Green Steel from Waste	Hella India Pvt. Ltd	Rs. 1400000	6th November 2024	31st March 2025	CSR project executed under AARTI, IIT Roorkee
Rare earth free permanent magnet Fe16N2	Danieli India Pvt Ltd	Rs. 1470000	4th November 2025	5th November 2026	Ongoing CSR project
Substitutional-Interstitial High Entropy Alloys	Global Institute for Materials Research Tohoku, Japan	400000 JPY	23rd December 2020	23rd December 2021	This project was awarded with travel grant to visit GIMRT Japan to work on proposed research. Due to Covid pandemic we could not utilize the opportunity of visiting GIMRT.
High strength steel sheets and wires production by Thermo-Mechano-Surface-Chemical Treatment	IMPRINT,	Rs. 96,00,000	Although this proposal has been evaluated (in three phases involving 5 reviewers) positively for its scientific and technical quality, the financial support to this project was declined as no ministry came forward to fund this project.		

RESEARCH PROJECTS AS Co-PI

Title	Sponsoring agency	Amount	Start date	End date	PI
Thermo-Mechanical characteristics of interstitial-substitutional high entropy CoCrFeMnNi (C, N) alloy	DST-SERB	Rs. 29,00,000	28th December 2020	29th June 2024	Prof. Vivek Pancholi
Digital Twinning of wire arc-based additive manufacturing to fabricate chiral auxetic structures for impact applications	AR&DB, DRDO	Rs. 50,59,920	26th June 2024	25th June 2027	Prof. Varun Sharma
Nature inspired hydrophobic surfaces with anti-fouling properties: An approach using cold spray additive manufacturing	Ministry of Earth Sciences (Deep Ocean Mission)	Rs. 57,99,907	21st October 2024	20th October 2027	Prof. Varun Sharma

PH. D THESES SUPERVISION

1	Dr. K.N. Sasidhar (awarded in 2020), Prime Minister Research Fellowship **(PMRF)** **PhD Topic:** metastable paraequilibrium states accessible during Gas/Solid equilibration Sr. Applications Scientist, CAMECA, Madison, USA.
2	Dr. Akeshwar Singh Yadav (awarded in 2022) **PhD Topic:** Development of Aluminium-Nitride dispersion strengthened steels Deputy Manager, Research and Development, Jindal Steel & Power Ltd., India.
3	Dr. Nitin Kumar (co-guide: Prof. G.P. Chaudhari) (awarded in 2022) **PhD Topic**: Mechanical and corrosion response of shot-peened liquid nitrided 316 stainless steel Asst. Manager, LG soft India.
4	Dr. S.A.R Qadri (awarded in 2024), Prime Minister Research Fellowship **(PMRF)** **PhD Topic:** Substitutional-Interstitial High Entropy Alloys Guest faculty at NIT Srinagar, India
5	Ms. Anupama Kashyap (awarded in 2025) **PhD Topic:** Nitrides and carbides precipitation and microstructure evolution during nitrocarburizing and carburizing of Fe-4Wt.% V alloy
6	Mr. Jagadeesh Neduri (awarded in 2026), Prime Minister Research Fellowship **(PMRF)** **PhD Topic:** Low temperature nitriding of stainless steels
7	Mr. Shubham Sharma (ongoing) (co-guide: Prof. Vivek Pancholi) **PhD Topic:** Thermo-mechanical behavior of high entropy alloys
8	Mr. Krishnakant Phand (ongoing) **PhD Topic:** Development of nitride dispersion strengthened stainless steels
9	Mr. Subodh Rana (ongoing), External industry (BHEL) sponsored part-time student **PhD Topic:** Boriding of steels
10	Mr. Devdutt Singh (ongoing, co-guide Dr. Bhrat Pant, BHEL), External industry (BHEL) sponsored part-time student **PhD Topic:** Diffusional processes in photovoltaic solar cells

ACHIEVEMENTS, HONOURS AND SCHOLARSHIPS

- **2024 IIM SAIL Gold Medal** award for a technical paper titled "Role of dislocations and deformation induced martensite on salt bath nitriding response of austenitic stainless steels" published in Transaction of Indian Institute of Metals (Vol. 76, 2023, P. 2835)
- Nominated to head the **Max Planck Partner Group** of Max Planck Institute for Iron Research, Dusseldorf, Germany at IIT Roorkee.
- **Academic Excellence Award** from Indian Institute of Technology, Kanpur, India for the best performance in the Master's program at IIT during academic year 2006.
- **Outstanding Reviewer Award** from **Acta Materilaia**
- Recipient of **IIT-DAAD Scholarship** in 2006-2007 under which Master's thesis work was carried out at Max Planck Institute for Intelligent Systems, Stuttgart, Germany.
- S.R. Meka et al, *Phil. Mag.,* Vol. 92, 2012, runner-up for the 2012 **James Clerk Maxwell Young Writers Prize**. Paper was awarded the distinction of being **highly commended**.
- Co-authored contribution, by T. Steiner, **S.R. Meka**, E. Bischoff, T. Waldenmaier and E.J. Mittemeijer,in European Conference on Heat Treatment and 21st IFHTSE Congress 2014 received the **IFHTSE-Tom Bell Young Author** award. Award was given to Mr. T. Steiner.
- Best poster award at **26th International Symposium on Metastable, Amorphous and Nanostructured Materials (ISMANAM 2019)**: K.N.Sasidhar and S.R.Meka "isothermal stabilization of metastable states upon controlled gaseous nitriding"
- **Reviewer for international journals** – Scripta Materialia, Acta Materialia, Metallurgical and Materials Transactions A, Philosophical Magazine, Steel Research International, Materials Characterization, Surface and Coatings Technology, Journal of Physics and Chemistry of Solids, Applied Physics Letters, Journal of Alloys and Compounds, Surface and Interface Analysis, Rare Metals, International Journal of Materials Research.

PARTICIPATION IN INDUSTRIAL NITRIDING RESEARCH PROJECTS

As a co-investigator, involved in industrial nitriding research projects carried out at department Mittemeijer, MPI-IS Stuttgart. In these projects usually industry funds a Ph.D student or a research engineer who resides at the Max Planck Institute to carry out the required research. In the below mentioned projects, I was a co-investigator and all the projects were executed under the leadership of Prof. Mittemeijer. As the research carried out was of direct technological relevance, only the brief summary is presented without specific technical details.

Company: Robert Bosch GmbH, Stuttgart, Germany
My role: Co-investigator (**Dr. H. Selg** was the principle investigator)
Project description: Above indicated company was already employing gaseous nitriding treatment to enhance the performance of their several automotive engineering components. Company was interested in understanding the nitriding response of a maraging steel which they utilize to produce a key automobile component. We have performed fundamental investigations on their steel specimens and also on model alloy specimens based on the corresponding steel chemistry.

Company: Hyundai Motors, South Korea

My role: Co-investigator (Mr. **C.W. Kang** was the principle investigator)
Project description: Above indicated company was already employing the gaseous nitriding treatment to enhance the fatigue and wear resistances of automobile transmission gears. However, they had some premature failure of components which they wanted to rectify. For that they deployed their employee (Mr. C.W. Kang) at Dept. Mittemeijer to investigate the problem utilizing our expertise in this field. We have investigated their steel specimens and also the model alloys related to their steel.

Company: Robert Bosch GmbH, Stuttgart, Germany
My role: Co-investigator (Mr. **T. Steiner** was the principle investigator)
Project description: Above indicated company was already employing the gaseous nitriding treatment to enhance the performance of their several automotive engineering components. Company was interested in understanding the nitriding response of high carbon steel which they utilize to produce a key automobile component. We are performing fundamental investigations on their steel specimens and model alloys based on their steel chemistry so that the optimal nitriding parameters can be explored.

Research guidance at Max Planck Institute for Intelligent Systems (MPI-IS), Stuttgart, Germany
Offered research guidance to post-docs, Ph.D. students and master students during my stay at Max Planck Institute for Intelligent Systems, Stuttgart, Germany. Note that in Germany, officially only professor can be the main supervisor of doctoral thesis: in all the below listed post-doc research projects, dissertations and master thesis projects Prof. Mittemeijer was the main advisor.

Details of post-doc research projects co-guided by me

Sl. No.	Name of PDF	Research Topic	Institute	Other supervisors
1	Dr. Z. Hegedus	Microstructure of severely plastically deformed metals and the thermal stability of nanocrystalline metals	Max Planck Institute for Intelligent Systems	Prof. E. J. Mittemeijer
2	Dr. M. Jung	Modeling the evolution of nitrided-region upon gaseous nitriding of Iron alloys	Max Planck Institute for Intelligent Systems	Prof. E. J. Mittemeijer and Dr. B. Rheingans

Details of Ph. D theses co-guided by me

Sl. No	Name of student	Topic	Institutes	submission	Other supervisors
1	T. Steiner	Internal precipitation of nitrides in iron-based alloys	University of Stuttgart and MPI-IS, Germany.	18.03.16	Prof. E.J. Mittemeijer
2	S. Loewy	Formation of lath martensite	University of Stuttgart and MPI-IS, Germany.	08.12.15	Prof. E.J. Mittemeijer and Dr. B. Rheingans
3	M.Akhlaghi	Precipitation of nitrides in iron-based binary and ternary alloys	University of Stuttgart and MPI-IS, Germany	25.11.15	Prof. E.J. Mittemeijer
4	B. Schwarz	Gas nitriding of Iron-based alloys	University of Stuttgart and MPI-IS, Germany.	30.07.14	Prof. E.J. Mittemeijer and Dr. R. Schacherl