

Curriculum vitae



Dr. K. Chandra Sekhar

Assistant Professor

Department of Materials and Metallurgical Engineering

National Institute of Advanced Manufacturing Technology (**NIAMT**),

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NIAMT Joining Date: 03-01-2024, Date of Birth: 05-08-1975, Marital status: Married

Engineering Qualifications

1) Doctor of Philosophy (Ph.D) from Metallurgical Engineering and Material Science,
Indian Institute of Technology Bombay (I I T Bombay)

Thesis title: Effect of Sine wavy rolling on Microstructure, Mechanical and Magnetic Properties
of AISI 304 Austenitic Stainless Steel Sheets

2) GATE-2011 Metallurgical Engineering: Score 276; All India Rank: 569

3) GATE-2010 Metallurgical Engineering: Score 224; All India Rank: 752

4) Bachelor of Technology (B. Tech.) in Metallurgical Engineering, IASE Deemed University

5) Post Diploma in Welding Technology (1½ years), Govt. Post Diploma College, Vizag (AP)

6) Diploma in Metallurgical Engineering (3 ½ years), Govt. Polytechnic College, Vijayawada

Basic Qualifications

7) 12th Class, TSR National junior college, Pendurthi, Board of Intermediate Education, Hyd, AP

8) 10th Class, MPL High School, Vizag, Board of Secondary Education, Andhra Pradesh

Professional Academic Experience

- 1) Technical Officer, Metallurgical and Materials Engineering Dept.,
Indian Institute of Technology Roorkee (I I T Roorkee) (From 11/Dec/2014 to 02/Jan/2024)
- 2) Technical Superintendent, Materials Science and Engineering Dept.,
Indian Institute of Technology Kanpur (I I T Kanpur) (From 16/Oct/2011 to 10/Dec/2014)
- 3) Jr. Technical Superintendent, Materials and Metallurgical Engineering Dept.,
Indian Institute of Technology Kanpur (I I T Kanpur) (From 16/Oct/2001 to 15/Oct/2011)

Industrial Experience

- 4) Metallurgist, M/s Sarita Steel and Industries limited, Visakhapatnam
From Mar, 1999 to Oct, 2001 (Steel Plant)
- 5) Trainee Operator, M/s Synergies-Dooray automotive limited, Visakhapatnam,
From Aug, 1998 to March 1999 (Aluminum die-casting foundry)
- 6) Technical trainee for 6 months in M/s Nelcast limited, Gudur, during 1998
- 7) Technical trainee for 6 months in Visakhapatnam steel plant, during 1997

Specialization and Expertise

I have an experience and knowledge in the process metallurgy of iron making, steel making, secondary steel making, continuous casting, hot-rolling, cold-rolling, and heat treatment as well as Non-ferrous extraction by working in industries of long and flat products of wire-rods, TMT bars, structural sections, plates and sheets. I have gained **Hands-on** experience in process, physical and mechanical metallurgy, testing, inspection, characterization, and analysis of various metals by using dissimilar methods (tensile, hardness, impact, creep, and fatigue testing, spectroscopy (OES), TEM, SEM, AFM, and non-destructive testing (NDT) etc.

Received awards / training certificates

- 1) First prize received for poster in EMSI 2015, July 8-10, BARC, Mumbai
- 2) Best paper award received in RAFTS 2012, Oct 4-6, RDCIS, SAIL, Ranchi, India.
- 3) “Honorable Mention” award received from 2007 international metallographic contest,

Organized by ASM International Metallographic Society.

- 4) Certificate of Proficiency in Welder (Heavy plates and Pressure vessels)
Advanced vocational training system, Govt of India, Visakhapatnam, AP, INDIA.
- 5) Training in Destructive and Non- Destructive testing of metals and alloys,
From 3/1/2005 to 4/2/2005, Regional Testing Centre, Chennai, SIDO, SSI, Govt of India
- 6) Training in operation of Atomic Force Microscope (21/11/2008 to 27/11/2008) Russia.
NT-MDT (Molecular Device and Tools for Nano Technology) Company, Moscow.
- 7) Training in workshop on Analytical Instrumental Techniques Current Trends and prac.,
From 20/6/2006 to 23/6/2006, Regional Research Laboratory, Bhubaneswar, Orissa
- 8) Training certificate on High Resolution Electron Microscopy (HREM)
Conducted by FEI Company, Netherlands, in JNCASR, Bangalore
- 9) Workshop on “Statistical Analysis for Engineers-2012 during July 2 – 6, 2012, IIT Kanpur

Journal Papers Publication

- 1) **K. Chandra Sekhar**, B.P. Kashyap, Sandeep Sangal, Characterization of Pearlite Morphology and Associated Micro cracks in EN9 Grade Carbon Steel by Atomic Force Microscope, *Advanced Materials Research* 585 (2012) 67-71.
- 2) **K. Chandra Sekhar**, B.P. Kashyap, Sandeep Sangal, AFM Characterization of Structural Evolution and Roughness of AISI 304 Austenitic Stainless steel under Sever Deformation by Wavy Rolling, *Advanced Materials Research*, 794 (2013) 230-237.
- 3) **K. Chandra Sekhar**, B.P. Kashyap, S. Sangal & R.D.K. Misra, Strengthening of a thin austenitic stainless steel coil by cold wavy rolling with no magnetic and dimensional changes *Philosophical Magazine Letters*, Vol. 95, No. 10 (2015) 483–488.
- 4) Mohd Anwar, Arvind Tripathi, Sushil Kumar Kar, **K. Chandra Sekhar**, Effect of PFM Firing Cycles on the Mechanical Properties, Phase Composition, and Microstructure of Nickel Chromium Alloy, *Wiley online library, Journal of Prosthodontics* 24(8), (2015) 634-641.

- 5) **K. Chandra Sekhar**, B. P. Kashyap, Sandeep Sangal, A Process of Notch Wavy Rolling for Strengthening Metal Sheets, *Materials and Manufacturing Processes* 31(2016) 781-786.
- 6) **K. Chandra Sekhar**, B.P. Kashyap, M. Siva Kumar, S. Sangal, Strengthening of thin sheet metals for advanced structural applications by various notch wavy rolling techniques, *Materials Today: Proceedings*, Vol. 5, (2018) 16871-79.
- 7) Abhijeet Prem kumar Moon, **K. Chandra sekhar**, Soumitro Mahanty, Sandeep Sangal, Kallol Mondal, Corrosion behavior of newly developed high strength bainitic railway wheel steels, *Journal of materials engineering and performance*, Vol 29 (2020) 3446-59.
- 8) **K. Chandra Sekhar**, Advanced physical model of hydrothermic reduction of iron ore pellets by dissociated $2H^+$ ionic gas in the shaft furnace, *CANADIAN METALLURGICAL QUARTERLY* (2023), <https://doi.org/10.1080/00084433.2023.2216077>

Conference Papers Publication

- 1) **K. Chandra Sekhar**, B.P. Kashyap, Sandeep Sangal, Wavy Rolling to Improve the Yield Strength of an Austenite Stainless Steel without Effecting Microstructure and Physical Dimensions, RAFTS-2012, Oct 4-6, RDCIS, SAIL, Ranchi, India.
- 2) **K. Chandra Sekhar**, B.P. Kashyap, Sandeep Sangal, Study of Grain Boundaries in Austenitic Stainless Steel Using Optical Dark Field Light Microscopy, ID: ISCA-ISC-2012-11MatS-29.
- 3) **K. Chandra Sekhar**, Detection of surface and internal structural defects of stainless steels under quality inspection program, MESC 2014 Oil and Gas industries, Oct 21-23, 2014, Dubai, UAE.

4) **K. Chandra Sekhar**, B.P. Kashyap, S. Sangal, S.K. Nath, R.D.K. Misra, Study of dislocation cell structure by TEM and AFM in an annealed 304 austenitic stainless steel, EMSI 2015, July 8-10, BARC, Mumbai.

5) **K. Chandra Sekhar**, Carbon dioxide emission free iron production by strongly ionized H⁺ ion plasma gases, 5th European steel technology and application days (ESTAD 2021), published for full oral presentation and online version.

Projects undertaken

| Sl. No. | Name of Sponsoring Agency | Project Title | Amount Sanction | From | To | Contribution and Organization | Status |
|---------|--|---|-----------------|------|------|-------------------------------|-----------|
| 1 | TMRS project sponsored by RDSO Lucknow | Wheels and axles of improved metallurgy | 1.1 cores | 2004 | 2008 | As a TEAM number IIT KANPUR | Completed |
| 2 | RuTAG India | Improved metallurgy of horse shoes | 10.5 Lakhs | 2009 | 2014 | As a Co-PI IIT KANPUR | Completed |
| 3 | M/s Rimjhim Stainless steel ltd. Unnao | Analysis of microstructural defects in austenitic stainless steel wire rods | 2.5 lakhs | 2016 | 2016 | As a Co-PI IIT ROORKEE | Completed |
| 4 | M/s Rimjhim Stainless steel ltd. Unnao | Investigation of martensite phase transformation in cold rolled austenitic stainless steel sheets | 1.77 lakhs | 2019 | 2019 | As a Co-PI IIT ROORKEE | Completed |

Actively participated events

- 1) International Conference on Rolling and Finishing Technology of Steel (RAFTS – 2012) held at Ranchi, India during the period October 4-6, 2012. The conference is being organized by the R&D Centre for Iron and Steel, SAIL, www.rafts.in
- 2) The International Science Community Association organized the 2nd International Science Congress (ISC-2012) at Vrindavan, (Mathura) UP, India with "Science and Technology - Challenges of 21st Century" as its focal theme. The congress was hosted by Bon Maharaj Engineering College, on 8th and 9th December 2012.
- 3) A series of AMPCO international conferences for development of materials and processes organized by Department of Metallurgical & Materials Engineering, IIT Roorkee in the years of 2012, 2017 and 2022 respectively to showcase recent advances in materials processing and applications.
- 4) Invited talk in Middle East Steel Conference for Oil and Gas (MESC 2014) held from October 21st - 23rd, at InterContinental, Festival City, Dubai, United Arab Emirates and organized by Knowledge Expansion & ASM Saudi Chapter.
- 5) International Conference on Electron Microscopy- EMSI-2015, Wednesday, July 8 - Friday, July 10, 2015. Vashi Convention Centre, NAVI Mumbai, Mumbai, India
- 6) Workshop: “Materials and Processes for High Temperature Applications” Coordinator: Dr. BV Manoj Kumar and Dr. V Dabhade, June 06-10, 2016.
- 7) 7th Gleeble Users Workshop India (GUWI'18) and "National Conference on Physical Simulation of Thermo-Mechanical Processing of Materials (NC-PSTMPM), Sponsored by

Dynamic System Inc. (DSI) and Dynamic Testing System (DTS), Chairman: Prof Anjan Sil, 12-13 Oct 2018.

8) QIP short term course on “Physical Simulation of Thermo-Mechanical Processes – Analysis and Interpretation”, sponsored by QIP, Co-coordinators: Dr. Vivek Pancholi, and Dr. S. R. Meka, 2-6 July 2018 in IIT Roorkee.

9) In 2021, ASMET, AIM, Steel Institute VDEh and Jernkontoret organized the 5th European Steel Technology & Application Days (ESTAD), the leading European technical conference for the Steel industry. The conference held in June 14-18, 2021 at Stockholm, Sweden.

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