KUMKUM BANERJEE, PhD
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RESEARCH INTERESTS

Thermo-mechanical Processing of Metals; Joining of Metals; Materials Characterization; Microstructure-Property Correlation; Corrosion and Hydrogen Embrittlement of Metals; Texture in Metals; Recrystallization and Precipitation Kinetics; Product Development in Steel; Electropulsing: Additive Manufacturing

SKILLS

- Hands on experience in using **EG & G PARC & PS6 potentiostats**
  (*for corrosion rate measurement*)
- Hands on experience in handling **Instron tensile testing equipment**
  (*for tensile properties of materials*)
- Hands on experience in using **CORTEST slow strain rate testing (SSRT) machine**
  (*for hydrogen embrittlement studies*)
- Hands on experience in using **XRD and X-ray texture goniometer**
- Hands on experience in using optical microscope, **SEM including FEG-SEM-EDS-EBSD and TEM-EDS and STEM-EDS**
  (*for materials characterization*)
- Hands on experience in handling **Gleeble 1500 and Gleeble 3500 thermomechanical simulators**
  (*for thermomechanical simulation studies*)
- **Research, teaching, reviewing and editorial expertise**
- Experience with Windows operating system, such as, Windows 95/98/NT/XP and Microsoft office, such as Word/Excel/PowerPoint and ability to handle different software
- Experience in specialized software such as those applicable for **EG & G and PS6 systems for corrosion studies, texture goniometry, XRD, image analysis, SEM-EDS, EBSD, TEM-EDS, Gleeble 1500 and 3500, Thermo-Calc**, etc.

EDUCATION

- 1999 PhD Degree in Metallurgical Engineering from **Indian Institute of Technology (IIT), Kharagpur**, India
  Title of Thesis: Hydrogen Embrittlement of HSLA-80 and HSLA-100 Steels in Seawater under Cathodic Charging Conditions
- 1994 BSc Engineering Degree (Metallurgical) from **BIT, Sindri, Dhanbad**, [Vinoba Bhave University, Hazaribagh], India
  Title of Thesis: A Review on Composite Materials

POST-DOCTORAL RESEARCH EXPERIENCE

- Research Associate at the Department of Materials Science and Engineering, **Carnegie Mellon University (CMU), Pittsburgh, Pennsylvania, USA** in the year 2000-2001
- Post-Doctoral Fellow at the Department of Mechanical and Industrial Engineering, **University of Manitoba (UofM), Winnipeg, Manitoba, Canada** in the year 2002-2004
- Research Associate at the Department of Materials Engineering, **The University of British Columbia (UBC), Vancouver, British Columbia, Canada** in the year 2008-2009 (*on study leave from Tata Steel Ltd, Jamshedpur, India*)

WORK EXPERIENCE

Dec 2024-To date	Dept. of Metallurgical & Materials Engineering **National Institute of Technology Karnataka (NITK) Surathkal, Mangalore, Karnataka, India**	**Professor**
Jan 2024-Jan 2026	Dept. of Metallurgical & Materials Engineering **National Institute of Technology Karnataka (NITK) Surathkal, Mangalore, Karnataka, India**	**Head of the Department**
Aug 2015-Dec 2024	Dept. of Metallurgical & Materials Engineering **National Institute of Technology Karnataka (NITK) Surathkal, Mangalore, Karnataka, India**	**Associate Professor**
Aug 2004- Aug 2015	Research and Development Division **Tata Steel Limited (TSL)** **Jamshedpur, Jharkhand, India**	**Principal Researcher & Project Leader**
April 2008-Feb 2009 (*On study leave from Tata Steel Limited Jamshedpur*)	Dept. of Materials Engineering **The University of British Columbia (UBC)** **Vancouver, British Columbia, Canada**	**Post-Doctoral Research Associate** (In a sponsored project—"Development of HAZ microstructure models of high strength line pipe steels")
May 2002-Mar 2004	Dept. of Mechanical & Industrial Engineering **University of Manitoba (UofM)** **Winnipeg, Manitoba, Canada**	**Post-Doctoral Fellow** (In a sponsored project---"Weldability assessment and improvement of Ni-based superalloys")
Jan 2002-April 2002	Dept. of Metallurgical & Materials Engineering **Indian Institute of Technology (IIT)** **Kharagpur, India**	**Project Consultant** (In a BRNS sponsored project—"Stress corrosion cracking of Hastelloy 'C' in fluoride environment")
Jan 2001-Jan 2002	Corrosion Protection Division **National Metallurgical Laboratory (NML-CSIR Lab)** **Jamshedpur, India**	**Scientist**

Aug 2000-Jan 2001	Dept. of Materials Science & Engineering **Carnegie Mellon University (CMU)** **Pittsburgh, Pennsylvania, USA**	**Post-Doctoral Research Associate** (In a sponsored project- "Microstructure, mechanical properties and texture of strip cast low 'C' steel sheets")
Feb 2000- July 2000	Dept. of Construction, Materials Engineering and Industrial Design, **Western Michigan University (WMU)** **Kalamazoo, Michigan, USA**	**Assistant Professor**
Dec 1999-Jan 2000	Dept. of Metallurgical & Materials Eng. **Indian Institute of Technology (IIT)** **Kharagpur, India**	**Post-Doctoral Research Associate** (In an Indo-US project- "Corrosion characteristics of advanced ferrous alloys" in collaboration with Naval Research Laboratory (NRL), Washington, DC, USA)
Nov 1995-Dec 1999	Dept. of Metallurgical & Materials Eng. **Indian Institute of Technology (IIT)** **Kharagpur, India**	**Research Fellow (Ph.D. Candidate)** (In an Indo-US project--"Corrosion characteristic of advanced ferrous alloys" in collaboration with Naval Research Laboratory (NRL), Washington, DC, USA
June 1995-Oct 1995	Dept. of Fuel & Mineral Engineering **Indian Institute of Technology [IIT (ISM)]** **(Indian School of Mines)** **Dhanbad, India**	**Junior Research Fellow** (In a sponsored project--"Modelling and scale-up studies of water only cyclone treating coal")

SPONSORED PROJECT

Young Scientist's Project – "Mechanical and Corrosion Characteristics of Al-Ni and Al-Fe-Ce alloys'', while working at NML Jamshedpur **in 2002**, funded by Department of Science and Technology (DST), Govt. of India (GOI)

SUPERVISION/MENTORING & COACHING

- Mentored and trained Research Associates, Interns, Junior Researchers and Supervisors of the R&D Dept. of Tata Steel Limited, Jamshedpur, India
- PhD external thesis examiner
- MTech Thesis Supervised – "Ageing and Recrystallization Behaviour of IF-Cu-steel" of IIT Kharagpur, India [Co-Supervisor, Student Name: Mr. Shambhu Sharan Patel, 2006]
- Coaching, mentoring and supervising UG, MTech and PhD students of Department of Metallurgical and Materials Engineering, NITK Surathkal, Mangalore, Karnataka, India, since Aug 2015

ACADEMIC COURSES HANDLED

Powder Metallurgy and Joining of Metals (Undergrad theory course), Advanced Welding Technology (Undergrad theory course), Steels and their Heat Treatment (Graduate theory course), Physical Metallurgy (Undergrad theory course), Physical Metallurgy (Undergrad lab course), Metallography (Undergrad lab course), Corrosion Science and Engineering

(Graduate theory course), Materials Engineering (Graduate lab course), Corrosion Science and Engineering (Graduate lab course)

RESEARCH PROJECTS HANDLED

University/Research Lab/ Post-doctoral Projects (*selected major projects*)

- ✓ Modelling and scale up studies of water only cyclone treating coal.
  ---Indian Institute of Technology (Indian School of Mines), Dhanbad, India
- ✓ Hydrogen embrittle of HSLA-80 and HSLA-100 steels in seawater under cathodic charging conditions (Ph.D. work)
  ---Indian Institute of Technology, Kharagpur, India
- ✓ Microstructure, mechanical properties and texture of strip cast Low C steel sheets (post-Doctoral research Work)
  —Carnegie Mellon University, Pittsburgh, USA

- The work was supported by the renowned steel industries (AKV, SMS, LTV, Dofasco, US-Steel etc.) in North America, and the steel, first of its kind, was supplied by Broken Hill Proprietary (*now BlueScope*), Australia.
- This study helped render knowledge about microstructure, texture and recrystallization kinetics in the steel in various non-conventional novel processing conditions that subsequently helped select suitable operating conditions for obtaining favourable microstructure and texture to generate desired mechanical properties
- The optimized processing parameters were implemented duly.
- The work was published in 'Iron and Steelmaker' in 2003 and was presented in an international conference.

- ✓ Weldability improvement in Ni-Based superalloys (post-Doctoral research Work)
  ---University of Manitoba, Winnipeg, Canada

- The project was sponsored by NSERC, Canada and was in collaboration with Bristol Aerospace Limited, Canada.
- Weldability of the alloys was improved and the same was subsequently implemented.
- A part of the work was presented at the 15th Canadian Materials Science Conference, Nova Scotia, Canada, held in June 2003 and the full work was published in the 'Metallurgical and Materials Transactions A', 2005.
- A review article on the effect of magnesium on superalloys was published in Materials Sciences and Applications in 2011.

- ✓ Development of HAZ microstructure models for high strength line pipe steels (*Research work during study leave from Tata Steel)*
  --- The University of British Columbia, Canada

- The project had partners from the leading Canadian manufacturer of line pipe, EVRAZ (formerly IPSCO) and the builder and operator of major Canadian pipelines (TransCanada), and the leading supplier of pipeline welding equipment (CRC-Evans).
- The work had been published in the 'Metallurgical & Materials Transactions A', 2010, 'Solid State Phenomena', 2011and 'Materials Science Forum', 2012.

- A patent was filed for a part of the work (Application No. 172/KOL/2010 dated 23 Feb 2010).

  The work was also published in 2-international conference proceedings and presented in 2-international conferences and 1-national conference.
  ---National Metallurgical Laboratory (CSIR Laboratory), Jamshedpur, India

✓ Corrosion behaviour of low carbon strip cast steels
✓ Mechanical and Corrosion Characteristics of Al-Ni and Al-Fe-Ce alloys **(Young Scientist's Project awarded by DST, GOI, India)**

Major (*selected*) Research Projects Completed at Tata Steel Limited, Jamshedpur India

✓ Texture evaluation of CRCA IF, IF-HS and EDD grade steels
✓ Development of IF steel for critical applications
✓ Improvement of formability in Interstitial Free High Strength (IF-HS) Steel
✓ Reduction in mill load of HSM Stand (1, 2 & 3) for TMBP-2
✓ Development of high carbon graphitic steels with enhanced drawability
✓ Development of advanced high strength steels (AHSS) with superior weldability aiming plug type nugget of diameter $<6\sqrt{t}$
✓ Development of X-70 linepipe steel through TSCR for non-sour environment
✓ Optimisation of microstructure of TFF tubes for eliminating the defects during processing
✓ Designing of microstructure in medium/high carbon steels for superior properties using electropulsing
✓ Improving tensile properties of low-carbon steels by rapid annealing technique

Research Projects Guided: At NIT Karnataka, Surathkal, Mangalore, Karnataka, India (*current institute*)

PG Projects Guided:

1 Year 2016-17 (MTech Thesis Project, NITK Surathkal—in collaboration with DMRL, Hyderabad)

Project Title: Mechanical property and Microstructural correlations of gamma-TiAl alloys

Student: Mr Abheepsit, NITK Surathkal

2 Year 2016-17 (MTech Thesis Project, NITK, Surathkal—in collaboration with DMRL, Hyderabad)

Project Title: Internal friction: Approaches and some application in material characterization

Student: Mr Sooraj S Rao, NITK, Surathkal

3 Year 2016-17 (MTech Thesis Project, NITK, Surathkal—in collaboration with IGCAR, Kalpakkam, India)

Project Title: Corrosion studies on thermally treated commercially pure titanium

Student: Mr Mallikharjuna Reddy, NITK, Surathkal

4. Year 2018-19 (MTech Thesis Project, NITK, Surathkal—in collaboration with Tata Steel, Jamshedpur, India)

Project Title: Understanding the influence of build strategy on microstructure and mechanical Properties of additively manufactured SS316L by laser metal deposition

Student: Mr Sreeram Dingari, NITK, Surathkal

5. Year 2018-19 (MTech Thesis Project, NITK, Surathkal—in collaboration with DMRL, Hyderabad, India)

Project Title: Laser Shock Peening (LSP) on Pure Aluminium—Simulation Studies

Student: Mr Chinmai Bhat, NITK, Surathkal

6. Year 2018-19 (MTech Thesis Project, NITK, Surathkal—in collaboration with GE, Bangalore, India)

Project Title: Comparative study on cast versus additively manufactured nickel-based superalloys

Student: Mr Ananthkrishnan Ullas, NITK, Surathkal

7. Year 2019-20 (MTech Thesis Project, NITK, Surathkal—in collaboration with DMRL, Hyderabad, India)

Project Title: Effect of heat treatment on microstructure and properties of a high strength low alloy steel

Student: Mr. Sreerag M, NITK, Surathkal

8. Year 2019-20 (MTech Thesis Project, NITK, Surathkal—in collaboration with DMRL, Hyderabad)

Project Title: Evaluation of Plain strain compression behavior of high strength low alloy steels using Gleeble thermomechanical simulator

Student: Mr Karthik V Venkitesh, NITK, Surathkal

9. Year 2019-20 (MTech Thesis Project, NITK, Surathkal—in collaboration with JSW, Bellary, India--*continuing*)

Project Title: Study of rapid transformation annealing in steels

Student: Mr Karthik Shinde, NITK, Surathkal

10. Year 2020-21 (MTech Thesis Project, NITK, Surathkal)

Project Title: Joining of Dissimilar Aluminium Alloys with Steels using Gas Metal Arc Welding and Gas Tungsten Arc Welding

Student: Mr Gaurav Singh, NITK, Surathkal

11. Year 2020-21 (MTech Thesis Project, NITK, Surathkal)

Project Title: Recrystallisation Kinetics and Micro Texture of Low Carbon Strip Cast Steel

Student: Mr Dibin Dinesh K, NITK, Surathkal

12. Year 2020-21 (MTech Thesis Project, NITK, Surathkal)

Project Title: Fusion Welding of Austenitic Stainless Steel with Ferritic Stainless Steel using GTAW and GMAW Processes

Student: Mr Tanmoy Sur Choudhury, NITK, Surathkal

13. Year 2021-22

Project Title: Recrystallization and texture of microalloyed steels

Student: Mr Devender Sharma, NITK, Surathkal

14. Year 2021-22

Project Title: Microstructure and texture of advanced high strength steels

Student: Mr Rahul K R, NITK, Surathkal

15. Year 2021-22 (MTech Thesis Project, NITK, Surathkal—in collaboration with ARCI, Hyderabad)

Project Title: Laser welding of iron-based superalloys

Student: Mr Hitesh Kumar, NITK, Surathkal

16. Year 2021-22 (Discontinued by student to join job)

Project Title: Laser welding of aluminium alloys with steel

Student: Mr Ravi Teja Nagireddy, NITK, Surathkal

17. Year 2021-22

Project Title: Friction stir welding of aluminium alloys with steel

Student: Mr Manish Dubey, NITK, Surathkal

18. Year 2022-23 (MTech Thesis Project, NITK, Surathkal—in collaboration with ISRO, Mahendragiri)

Project Title: Hydrogen embrittlement in post weld heat treated IN-718 superalloy electron beam weldments

Student: Mr Yogesh Mahawar, NITK, Surathkal

19. Year 2022-23 (MTech Thesis Project, NITK, Surathkal)

Project Title: Comparative studies of Complex phase and Dual phase steels

Student: Mr Shubhank Shivhare, NITK, Surathkal

20. Year 2022-23 (MTech Thesis Project, NITK, Surathkal)

Project Title: Microstructure and mechanical properties of continuously annealed first generation Advanced High Strength Steels

Student: Mr Predeep D, NITK, Surathkal

21. Year 2022-23 (MTech Thesis Project, NITK, Surathkal—in collaboration with ISRO, Mahendragiri)

Project Title: Designing hydrogen charging set-up and characterizing pre-and post-weld heat-treated electron beam welded Inconel 718 superalloy

Student: Mr Manish Tripathy, NITK, Surathkal

22. Year 2023-24 (MTech Thesis Project, NITK, Surathkal)

Project Title: Microstructure and mechanical properties of Boron carbide reinforced inconel 718 by laser directed energy deposition

Student: Mr Bhuvaneswaran R, NITK, Surathkal

23. Year 2023-24 (MTech Thesis Project, NITK, Surathkal)

Project Title: Repair of Inconel 718 using laser directed energy deposition process: Effect of energy density and heat treatment

Student: Ms Snehal Katkar, NITK, Surathkal

24. Year 2025-26 (MTech Thesis Project, NITK, Surathkal—in collaboration with ISRO, Mahendragiri)

Project Title: Thermomechanical processing of HSLA Steel with ferritic-pearlitic microstructures

Student: Mr Vamshidhar Peesugalla, NITK, Surathkal

Other MTech Research Project guided:

25.Year 2005-06 (MTech Thesis co-supervised with Prof Shiv Brat Singh, IIT Kharagpur, India)

Project Title: Ageing and Recrystallization Behaviour of IF-Cu-steel

Mr Shambhu Sharan Patel (IIT Kharagpur) (as external co-guide, Tata Steel--2006)

BTech Projects Guided:

1. Year 2016-17 (BTech Major Project, NITK, Surathkal, India)

Project Title: Fabrication and characterization of aluminium–silicon carbide metal matrix composite

Students: Mr Ajey S Hegde & Ms Aishwarya S K

2. Year 2016-17 (BTech Major Project, NITK, Surathkal)

Project Title: Metallographic inspection of bicycle parts

Students: Ms Amal Mansoor & Mr Chandra B Harsha

3. Year 2017-18 (BTech Major project, NITK, Surathkal)

Project Title: Ageing behaviour of AA-6061 aluminium alloy

Students: Mr Arjun B & Mr Tirumala Prasad

4. Year 2017-18 (BTech major project)

Project Title: Spheroidization of cementite in high carbon steel wires

Students: Ms. Prathvi B K & Mr Sravan Kumar

5. Year 2018-19 (BTech major project)

Project Title: Microstructure and mechanical properties of microalloyed Advanced

High strength steel

Students: Mr Akash Benagi & Mr Vinodraj S Madari

6. Year 2018-19 (BTech major project)

Project Title: Tempering of plain carbon and microalloyed high strength steels

Students: Mr Akhil D. Kumar & Mr. Avinash Anand

7. Year 2019-20 (BTech major project)

Project Title: Behaviour of a high strength steel in various quenching media

Students: Ms Madhumitha B & Ms. Shubha U. Gowda

8. Year 2020-21 (BTech major project)

Project Title: Resistance Spot Welding of Advanced High Strength Steels –A Review

Students: Mr M P Vidyadhar & Mr Ninad Lamture

9. Year 2021-22

Project Title: Mechanical behaviour of heat-treated PH grade stainless steels

Students: Mr Rajasekhar Korada & Mr Akash Kumar

10. Year 2021-22

Project Title: Recrystallization of Ti alloys

Students: Mr Pradeep Raj & Mr Himanshu Chaudhari

11. Year 2022-23

Project Title: Tempering of advanced high strength steels

Students: Mr Bharath R & Mr Kanak Zalaki

12. Year 2022-23

Project Title: Microstructural and mechanical characterization of stainless-steel weldments

Students: Mr Sagar & Mr Advik

13. Year 2025-26

Project Title: Microstructure, mechanical properties and corrosion characteristics of cold rolled and annealed interstitial free steel

Students: Mr Abhishek & Ms Maanasa

14. Year 2025-26

Project Title: Gas tungsten arc welding of SS316 and SS420 stainless steels

Students: Mr Naren & Mr Salman

PhD Projects Guided:

1. Year 2016-21 (Co-supervisor: Dr K Devakumaran, Manager, BHEL, Trichy)

Project Title: Welding of dissimilar aluminium alloys for automotive applications

Student: Mr R Rajeshkumar (PhD *Degree awarded on 6 Nov 2021 during 19th convocation*)

1. Year 2020-21 (PhD project-*Discontinued by student due to personal reasons*)

Student: Ravi Raj Anand (Thesis topic—Joining of steel with aluminium)

2. Aug 2022-till date

Student: Ms Preethi J Aradhya

Project Title: Additive manufacturing of 15-5 PHSS and 17-7 PHSS precipitation hardenable stainless steels for aerospace materials using laser powder bed fusion technique

3. Aug 2025-till date

Student: Mr Silambarasan K

Project Title: Additive manufacturing of nickel-based superalloys for aerospace materials using directed energy deposition technique

SHORT TERM COURSES ORGANIZED

S. No.	From	To	Name of Course	Coordinator/Organizer	Number of Participants
1.	June 2006	June 2006 (5 days)	Transmission Electron Microscopy--by Prof. (late) D S Sarma, Ex Professor IIT (BHU), India	Coordinator, R&D Dept, Tata Steel Ltd,	38
2.	May 2007	May 2007 (7-days)	Crystallographic Texture--by Prof. A. D. Rollett, CMU, Pittsburgh, USA	Coordinator, R&D Dept, Tata Steel Ltd,	26
3.	April 2006	April 2006	Ethics at work place	Coordinator and Organizer, R&D Dept,	83
4.	Feb 2010	Feb 2010 (1-day)	Data Acquisition System—by Pyrodynamics, India	Coordinator and Organizer, R&D Dept, Tata Steel Ltd,	6
5.	June 2010	June 2010 (3-days)	X-ray Diffraction ---by Dr. Ravi Kumar, Scientist, NML Jamshedpur, India	Coordinator & Organizer, R&D Dept, Tata Steel Ltd, Jamshedpur	22

6.	Feb 2010	Feb 2010 (1-day)	Identifying and mentoring the speakers and finalizing the presentations of the best R&D projects of Tata Steel and subsequent organizing of the Managing Director's visits to R & D, Tata Steel for assessing the best projects.	R&D Dept, Tata Steel Ltd, Jamshedpur	25

SHORT TERM COURSES ATTENDED

S. No.	From	To	Institute/Organization	Sponsored by	Name of Course
1.	Mar 2014	Jan 2014 (9-days)	R&D Dept, Tata Steel Ltd, Jamshedpur, India	R&D Dept., Tata Steel Limited, Jamshedpur, India	Course on Transmission Electron Microscopy—by Prof. N. Prabhu, IIT Bombay
2.	Feb 2014	Feb 2014 (3-days)	Tata Steel Limited, Jamshedpur, India	Tata Steel Limited, Jamshedpur, India	Advanced training on interpersonal effectiveness (for officers and executives of Tata Steel)
3.	Nov 2013	Aug 2014 (9-days)	R&D Dept, Tata Steel Ltd, Jamshedpur, India	R&D Dept., Tata Steel Limited, Jamshedpur, India	Advanced Thermodynamics course on ThermoCalc –by Prof. Hari Kumar, IIT Madras
4.	May 2010	May 2010 (3-days)	Tata Steel Limited, Jamshedpur, India	Tata Steel Limited, Jamshedpur, India	Training on interpersonal effectiveness (for officers/executives of Tata Steel)
5.	Feb 2010	Feb 2010 (1-day)	R&D Dept, Tata Steel Ltd, Jamshedpur, India	R&D Dept, Tata Steel Ltd, Jamshedpur, India	Training on Data Acquisition System—by Pyrodynamics
6.	June 2010	June 2010 (3-days)	R&D Dept, Tata Steel Ltd, Jamshedpur, India	R&D Dept, Tata Steel Ltd, Jamshedpur, India	Training on X-ray Diffraction-- by Dr. Ravi Kumar NML Jamshedpur
7.	May 2007	May 2007 (7-days)	R&D Dept, Tata Steel Ltd, Jamshedpur, India	R&D Dept, Tata Steel Ltd, Jamshedpur, India	Course on Crystallographic Texture -- by Prof. A. D. Rollett, CMU, Pittsburgh, USA
8.	Aug 2006	Aug 2006 (3-days)	Tata Steel Limited, Jamshedpur, India	Tata Steel Limited, Jamshedpur, India	Training on problem solving and decision making (for officers/executives of Tata Steel)
9.	June 2006	June 2006 (5 days)	R&D Dept, Tata Steel Ltd, Jamshedpur, India	R&D Dept, Tata Steel Ltd, Jamshedpur, India	Course on Transmission Electron Microscopy-- by Prof (late) D S Sarma, Ex Prof. IIT, BHU, India
10.	Feb 2006	Feb 2006 (4-days)	R&D Dept, Tata Steel Ltd, Jamshedpur, India	R&D Dept, Tata Steel Ltd, Jamshedpur, India	Course on ThermoCalc software course --by Prof. Hari Kumar, IIT Madras

OTHER RESPONSIBILITIES

- Lab In charge of the Gleeble 1500 thermomechanical simulator in the R & D Dept of Tata Steel, Jamshedpur, India (Sept 2009-Dec 2012)
- Member of the Editorial Committee of Tata Steel Ltd., Jamshedpur, India
- Editor and Coordinator of the Quarterly R & D Highlights of Tata Steel India and Europe (Jan 2010-Apr. 2011).
- Selection and presentation finalization of Best R&D Projects of Tata Steel and subsequent organizing of the Managing Director's visits to R & D, Tata Steel for presentation of the projects
- Life Member of the Indian Institute of Metals (membership No.: 43531 since year 2009)

- Procurement committee member of Gleeble 3800 thermomechanical simulator in the R & D Dept of Tata Steel, Jamshedpur, India (2014)
- Corresponding Editor of Metal News, Indian Institute of Metals (2010-17)
- Chairperson, Transport Committee, for the International Conference, "Make in India: Role of Materials" (Golden Jubilee Celebration of the Dept of Metallurgical & Materials Engineering, National Institute of Technology, Karnataka, Surathkal, India) during 30-31 Oct 2015
- Member of Departmental Under-Graduate Committee, Post Graduate Committee and Research Progress Committee, Dept. of Metallurgical and Materials Engineering, NITK, Surathkal (2015-18)
- Secretary, Departmental Post Graduate Committee, Dept. of Metallurgical and Materials Engineering, NITK, Surathkal (2019), Mangalore, India
- Chairperson of one of the MTech thesis evaluation committees, NITK Surathkal, Mangalore, India (2015-till date)
- Chairperson, Class Committee--BTech VI Semester (2019), NITK Surathkal, Mangalore, India
- Chairperson, Class Committee--MTech III Semester (2019), NITK Surathkal, Mangalore, India
- Chairperson, Class Committee—MTech III Semester (2022-23), NITK Surathkal, Mangalore, India
- Acting Head, 2015-2019, NITK, Surathkal, Mangalore, India
- Lab In charge, Mechanical Testing Lab and Heat Treatment Lab, Metallurgical & Materials Engineering Department, NITK, Surathkal, Mangalore, India
- Member of Anti-Ragging Committee, NITK Surathkal (2015-19; 2023), Mangalore, India
- Member of Convocation Committee, NITK Surathkal (2015-2017), Mangalore, India
- Polling Officer, Institute Student Election Committees, NIT Karnataka, Surathkal, Mangalore, India
- Chairperson, Technical Committee and Chief Editor, Souvenir, for the National Conference on Processing of Materials, NCOPOM'18, held at NIT Karnataka, Surathkal, Mangalore, India, during Sept 2018
- Coordinator, NBA-Audit 2020, Dept of Metallurgical and Materials Engineering, NIT Karnataka, Surathkal, Mangalore, India
- Reviewing Committee Member of Trans. Indian Institute of Metals
- Reviewer of Journal of Materials Science
- Reviewer of Journal of Alloys and Compounds
- Reviewer of Metallurgical and Materials Transactions A
- Reviewer of Materials Science and Technology
- Reviewer of Materials Science and Engineering

RECOGNITIONS/AWARDS

- "Apex Aspire Recognitions- 2006 Awards", Tata Steel Limited, Jamshedpur

  - For the project: "Development of interstitial free steel (super extra deep drawing quality) for critical applications (autobody)" at the Managing Director level
  - Implemented in the plant of Tata Steel Limited, Jamshedpur, India and commercialized in the year 2007

- The project was successful in improving the drawability of IF-Ti steel from 1.9 to ~2.29 using batch annealing route
- The work was patented: Title--"Development of batch annealed Ti-stabilized IF steel with improved drawability by optimization of processing parameters" (Granted Patent No. 242358 dt 24.8.10, Govt of India).
- A part of the work was also published in the 'Metallurgical and Materials Transactions A', 2007
- Besides, the work was presented at the ATM of IIM and at an international conference in the year 2006.

➢ Awarded oral session prize at IIM-NMD-ATM 2015 for the presentation (Ferrous Category) on "Microstructural modification in cold drawn high carbon steel wires using electropulsing"

➢ "Distinguished Woman in Engineering Award" by Venus International Foundation, India, 2018

➢ Chaired a technical session at the International Conference on Frontiers in Surface Engineering and Additive Manufacturing, FSEAM 2026, held at IIT Kharagpur during 21-23 Jan 2026

RESEARCH PUBLICATIONS/PAPER PRESENTATION

- Kumkum Banerjee and U. K. Chatterjee: Hydrogen Embrittlement of A HSLA-100 Steel in Seawater, **ISIJ international**, Vol. 39, No. 1 (1999), pp. 47-55
- K. Banerjee and U. K. Chatterjee: Hydrogen Embrittlement of a HSLA-80 Steel in Seawater under Cathodic Charging Conditions, **Mater. Sci. Technol**., Vol. 16 (2000), pp. 517-523
- K. Banerjee and U. K. Chatterjee: Effect of Applied Potential on Hydrogen Embrittlement of Weld Simulated Hsla-80 Steel in Seawater, **British Corrosion Journal** (currently *Corrosion Engineering, Science and Technology*), Vol. 35, No. 4 (2000) pp. 273-278
- Kumkum Banerjee and U. K. Chatterjee: Hydrogen Permeation and Hydrogen Measurement on Cathodic Charging in HSLA 80 and HSLA 100 Steels, **Scripta Mater.**, Vol. 44, No. 2 (2001) pp. 213-216
- Kumkum Banerjee and U. K. Chatterjee: Effect of Microstructure on Hydrogen Embrittlement of Weld-Simulated HSLA-80 and HSLA-100 Steels, **Metall. & Mater. Trans. A**, Vol. 34, 2003, pp. 1297-1309
- Kumkum Banerjee and A. D. Rollett: Microstructure and Crystallization Texture of a Low Carbon Strip Cast Steel, **Iron & Steelmaker**, Vol. 30, No. 6, June 2003, pp. 62-68
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BOOK CHAPTER

Book Chapter Title (*Invited*): "Physical Metallurgy and Drawability of Extra Deep Drawing and Interstitial Free Steels" for the book--"Recrystallization", ISBN 978-953-51-0122-2, Ed. Krzysztof Sztwiertnia, Publisher—InTech, March, 2012

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- DEVELOPMENT OF HYPOEUTECTOID GRAPHITIC STEEL WITH ENHANCED DRAWABILITY FOR WIRES [Application No. 653/KOL/2008, 31 March 2008; **Granted Patent No**. 266385, 8 May 2015; Govt of India; Inventor: Kumkum Banerjee; Patentee: Tata Steel Limited]
- NOVEL ETCHING PROCESS FOR DETERMINING THE SIZE OF AUSTENITE GRAIN IN LOW CARBON MICRO ALLOYED HIGH STRENGTH STEELS [Application No. 172/KOL/2010, 23 Feb 2010; **Granted Patent No.** 286274, 18 Aug 2017; Govt of India; Inventor: Kumkum Banerjee; Patentee: Tata Steel Limited].
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