Harishchandra A. Lanjewar

PhD, Materials Engineering
Materials Processing & Characterization Specialist
Date of Birth: 15/08/1982

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CURRENT INTERESTS

Severe plastic deformation; Hot and cold deformation; Hierarchical microstructural engineering; Crystallographic texture; Constitutive modelling; Structure-property correlation; Orientation imaging microscopy; Microscopy, spectroscopy, and diffraction techniques.

EDUCATION

Ghent University, Belgium
PhD, Doctor of Materials Engineering
2016-2020 (PhD Public Defense – 10/09/2020)

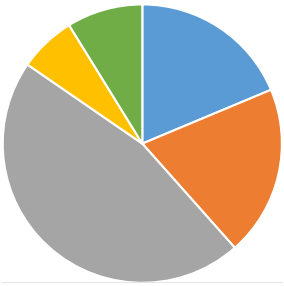
Indian Institute of Technology Bombay (IITB)
Master of Technology, Steel Technology (*8.9/10*)
2009-2011

University of Pune
Bachelor, Metallurgical Engineering (*First Class*)
2001-2004

Government Polytechnic, Nagpur
Diploma, Metallurgical Engineering (*Distinction*)
1997-2000

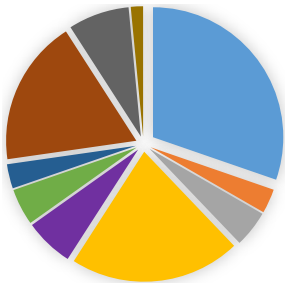
SKILLS & EXPERTISE

Material Processing & Manufacturing



- Severe Plastic Deformation (SPD)
  - High Pressure Torsion (HPT)
  - Dynamic High Pressure Torsion (DHPT)
- Physical Simulation Using Gleeble
  - Continuous Annealing (CAL)
  - Hot Rolling
  - Hot Ductility
- Basic Oxygen Steelmaking (BOF)
- Secondary Steelmaking – Electric Arc Furnace (EAF)
- Heat Treatment – Metals/Alloys

Material Characterization & Testing



- Electron Backscattered Diffraction (EBSD)
- Electron Probe Microanalyzer (EPMA)
- Scanning Electron Microscopy (SEM)
- X-Ray Diffraction (XRD)
- X-Ray Fluorescence (XRF)
- Optical Microscopy (OM)
- Optical Emission Spectroscopy (OES)
- Mechanical Testing
- Digital Image Correlation (DIC)
- ONH Analyzer

EXPERIENCE

Research

April 2021 — **Delft University of Technology, Netherlands | Post-doctoral researcher**
Department of Materials Science and Engineering

Proposed research aims to investigate the mesoscopic spatial distribution of crystal orientations and the physical phenomena responsible for their evolution during press forming of metal sheets.

2016 – 2020 (4.8 yrs) — **Ghent University, Belgium | Doctoral researcher**
Department of Electromechanical, Systems and Metal Engineering

- Correlated microstructure-crystallographic texture-mechanical response evolution leading to a **hypothesis for dynamic recrystallization** in dynamically torsion strained aluminium.
- Provided **statistical analysis framework** for deformed microstructures in static and dynamically severely deformed materials and anisotropy in their structural progression.
- Modelled and related micromechanical behaviour and damage mechanisms with structure parameters in hierarchically different microstructures using **dislocation kinetics-based approach**.

2015 – 2016 (5 mos) — **Ghent University; Affilips N. V., Belgium | Voluntary Researcher**

Statistical production and quality data analysis; Proposed revised sampling and chemical analysis method for accurate and consistent chemical analysis of the finished master alloy products.

2011 - 2014 (3.5 yrs) **JSW Steel Ltd., India | Group Leader – Hot Strip Rolling and Product Development**
Research & Development and Scientific Services

- Led a group of 4 researchers to address product manufacturing quality and cost-cutting measures.
- Forensic post-mortem investigations of in-service material degradation and failure.
- **Lead investigator** in projects - Microstructure-property optimization in hot-rolled microalloyed steel; Crack susceptibility of C-Mn-Nb steel during continuous casting; Processing maps for automotive steel; Continuous annealing optimization for automobile steel grades.

Manufacturing

2005 – 2009 (4.1 yrs) **JSW Steel Ltd., India | Shift-in-charge - Operations**
Steel Melting Shop (SMS)

- SMS floor in-charge – managed a team of 30 – 35 operators in a 4 million ton/annum steel production unit.
- Member of a core team, achieving **more than 10,000 heats** in a basic oxygen furnace (BOF) in single campaign life and setting a **steel industry benchmark**.
- Part of an interface team for **upgradation of BOF** instrumentation and process control.

2004 – 2005 (11 mos) **ESAB India Ltd., India | Sales and Marketing Executive**
Conventional and Reclamation Welding Consumables Division

2000 – 2001 (1 yr) **Bajaj Auto Ltd., India | Technical Assistant**
Heat Treatment Shop

Teaching

2017 – 2019 **Ghent University, Belgium | Teaching Assistant**
Department of Electromechanical, Systems and Metal Engineering

- Fracture and deformation behaviour of materials — Autumn 2017, 2018
- Micro-analysis and structure determination in materials science — Autumn 2017, 2018, 2019

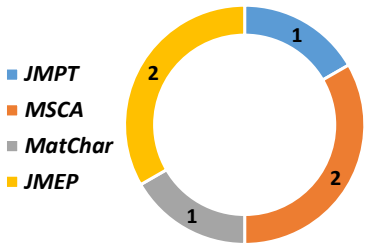
2011 - 2014 **JSW Steel Ltd., India**
Research & Development and Scientific Services

Pedagogy sessions - Induction training and staff training programs under the Department of Human Resources initiative.

JOURNAL PUBLICATIONS (*Science Citation Indexed*)

Journal Metrics (2019)

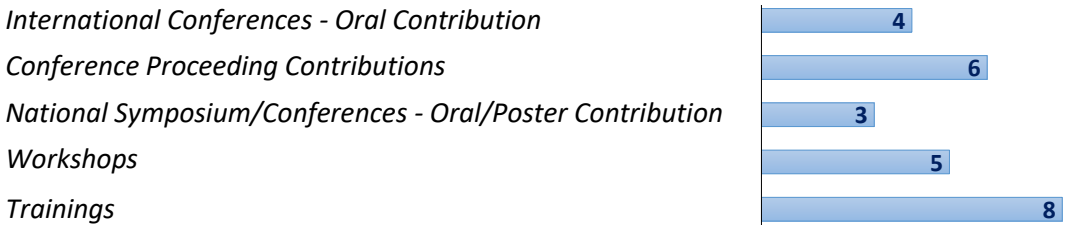
Journal title	Impact factor	Rank
Journal of Materials Processing Technology (*JMPT*)	4.669	Q1, 8/48
Materials Science & Engineering: A (*MSCA*)	4.652	Q1, 7/79
Materials Characterization (*MatChar*)	3.562	Q1, 3/33
Journal of Materials Engineering & Performance (*JMEP*)	1.652	Q3, 229/314



Selected Publications

- *Damage and strengthening mechanisms in severely deformed commercially pure aluminum: experiments and modeling*, **MSCA**, vol. 800, 140224, January 2021.
- *Statistical analysis of dislocation substructure in commercially pure aluminum subjected to static and dynamic high pressure torsion*, **MatChar**, vol. 160, 110088, February 2020.
- *Hot ductility and deformation behavior of C-Mn/Nb-microalloyed steel related to cracking during continuous casting*, **JMEP**, vol. 23, October 2014, pp. 3600-3609.

CONFERENCES/WORKSHOPS/TRAINING



Notable Mentions

- *Miniature tensile testing of SPD processed fine-grained aluminum*, Recrystallization and Grain Growth (ReX&GG), **Gent, Belgium**, 2019.
- *Dynamic high pressure torsion (DHPT)-A novel method for severe plastic deformation at high strain rate*, DYMAT, **Arcachon, France**, 2018.
- *Improvement in mechanical properties through physical simulation of hot rolling process*, SIMPRO'12, **Ranchi, India**, 2012.
- *Data manipulation, analysis and visualization in Python*. A specialist course at Ghent University, Belgium. Dec. 3-5, 2018.
- *X-ray diffraction – specific application course*. Application Centre, PANanytical B. V., Almelo, Netherlands. Mar. 25-29, 2013.

FACILITIES ESTABLISHED

JSW Steel Ltd., Research & Development and Scientific Services

- *X-ray diffraction (XRD)* – Bragg-Brentano geometry with reflection and transmission utility
- *X-ray fluorescence (XRF)* – Integrated WDXRF and XRD workstation for metals and mining applications

AWARDS/RECOGNITIONS/FELLOWSHIPS

- Funding to pursue M. Tech., IIT Bombay under employee development program at JSW Steel Ltd. (2009-2011)
- Ranked 10th in order of merit in the University of Pune – Engineering (Metallurgy Branch) (2003)
- Industry-Academia outreach program - Annual subscription of ASM International, for an academic year (2003)
- Mahindra Sintered Products scholarship - Bachelor of Engineering (2001-2002)
- Ranked 8th in order of merit in the University of Pune – Engineering (Metallurgy Branch) (2002)
- Sir Ratan Tata Trust scholarship - Excellent academic record in Polytechnic - Metallurgical Engineering (2001)

OTHER SKILLS

- **Material modelling and analysis:** MatchID - DIC Package, JMatPro, FullProf Suite – Rietveld refinement, XRD – Stress and Stress plus, Highscore suite, HSMM – Hot strip mill model, ABAQUS
- **Data analysis and programming:** Origin, MATLAB, Python, C
- **Orientation imaging analysis:** TSL OIM, M-Tex
- **Languages:** English (Native), Hindi (Native), Marathi (Native), Nederlands (A1)

EXTRA ACADEMIC ACTIVITIES

- **Reviewer** for **MDPI** journals – Materials, Metals, Applied Sciences; **Elsevier** - Materials & Design, International Journal of Mechanical Sciences, Journal of Materials Research and Technology; **Springer** – Journal of Materials Science, Archives of Civil and Mechanical Engineering.
- Former member of ASM International; Lifetime Member of The Institution of Engineers (India).