

# Curriculum Vitae



## Prof. Pradeep Kumar Jha | Ph.D.

Professor | Department of Mechanical and Industrial Engineering  
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## Research Interests

Physical and Mathematical Modeling in Steelmaking practices, Advanced Casting Technology, Metal matrix Composites, Modeling and Simulation of Discrete Event Systems, Machine Learning, Business Economics, Industrial Engineering

## Professional Experience

Jan 2024-Present	Associate Dean of Student Welfare (Bhawan and Mess) Indian Institute of Technology Roorkee, Uttarakhand, India
Aug 2020 – present	Professor, Department of Mechanical and Industrial Engineering Indian Institute of Technology Roorkee, Uttarakhand, India
Apr 2014 – Aug 2020	Associate Professor, Department of Mechanical and Industrial Engineering Indian Institute of Technology Roorkee, Uttarakhand, India
Mar 2007 – Apr 2014	Assistant Professor, Department of Mechanical and Industrial Engineering Indian Institute of Technology Roorkee, Uttarakhand, India Joint faculty, School of Minerals,
Sep 2006 – Mar 2007	Assistant Professor, Department of Mechanical Engineering Indian School of Mines (IIT Dhanbad), Jharkhand
Nov 2003 – Sep 2006	Senior Lecturer Indian Institute of Technology Guwahati, Assam, India
Mar 2003 – Nov 2003	Quick Hire Fellow National Metallurgical Laboratory, Jamshedpur, India

## Education

2004   Ph.D.	Department of Mechanical Engineering, IIT Kharagpur, India Thesis: Mixing in a Tundish (Thesis supervised: Prof. S. K. Dash)
1999   M.Tech.	National Institute of Foundry and Forge Technology, Ranchi, India
1995   B.Sc. Engg.	Department of Mechanical Engineering, MIT Muzaffarpur, India

## Teaching

- **Lecture (UG)**  
Manufacturing Techniques | Engineering Economy | Manufacturing Technology- I | Theory of production processes | Engineering Mechanics | Operations Research
- **Lecture (PG)**  
Modelling & Simulation | Metal Casting | Welding Procedure for Specific Applications | Operations Research | Fluid Mechanics
- **Laboratory (UG and PG)**  
Manufacturing Technology | Foundry Engineering

## Patents

- **A continuous production of metal matrix composite sheets using twin roll continuous casting method**  
Name of inventors: Mr. Dheeraj K. Saini, Dr. Pradeep K. Jha  
Patent number 515594

## Books

1. **Proceedings of the Second Congress on Control, Robotics, and Mechatronics CRM 2025, Volume 1**  
Editors: H. Sharma, **P. K. Jha**, P. Jamwal, B. Tripathi, P. Kumar  
Publisher: Springer, 2024
2. **Proceedings of the Second Congress on Control, Robotics, and Mechatronics CRM 2025, Volume 2**  
Editors: **P. K. Jha**, P. Jamwal, B. Tripathi, D. Garg, H. Sharma  
Publisher: Springer, 2024
3. **Recent Trends in Mechanical Engineering Select Proceedings of PRIME 2021**  
Editors: A. Maurya, A.K. Srivastava, **P. K. Jha**, S.M. Pandey  
Publisher: Springer, 2024

## Book Chapters

1. **Kinetics and Mechanisms of Reactions Involved in In-Situ Aluminum-Based Metal Matrix Composites Reinforced with TiB<sub>2</sub>: A Numerical Investigation**  
Authors: S. Ranjan, **P. K. Jha**

Book: Advancements in Materials Processing Technology, Volume 2, Springer, 2024

**2. Solidification Behavior and Microstructural Evolution of In-Situ Fabricated Al-12.5wt%Si-(TiB<sub>2</sub> + Al<sub>2</sub>O<sub>3</sub>) Hybrid Composite**

Authors: S. Ranjan, **P. K. Jha**

Book: Processing and Fabrication of Advanced Materials, Volume 2, Springer, 2024

**3. Processing Challenges in the Fabrication of In Situ Al-Mg<sub>2</sub>Si Composite Sheet Through Continuous Casting Route**

Authors: D.K. Saini, **P. K. Jha**

Book: Advancements in Materials Processing Technology, Volume 1, Springer, 2024

**4. Effect of Inlet Position and Transverse Wall Inclination on the Behaviour of Inclusions in Four-Strand Curved Shaped Tundish for Steelmaking**

Authors: M. Farhan, V.K. Gupta, **P. K. Jha**

Book: Fluid Mechanics and Fluid Power, Volume 8, Springer, 2024

**5. Investigation on EMS Induced Solidification and Inclusion Behavior with Curved Mold in Continuous Casting Process**

Authors: R. Kumar, **P. K. Jha**

Book: Fluid Mechanics and Fluid Power, Volume 8, Springer, 2024

**6. Effect of Nozzle Geometry on Slag Entrapment During Thin Slab Continuous Casting Process**

Authors: K.K. Sharma, **P. K. Jha**

Book: Fluid Mechanics and Fluid Power, Volume 8, Springer, 2024

**7. Investigation of Solidification Behavior and Processing Defects in the Continuous Cast Al-Based Composite Sheet**

Authors: D.K. Saini, **P. K. Jha**

Book Proceedings of the International Conference on Metallurgical Engineering and Centenary Celebration, Springer, 2023

**8. The abrasive wear behavior of in situ processes aluminium alloy metal matrix composite**

Authors: J. Karloopia, S. Mozammil, **P. K. Jha** and T. S. Srivatsan

Book: Metal-Matrix Composites. The Minerals, Metals & Materials Series, Springer, 2022.

**9. Recent advances in aluminium based hybrid metal matrix composite: A Review**

Authors: S. Ranjan, J. Karloopia and **P. K. Jha**

Book: Metal-Matrix Composites. The Minerals, Metals & Materials Series, Springer, 2022.

**10. Analysis of inclusion behaviour in mold during continuous casting**

Authors: R. Kumar, A. Maurya and **P. K. Jha**

Book: Advanced Computational Methods in Mechanical and Materials Engineering, CRC Press, 2021.

**11. Mathematical and intelligent modeling in tundish steelmaking**

Authors: V. K. Gupta, **P. K. Jha** and P. K. Jain

Book: Advanced Computational Methods in Mechanical and Materials Engineering, CRC Press, 2021.

**12. Effect of heat treatment on mechanical properties of an aluminum alloy and aluminum alloy composite: a comparative study**

Authors: S. Mozammil, J. Karloopia, **P. K. Jha** and T. S. Srivatsan

Book: Metal- Metal-Matrix Composites, The Minerals, Metals & Materials Series, Springer, 2021

**13. Transient numerical simulation of solidification in continuous casting slab caster**

Authors: V. K. Gupta, **P. K. Jha** and P. K. Jain

Book: Advances in Industrial and Production Engineering. Lecture Notes in Mechanical Engineering, Springer, Singapore, 2021

**14. Understanding the mechanical response of friction stir welded in situ processed aluminium alloy metal matrix composite: Experimental and statistical modelling approaches**

Authors: J. Karloopia, S. Mozammil, **P. K. Jha** and T. S. Srivatsan

Book: Metal Metal-Matrix Composites, The Minerals, Metals & Materials Series, Springer, 2021.

**15. Water quality assessment of upper ganga canal for human drinking**

Authors: T. A. Bahita, S. Swain, D. Dayal, **P. K. Jha** and A. Pandey

Book: Climate Impacts on Water Resources in India. Water Science and Technology Library, vol 95. Springer, 2021

**16. Analysis of solidification kinetics during continuous casting mold**

Authors: A. Maurya and **P. K. Jha**

Book: Manufacturing Techniques for Materials: Engineering and Engineered, CRC Press, Taylor & Francis Group, 2017, pp. 539-558.

**17. Influence of machining parameter on Al-4.5Cu-TiC in-situ metal matrix composites**

Authors: **P. K. Jha**, A. Kumar and M. M. Mahapatra

Book: Light Metals, The Minerals, Metals & Materials Series. Springer, 2013

**18. An assessment of six turbulent model for prediction of single-phase flow in a vessel stirred by a grid disc impeller**

Authors: A. Dewan, R. Swarnkar, M. K. Jha, **P. K. Jha** and V. V. Buwa

Book: Applied Mathematical Modeling, Nova Science Publishers, Inc., New York, USA, 2008.

**19. Mechanical property and abrasive wear characteristics of in-situ synthesized Al+12Si/10TiC composites**

Authors: S. Y. Belete, M. M. Mahapatra and **P. K. Jha**

Book: In: TMS (ed), TMS2013 Supplemental Proceedings, 2013

**20. Fluid flow and inclusion removal in multi-strand tundish with nozzle blockage** Authors: **P. K. Jha**, S. K. Mishra, S. C. Sharma, S. K. Ajmani, and M. M. Mahapatra Book: CFD Modeling and Simulation in Materials Processing, TMS, 2012.

**21. Time zone analysis of F-curve for intermixing during ladle change-over**

Authors: **P. K. Jha**, S. Kant, P. Kumar, and A. Kumar

Book: CFD Modeling and Simulation in Materials Processing, TMS, 2012.

**22. Modeling the effects of tool geometries on the temperature distributions and material flow of friction stir aluminum welds**

Authors: H. K. Mohanty, M. M. Mahapatra, P. Kumar and **P. K. Jha**

Book: CFD Modeling and Simulation in Materials Processing, TMS, 2012.

## Peer Reviewed Publications

### 2026

1. A. K. Soni, D. Das, S. Bag, P. S. Robi, D. K. Saini, and P. K. Jha, "Prediction of segregation and mechanism of microstructure formation in twin roll cast AA6061 alloy strip through numerical simulation and experimental verification," Mater. Chem. Phys., vol. 354, p. 132208, Apr. 2026, doi: 10.1016/j.matchemphys.2026.132208.

### 2025

2. V. K. Gupta, P. K. Jha, and P. K. Jain, "Numerical Investigations on the Influence of Electromagnetic Stirring on Multiphase Flow in Continuous Casting Billet: A Parametric Study," J. Therm. Sci. Eng. Appl., pp. 1–16, Nov. 2025, doi: 10.1115/1.4070424.
3. P. K. Jha, I. Singh, and P. K. Jha, "Machinability characteristics of an aluminum alloy composite: a study and analysis," Mater. Manuf. Process., vol. 41, no. 1, pp. 102–116, Jan. 2026, doi: 10.1080/10426914.2025.2586494.
4. J. Karloopia, K. Chauhan, J. K. Katiyar, and P. K. Jha, "Abrasive wear characteristics of in-situ synthesized Al-12%Si/TiB<sub>2</sub> metal matrix composites under room temperature conditions," Tribol. Int., vol. 212, p. 110980, Dec. 2025, doi: 10.1016/j.triboint.2025.110980.
5. D. K. Saini, P. Saini, and P. K. Jha, "Investigation of processing parameters, dendritic coherency point, and microstructural evolution in continuous cast in-situ Al-Mg<sub>2</sub>Si composite sheets," J. Manuf. Process., vol. 149, pp. 258–275, Sep. 2025, doi: 10.1016/j.jmapro.2025.05.069.
6. K. K. Sharma and **P. K. Jha**, "Physical Modeling and Numerical Investigation of Inclusion Behavior in a Slab Caster Mold With Use of Hexa-furcated Nozzle," Trans. Indian Inst. Met., vol. 78, no. 1, p. 22, Jan. 2025, doi: 10.1007/s12666-024-03473-y.
7. S. Ranjan, D. K. Saini, and **P. K. Jha**, "Next-gen composite sheets: Experimental and numerical investigation of processing and solidification kinetics of continuously cast Al-12Si-(TiB<sub>2</sub> + Al<sub>2</sub>O<sub>3</sub>) hybrid composite," J. Manuf. Process., vol. 140, pp. 14–30, Apr. 2025, doi: 10.1016/j.jmapro.2025.02.040.
8. D. K. Saini, J. Dwivedi, S. Joshi, V. Dawar, and **P. K. Jha**, "Centerline macrosegregation control in Al-Mg<sub>2</sub>Si composite sheet: Analyzing melt delivery dynamics in twin-roll continuous casting," Therm. Sci. Eng. Prog., vol. 60, p. 103407, Apr. 2025, doi: 10.1016/j.tsep.2025.103407.
9. D. Gehlot, P. K. Jha, **P. K. Jha**, and P. K. Jain, "Investigation of rotary magnetic field for the fabrication of microfluidic channel using MAECDM process," Proc. Inst. Mech. Eng. Part B J. Eng. Manuf., Mar. 2025, doi: 10.1177/09544054251326117.
10. S. Ranjan and **P. K. Jha**, "Investigation of Solidification Behavior and Strengthening in Al-Si Based Hybrid Composites Fabricated Through In-Situ Stir Casting Route," Silicon, Mar. 2025, doi: 10.1007/s12633-025-03280-0.
11. T. A. Bahita, S. Swain, **P. K. Jha**, S. S. Palmate, and A. Pandey, "Numerical modelling of pollutant dispersion affecting water quality of Upper Ganga Canal (Roorkee City, India)," Int. J. Environ. Sci. Technol., vol. 22, no. 6, pp. 4433–4444, Mar. 2025, doi: 10.1007/s13762-024-06054-0.

### 2024

12. V. K. Gupta, **P. K. Jha**, and P. K. Jain, "Numerical investigation of solidification behavior and inclusion transport with M-EMS in continuous casting mold," Proc. Inst. Mech. Eng. Part B J. Eng. Manuf., vol. 238, no. 4, pp. 590–604, Mar. 2024, doi: 10.1177/09544054231166234.
13. D. K. Saini and **P. K. Jha**, "A hybrid approach towards evaluation of average heat transfer coefficient in twin-roll strip casting mold," Therm. Sci. Eng. Prog., vol. 49, p. 102472, Mar. 2024, doi: 10.1016/j.tsep.2024.102472.
14. D. Gehlot, **P. K. Jha**, and P. K. Jain, "Experimental Investigation and Modelling Studies on MHD Convection in Magnetic-assisted - ECDM," Mater. Manuf. Process., vol. 39, no. 4, pp. 494–505, Mar. 2024, doi: 10.1080/10426914.2023.2236207.
15. D. Gehlot, **P. K. Jha**, and P. K. Jain, "Microchannel Fabrication on Silica Glass and Experimental Investigation of MHD Convection in ECDM Process," Silicon, vol. 16, no. 6, pp. 2521–2531, Apr. 2024, doi: 10.1007/s12633-024-02859-3.

16. K. K. Sharma, R. Kumar, and **P. K. Jha**, "Physical modeling and numerical investigation of fluid flow and solidification behavior in a slab caster mold using hexa-furcated nozzle," *Heat Transf.*, vol. 53, no. 3, pp. 1050–1072, May 2024, doi: 10.1002/htj.22980.
17. V. K. Gupta, **P. K. Jha**, and P. K. Jain, "Numerical Investigations of Stirring Induced Flow on Solidification and Interface Behavior in Continuous Casting Mold With Bifurcated Nozzle," *ASME J. Heat Mass Transf.*, vol. 146, no. 6, Jun. 2024, doi: 10.1115/1.4064561.
18. D. K. Saini and **P. K. Jha**, "Study on effect of melt level on heat transfer characteristics and quality of continuously cast Al-Mg<sub>2</sub>Si composite sheet," *Int. Commun. Heat Mass Transf.*, vol. 155, p. 107506, Jun. 2024, doi: 10.1016/j.icheatmasstransfer.2024.107506.
19. D. Gehlot, P. K. Jha, and **P. K. Jain**, "Modelling Studies of Rotary Magnetic Field in ECDM for Microchannel Fabrication of Silica Glass," *Silicon*, vol. 16, no. 11, pp. 4915–4928, Jul. 2024, doi: 10.1007/s12633-024-03057-x.
20. D. K. Saini, N. Bafna, and **P. K. Jha**, "Effect of sheet thickness on the solidification and quality of Al-Mg<sub>2</sub>Si composite sheet fabricated by continuous casting," *J. Manuf. Process.*, vol. 131, pp. 27–37, Dec. 2024, doi: 10.1016/j.jmapro.2024.09.007.

## 2023

21. D. Gehlot, **P. K. Jha**, and P. K. Jain, "Micro-slit fabrication using magnetic-assisted ECDM and parametric optimization by metaheuristic algorithms," *J. Brazilian Soc. Mech. Sci. Eng.*, vol. 45, no. 9, p. 455, Sep. 2023, doi: 10.1007/s40430-023-04390-9.
22. R. Kumar and **P. K. Jha**, "Effect of casting speed on solidification and inclusion motions in bloom mold caster under the influence of in-mold electromagnetic stirring," *Int. J. Numer. Methods Heat Fluid Flow*, vol. 33, no. 3, pp. 1022–1045, Jan. 2023, doi: 10.1108/HFF-07-2022-0415.
23. R. Kumar and **P. K. Jha**, "Effect of electromagnetic stirring on the transient flow, solidification and inclusion movements in the continuous casting slab mold," *Int. J. Numer. Methods Heat Fluid Flow*, vol. 33, no. 11, pp. 3716–3733, Oct. 2023, doi: 10.1108/HFF-04-2023-0220.
24. R. Kumar, A. Maurya, and **P. K. Jha**, "Transient Analysis of Fluid Flow, Solidification, and Inclusion Behavior in Electromagnetically Stirred Bloom Caster Mold Using Bifurcated Submerged Entry Nozzle," *steel Res. Int.*, vol. 94, no. 11, Nov. 2023, doi: 10.1002/srin.202300014.
25. S. Mozammil, E. Koshta, **P. K. Jha**, and P. K. Swain, "Investigation on Experimental Machinability & 3D Finite Element Turning Simulations of Al-4.5%Cu/TiB<sub>2</sub>/3p Composite," *Trans. Indian Inst. Met.*, vol. 76, no. 1, pp. 225–238, Jan. 2023, doi: 10.1007/s12666-022-02735-x.
26. S. Ranjan and **P. K. Jha**, "Investigation on the thermodynamic stability of phases evolved in Al-based hybrid metal matrix composite fabricated using in-situ stir casting route," *J. Manuf. Process.*, vol. 95, pp. 14–26, Jun. 2023, doi: 10.1016/j.jmapro.2023.03.084.
27. D. K. Saini and **P. K. Jha**, "Fabrication of aluminum metal matrix composite through continuous casting route: A review and future directions," *J. Manuf. Process.*, vol. 96, pp. 138–160, Jun. 2023, doi: 10.1016/j.jmapro.2023.04.041.
28. D. K. Saini and **P. K. Jha**, "Numerical Modeling and Experimental Study of Solidification Behavior of Al-Mg<sub>2</sub>Si Composite Sheet Fabricated Using Continuous Casting Route," *ASME J. Heat Mass Transf.*, vol. 145, no. 10, Oct. 2023, doi: 10.1115/1.4062758.

## 2022

29. R. Kumar, and **P. K. Jha**, "Effect of casting speed on solidification and inclusion motions in bloom mold caster under the influence of in-mold electromagnetic stirring", *International Journal of Numerical Methods for Heat & Fluid Flow*, 2022. <https://doi.org/10.1108/HFF-07-2022-0415>
30. S. Mozammil, E. Koshta, **P. K. Jha** and P. K. Swain, "Investigation on experimental machinability & 3D finite element turning simulations of Al-4.5%Cu/TiB<sub>2</sub>/3p composite", *Transactions of the Indian Institute of Metals*, 2022. <https://doi.org/10.1007/s12666-022-02735-x>
31. R. Kumar and **P. K. Jha**, "Numerical simulation for EMS induced solidification and inclusion behavior in bloom caster CC mold with bifurcated SEN", *Journal of Manufacturing Processes*, Vol 81, 2022, pp. 396-405. <https://doi.org/10.1016/j.jmapro.2022.06.061>
32. V. K. Gupta, **P. K. Jha** and P. K. Jain, "A novel approach to predict the inclusion removal in a billet caster mold with the use of electromagnetic stirrer", *Journal of Manufacturing Processes*, Vol 83, 2022, pp. 27-39. <https://doi.org/10.1016/j.jmapro.2022.08.048>
33. V. K. Gupta, **P. K. Jha** and P. K. Jain, "Numerical investigation on gas bubbling assisted inclusion transport and removal in multistrand tundish", *Metals and Materials International*, Vol 28, 2022, pp. 2146-2165. <https://doi.org/10.1007/s12540-021-01124-1>

## 2021

34. V. K. Gupta, **P. K. Jha** and P. K. Jain, "Numerical investigation into flow and solidification behavior of billet continuous casting with and without mold electromagnetic stirring", *Heat Transfer*, Vol 51, 2021, pp. 909-928. <https://doi.org/10.1002/htj.22335>
35. V. K. Gupta, **P. K. Jha** and P. K. Jain, "Modeling of wall shear stress induced inclusion transport and removal in multi-strand tundish", *ISIJ international*, vol. 61, 2021, pp. 2445-2456. <https://doi.org/10.2355/isijinternational.ISIJINT-2020-66>
36. J. Karloopia, S. Mozammil, **P. K. Jha** and T. S. Srivatsan, A study on microstructure and mechanical properties of in-situ processed Aluminum alloy composites, *Materials Today: Proceedings*, Vol 46, 2021, pp. 1396-1400. <https://doi.org/10.1016/j.matpr.2021.02.492>.
37. S. Mozammil, E. Koshta and **P. K. Jha**, "Abrasive wear investigation and parametric process optimization of in-situ Al- 4.5%Cu-xTiB<sub>2</sub> composites", *Transactions of the Indian Institute of Metals*, vol. 74, 2021, pp. 629-648. <https://doi.org/10.1007/s12666-020-02180-8>

**2020**

38. A. Maurya, R. Kumar, **P. K. Jha**, "Simulation of electromagnetic field and its effect during electromagnetic stirring in continuous casting mold", *Journal of Manufacturing Processes*, Vol 60, 2020, pp. 596-607. <https://doi.org/10.1016/j.jmapro.2020.11.003>.
39. S. Mozammil, R. Verma, J. Karloopia and **P. K. Jha**, "Investigation and measurement of porosity in Al + 4.5Cu/6wt%TiB<sub>2</sub> in situ composite: optimization and statistical modelling" *Journal of Materials Research & Technology*, Vol. 9, 2020, pp. 8041- 8057. <https://doi.org/10.1016/j.jmrt.2020.05.045>
40. J. Karloopia, S. Mozammil and **P. K. Jha**, " Influence of in situ titanium diboride particulate reinforcement on mechanical properties of aluminum–silicon-based metal matrix composite ", *JOM*, Vol. 72, 2020, pp. 2927-2936. <https://doi.org/10.1007/S11837-020-04245-X>
41. S. Mozammil, J. Karloopia, R. Verma and **P. K. Jha**, "Mechanical response of friction stir butt weld Al-4.5%Cu/TiB<sub>2</sub>/2.5p in situ composite: Statistical modelling and optimization", *Journal of Alloys and Compounds*, Vol. 826, 2020, pp. 1-17. <https://doi.org/10.1016/j.jallcom.2020.154184>

**2019**

42. H. K. Narang, C. Pandey, J. G. Thakare, N. Saini, M. M. Mahapatra and **P. K. Jha**, "Thermomechanical analysis of tungsten inert gas welding process for predicting temperature distribution and angular distortion." *Journal of Ship Production and Design*, Vol 35, 2019, pp. 241–249. doi: <https://doi.org/10.5957/JSPD.12170057>
43. S. Mozammil, J. Karloopia, and **P. K. Jha**, "Effect of varying TiB<sub>2</sub> reinforcement and its ageing behaviour on tensile and hardness properties of in-situ Al-4.5%Cu-xTiB<sub>2</sub> composite", *Journal of Alloys and Compounds*, Vol. 793, 2019, pp. 454-466. <https://doi.org/10.1016/j.jallcom.2019.04.137>

**2018**

44. J. Karloopia, S. Mozammil, and **P. K. Jha**, "Machinability, modelling and statistical analysis of in-situ Al–Si–TiB<sub>2</sub> composites," *Journal of Composites Science*, vol. 3, no. 1, 2018, pp. 28. <https://doi.org/10.3390/jcs3010028>
45. A. Maurya and **P. K. Jha**, "Two-phase analysis of interface level fluctuation in continuous casting mold with electromagnetic stirring". *International Journal of Numerical Methods for Heat & Fluid Flow*, Vol 28, 2018, pp. 2036-2051. <https://doi.org/10.1108/HFF-08-2017-0310>
46. A. Maurya and **P. K. Jha**, "Study of fluid flow and solidification in billet caster continuous casting mold with electromagnetic stirring". *Archives of Metallurgy and Materials*, Vol 63, 2018, pp. 413-424. <https://doi.org/10.24425/118955>
47. S. Mozammil, J. Karloopia, and **P. K. Jha**, "Studies on porosity of Al-4.5% Cu-2.5pTiB<sub>2</sub> in situ composites," *Materials Science Forum*, Vol. 928, 2018, pp. 51–55. <https://doi.org/10.4028/www.scientific.net/MSF.928.51>
48. H. K. Narang, M. M. Mahapatra, **P. K. Jha**, PVSS Sridhar and P. Biswas, "Experimental and numerical study on effect of weld reinforcement on angular distortion of SAW square butt welded plates", *Journal of Welding and Joining*, Vol 36(2), 2018, pp. 48-59. <https://doi.org/10.5781/JWJ.2018.36.2.8>
49. J. Karloopia, S. Mozammil, and **P. K. Jha**, "An experimental study on friction stir welding of Al-Si-TiB<sub>2</sub> metal matrix composite," *Materials Today: Proceedings*, Vol 5, 2018, pp. 17260–17269. <https://doi.org/10.1016/j.matpr.2018.04.137>
50. S. Mozammil, J. Karloopia, and **P. K. Jha**, "Investigation of porosity in Al casting," *Materials Today: Proceedings*, Vol 5, 2018, pp. 17270–17276. <https://doi.org/10.1016/j.matpr.2018.04.138>

**2017**

51. A. Maurya and **P. K. Jha**, "Numerical investigation of M-EMS for fluid flow and solidification", *COMPEL: The International Journal for Computation and Mathematics in Electrical and Electronic Engineering*, Vol 36, 2017, pp. 1106-1119. <https://doi.org/10.1108/COMPEL-10-2016-0460>
52. A. Maurya and **P. K. Jha**, "Influence of electromagnetic stirrer position on fluid flow and solidification in continuous casting mold", *Applied Mathematical Modelling*, Vol 48, 2017, pp. 736-748. <https://doi.org/10.1016/j.apm.2017.02.029>
53. S. Pattnaik, D. B. Karunakar and **P. K. Jha**, "A novel method of increasing ceramic shell permeability and optimizing casting shrinkage and tensile strength of the investment cast parts", *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, Vol 231, 2017, pp. 377-388. <https://doi.org/10.1177/0954405415606386>

**2016**

54. A. Maurya and **P. K. Jha**, "Mathematical modelling of solidification in a curved strand during continuous casting of steel". *Journal of The Institution of Engineers (India): Series C*, Vol 98, 2016, pp. 1-8, <https://doi.org/10.1007/s40032-016-0322-1>
55. S. K. Singh, M. Mishra and **P. K. Jha**, "Performance of co-current and counter-current parallel flow three-fluid heat exchanger due to perturbations in flow", *International Journal of Global Energy Issues*, Vol 39, 2016, pp. 144-156. <https://doi.org/10.1504/IJGEI.2016.076342>.

**2015-2005**

56. M. I. H. Siddiqui and **P. K. Jha**, "Effect of inflow rate variation on intermixing in a steelmaking tundish during ladle change-over", *Steel Research International*, Vol 87, 2015, pp. 733-744. <https://doi.org/10.1002/srin.201500210>
57. M. I. H. Siddiqui and **P. K. Jha**, "Numerical Investigation of Inclusion Behaviour in a Multi-Strand Tundish During Strand Blockages", *Journal of The Institution of Engineers (India): Series D*, Vol 96, 2015, pp. 123-130. <https://doi.org/10.1007/s40033-015-0077-5>
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#### Conferences (International)

1. V. K. Gupta, **P. K. Jha** and P. K. Jain, "Influence of electromagnetic stirrer parameters on solidification and interface behaviour in continuous casting mold", IIM-ATM 2022 at Hyderabad, India, 2022.
2. V.K. Gupta, **P. K. Jha** and P. K. Jain, "Effect of submerged entry nozzle port angle on fluid flow and solidification of continuous casting bloom", FMFP-2020 at IIT Guwahati, India, 2020.
3. J. Karloopia, S. Mozammil and **P. K. Jha**, "Fabrication and characterization of Al-Si/TiB<sub>2</sub> in-situ composites", International Conference on Innovative Engineering Design (ICoIED 2020) at Dehradun, India, 2020.
4. J. Karloopia, S. Mozammil and **P. K. Jha**, "Synthesis and characterization of in-situ formed TiB<sub>2</sub> particulate reinforced Al-Si alloy composites", TMS 2020 at San Diego, USA, 2020.
5. J. Karloopia, S. Mozammil and **P. K. Jha**, "Wear and mechanical characteristics of Al-Si/TiB<sub>2</sub>", Twenty-Second International Conference on composite materials (ICCM22) at Melbourne, Australia, 2019.
6. J. Karloopia, S. Mozammil and **P. K. Jha**, "Effect of in-situ TiB<sub>2</sub> on mechanical properties of Al-Si based MMC's", International Conference on Advanced Materials, Energy & Environmental Sustainability (ICAMEES-2018) at Dehradun, India, 2018.
7. J. Karloopia, S. Mozammil and **P. K. Jha**, "A study on machining performance of Al-Si-TiB<sub>2</sub> in-situ metal matrix

- composites", 11th Asian-Australasian Conference on Composite materials (ACCM-11), Cairns, Australia, 2018.
8. S. K. Mishra and **P. K. Jha**, "Inclusion removal study in multistrand tundish with turbostoper", 18 Advances in Science and Engineering Technology International Conferences (ASET), Dubai, 2018.
  9. S. Mozammil, J. Karloopia and **P. K. Jha**, "Studies of porosities in Al-4.5%Cu-2.5pTiB2 in-situ composites", 3RD International Conference on Composite Materials and Material Engineering (ICCME-2018), Singapore, 2018.
  10. J. Karloopia, S. Mozammil and **P. K. Jha**, "Influence of TiB2 on microstructure, hardness and Tensile properties of aluminium alloy-based metal matrix composite", 12th International conference on Complex Fluids and Soft Matter (COMPFLU-2018) at Roorkee, India, 2018.
  11. A. Maurya and **P. K. Jha**, "Investigation of meniscus level fluctuation during electromagnetic stirring in continuous casting mold", STIS-2017, IIT Kanpur, India, 2017.
  12. R. Kumar, A. Maurya, M. I. H. Siddiqui, **P. K. Jha**, "Some studies in different shapes of tundish intermixing and flow behavior", International Conference on Production and Industrial Engineering, NIT Jalandhar, India, 2016, pp. 1-8.
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  15. A. Maurya and **P. K. Jha**, "Study of inclusion removal in a single strand tundish with varying dam height and position". International Conference on "Processing and Fabrication of Advanced Materials - XXIII", IIT Roorkee, Uttarakhand, India, 2014, pp. 1010-1024.
  16. M. I. H. Siddiqui and **P. K. Jha**, "Grade mixing analysis in steelmaking tundish using different turbulence models," 5th International and 26th All India Manufacturing Technology, Design and Research Conference AIMTDR, IIT Guwahati, India, pp. 341, 2014.
  17. M. I. H. Siddiqui and **P. K. Jha**, "Numerical investigation of grade intermixing and heat transfer during ladle change-over in steelmaking tundish," 23rd International Conference on Processing and Fabrication of Advanced Materials, IIT Roorkee, Roorkee, India, 2014, pp. 981-993.
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  20. S. Pattnaik, D. B. Karunakar and **P. K. Jha**, "Optimization of gate location with least defects in plastic injection moulding", 5th International Conference on Advances in Mechanical Engineering, NIT Surat, India, 2011.
  21. S. K. Mishra, A. Maurya, **P. K. Jha**, S. C. Sharma and S. K. Ajmani, "Optimization of dam height and position with regard to mixing in a single strand Tundish", International Conference on "All India Manufacturing Technology, Design and Research Conference", Andhra University College of Engineering, Visakhapatnam, Andhra Pradesh, India, 2010, pp. 1099-1104.
  22. S. K. Mishra, **P. K. Jha**, S. C. Sharma and S. K. Ajmani, "Simulation of the effect of roughness of dam height on mixing", International conference, FIME - 2010, at National Institute of Technology, Surathkal, Karnataka, 2010.
  23. S. Kant, A. Dubey, **P. K. Jha** and P. Kumar, "Grade change study with the use of flow modifiers in slab caster tundish," AIMTDR 2010, 3rd International Conference and 24th AIMTDR on Global Trends and Challenges in Design and Manufacturing, Andhra University Visakhapatnam, India, 2010.
  24. S. Kant, P. Kumar and **P. K. Jha**, "Intermixed amount optimization using artificial neural network in six strand billet caster tundishes", International Conference on Theoretical, Applied, Computational and Experimental Mechanics, IIT Kharagpur, India, 2010.
  25. S. Kant., **P. K. Jha** and P. Kumar, "The effect of wall inclination on intermixing during grade transition in two strands slab caster tundish", International Conference on Frontiers in Mechanical Engineering FIME-2010, NITK, Surathkal, 2010, pp 255-259.
  26. S. Kant., **P. K. Jha** and P. Kumar, "Investigation of grade transition in two strands slab caster tundish", International Conference on Latest trends in Simulation Modeling and Analysis, COSMA-2009, NIT Calicut, 2009, pp 142-147.
  27. M. K. Jha, R. Swarnkar, A. Dewan, **P. K. Jha**, and V. Buwa, "An assessment of different turbulence models for prediction of single phase flow in a stirred vessel", 2nd International congress on Computational Mechanics and Simulation, IIT Guwahati, 2006.
  28. P. S. Rao, **P. K. Jha** and A. Dewan, "Numerical simulation of inclusion separation process in continuous casting tundish", 2nd International congress on Computational Mechanics and Simulation, IIT Guwahati, 2006.
  29. S. S. Shinde, **P. K. Jha** and A. L. Mujumdar, "Effect of geometrical parameters on mixing in a continuous casting tundish", 18th National & 7th ISHMT-ASME Heat and Mass Transfer Conference, IIT Guwahati, India, 2006.
  30. **P. K. Jha**, "Assessment of various non-linear differencing schemes for the prediction of mixing in a tundish", 118th National & 7th ISHMT-ASME Heat and Mass Transfer Conference, IIT Guwahati, India, 2006.
  31. S. S. Choudhary, **P. K. Jha** and P. S. Robi, "Numerical simulation of hollow continuous casting", 18th National & 7th ISHMT- ASME Heat and Mass Transfer Conference, 2006, IIT Guwahati, India, 2006.
  32. **P. K. Jha** and S. K. Dash, "Study of mixing in a tundish using different turbulence models", Asia Steel International Conference, Tata Steel, Jamshedpur, 2003.
  33. **P. K. Jha**, M. P. Yallasiri and N. S. Mishra, "Genesis of pearlite banding during hot deformation of high strength low alloy steels", International Conference on Metallurgical Technologies (ICMT-98), IT BHU, Varanasi, 1998.

## Conferences (National)

34. A. Maurya and **P. K. Jha**, "Numerical modelling of M-EMS in continuous casting billet mold". National Conference on "Statistics and Analytical Method in Production & Industrial Engineering", PEC University of Technology, Chandigarh, 2016, pp. 207-213.
35. A. Maurya and **P. K. Jha**, "Numerical modelling of M-EMS in continuous casting billet mold". National Conference on Statistics and Analytical Method in Production & Industrial Engineering, PEC University of Technology, Chandigarh, 2016, pp. 207-213.
36. A. Maurya and **P. K. Jha**, "Effect of casting speed on continuous casting of steel slab". International Journal of

- Mechanical Engineering and Robotic Research, Special Issue 1(1), National Conference on Recent Advances in Mechanical Engineering, 2014, pp. 13-21.
37. S. R. Pattnaik, D. B. Karunakar, **P. K. Jha**, "Mold filling analysis of the pattern wax in investment casting process by simulation and defect prediction", National Seminar on Development in Materials and Manufacturing Process, Rajdhani Engineering College, Bhubaneswar, India, 2011.
  38. S. Kant, P. Kumar and **P. K. Jha**, "The effect of dam and weir on intermixing during grade transition in six strand billet caster tundish", Proceeding: National Conference on Futuristic trend in Mechanical Engineering (FTME-2010), October 29-30, GNDEC, Ludhiana, 2010.
  39. S. Kant, A. Dubey, **P. K. Jha** and P. Kumar, "The effect of dam and weir on intermixing during grade transition in two strand slab caster tundish", 2nd National Conference on Precision Metrology, SLIET Longowal, India, 2010.
  40. **P. K. Jha**, P. Kumar and S. Kant, "Investigation of intermixing in single strand tundish in continuous casting tundish steelmaking process", RAMP-2009, GBPUAT Pantnagar, India, 2009.
  41. **P. K. Jha**, J. P. Malladi, P. Kumar and S. Kant, "Investigation of grade change in continuous casting tundish", NCFCE-2007, IIT Guwahati, Dec 12-14, 2007.

## Online MOOCS courses developed and run under NPTEL

1. MOOCS Online course (NPTEL) on Engineering Economic Analysis (duration: 8 Weeks) during July-September 2016
  2. MOOCS Online course (NPTEL) on Principles of Casting Technology (duration: 8 Weeks) during January-March 2017
  3. MOOCS Online course (NPTEL) on Modeling and Simulation of Discrete Event Systems (duration: 8 Weeks) during July-September 2017
  4. MOOCS Online course (NPTEL) on Theory of Production Processes (duration:12 Weeks) during January-March 2018
  5. MOOCS Online course (NPTEL) on Principles of Metal Forming Technology (duration: 8 Weeks) during July-September 2018
  6. MOOCS Online course (NPTEL) on Financial Mathematics (duration: 12 Weeks) during January-March 2019
  7. MOOCS Online course (NPTEL) on Welding Metallurgy (duration: 12 Weeks) during July-September 2019
- MOOCS Online course (NPTEL) on Modeling of Tundish Steelmaking in Continuous Casting (duration: 8 Weeks) during Jan-March 2020

## Research Grants

### A. Current Projects

- **Investigation on casting parameters optimization and solidification behaviour of melt cast /cast cure explosives**  
| 2025 - Ongoing  
DRDO TBRL  
PI – Prof. P. K. Jha
- **Casting Design and simulation of ferrous and non-ferrous alloy**  
| 2025 - Ongoing  
KIE Pvt. Ltd.  
PI – Prof. P. K. Jha
- **Magneto Hydrodynamics Analysis of Fluid Flow and Solidification in Continuous Casting Mold Towards Clean Steel Production**  
| 2023 - Ongoing  
CSIR  
PI – Prof. P. K. Jha

### B. Completed Projects

- **Multiphase analysis of inclusion transport and removal in continuous casting products with use of electromagnetic stirring**  
| 2020 – 2024  
Science and Engineering Research Board PI – Prof. P. K. Jha
- **Investigation of the effect of temperature and flow nonuniformities on the performance of three fluid compact exchange** | 2014  
Department of Science and Technology  
PI – Dr. Manish Mishra (Professor, MIED, IIT Roorkee), Co-PI – Prof. P. K. Jha
- **Development of refined high strength cast hypereutectic Al-Si alloy** | 2010  
Counsel of Scientific and Industrial Research (CSIR)  
PI - Dr. D. K. Dwivedi (Professor, IIT Roorkee), Co-PI – Dr. P. K. Jha
- **Physical Modelling o and numerical investigation of intermixing during ladle changeover in continuous casting process of steel** | 2010  
Counsel of Scientific and Industrial Research (CSIR)  
PI - Dr. P. K. Jha, Co-PI – Dr. Pradeep Kumar (Professor, IIT Roorkee)
- **Investigation of grade transition in continuous casting tundish**| 2007  
Indian Institute of Technology Roorkee, India PI – Dr. P. K. Jha
- **Study of the effect of geometrical parameter on mixing and inclusion separation for different shape of tundish with and without the use of flow modifier devices** | 2005  
Department of Science and Technology PI - Dr. P. K. Jha

## Consultancy Projects

- **Determination of pre-weld heating and post-weld heating parameters for different grades and thickness of the steel processed at PLTCM, CRM-III, BSL | 2021**  
RDCIS, Steel Authority of India Limited (SAIL)  
PI - Dr. P. K. Jha, Co-PI – Dr. D. K. Dwivedi (Professor, IIT Roorkee)
- **Capacity assessment of ITC Haridwar/manpower unit | 2010**  
ITC, Kolkata, India  
PI – Dr. B. K. Gandhi (Professor, IIT Roorkee).  
Co-PI: Dr P K Jha

## Professional Activities

1. QIP Short term course on "Processing and Fabrication of Metal Matrix Composites" (1-5 July 2013)
2. CEC Course on "Welded Structure Design and Quality Control" (December 14-16,2011)
3. QIP Workshop on Numerical Methods in Manufacturing / Materials Processing, March 30, 2013
4. Organizing Secretary of 23rd International conference on Processing and Fabrication of Advanced materials (PFAM-XXIII) at IIT Roorkee during December 5-7, 2014
5. Joint Organizing Secretary, Sustainable Technologies for Intelligent Water Management (STIMM-2018), February 16-19, 2018

## Professional Membership

- Life Member, The Indian Institute of Metals
- Member, Indian Water Resource society

## Student Supervision:

### ▪ Ph.D.

1. **Suman Kant** (2011) | Some investigation on the use of flow modifiers in continuous casting tundish
2. **Sabin Kumar Mishra** (2012) | Influence of nozzle blockage on flow behaviour in curved wall multistrand tundish
3. **Harendra Kumar Narang** (2013) | Experimental and finite element modelling of arc weldment profile and angular distortion
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5. **Anand Kumar** (2014) | Some studies on wear, machinability, and weldability of Al-4.5%Cu-TiC in-situ composite
6. **Saroj Rani Pattnaik** (2014) | Reduction of shrinkage and porosity defects in investment casting
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10. **Tesfamariam Abreha Bahita** (2018) | Water quality assessment and pollution status of upper ganga canal
11. **Jimmy Karloopia** (2021) | Studies on synthesis and characterization of in-situ Al-12%Si-TiB<sub>2</sub> metal matrix composite
12. **Shaik Mozammil** (2021) | Synthesis, characterization, and modeling studies on in-situ TiB<sub>2</sub> reinforced Aluminium metal matrix composite
13. **Rajneesh Kumar** (2024) | Analysis of solidification in continuous casting
14. **Vipul Kumar Gupta** (2023) | Multiphase modelling in continuous casting process
15. **Sudhir Ranjan** (2025) | Fabrication and characterization of in-situ developed aluminium hybrid metal matrix composite
16. **Prabhash Kumar Jha** (Submitted) | Machining of Aluminium metal matrix composite
17. **Dilip Gehloth** (2024) | Experimental investigation and modelling of ECDM
18. **Kapil Kumar Sharma** (2025) | Multiphase modelling for slag entrapment in continuous steel casting slab.
19. **Dheeraj Kumar Saini** (2024) | Continuous casting of particle reinforced metal matrix composite
20. **Mohammad Farhan** (Ongoing) | Multiphase analysis of inclusion transport and its removal from continuous casting product with the use of EMS
21. **Lokesh Nair** (Ongoing) | Fatigue life analysis of metal matrix composite
22. **Kunal Chauhan** (ongoing) | Development of hybrid Aluminium Metal Matrix Composite
23. **Ravi Patel** (ongoing) | Metal matrix composite
24. **Sumitra Sahoo** (ongoing) | Experimentation of Laser Powder Bed Fusion of Titanium alloy

### ▪ M.Tech.

1. **S. S. Shinde** (2005) | Effect of geometrical parameters on mixing in a tundish
2. **S. Chanda** (2006) | Simulation of twin roll casting process
3. **P. S. Rao** (2006) | Modelling of inclusion removal process in a continuous casting tundish
4. **M. J. Prasad** (2006) | Modeling of grade change in a continuous casting tundish
5. **Prakash Anand L.** (2009) | Investigation of the adhesively bonded composite joints using finite element approach
6. **Rajeev Kumar** (2009) | Finite element simulation for the optimization of parameters in continuous casting of slabs
7. **Jumhedi** (2009) | CFD analysis for improvement in effectiveness of potable water reservoir
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9. **Amrishi Maurya** (2010) | Investigation of inclusion removal in tundish steelmaking process
10. **Achitanand Dubey** (2010) | Analysis of intermixing during ladle change over in CC process
11. **Dharmesh Kumar** (2010) | Optimal riser design for sand casting using Autocast
12. **Shivmohan Meena** (2010) | Investigation of mixing using different configuration of tundish in CC steelmaking process
13. **Vineet Kumar** (2010) | Investigation of stress emanation during twin roll strip casting
14. **Waseem Ahmad** (2011) | Experimental study and simulation of intermixing in CC steelmaking tundish of different shape
15. **Md. Irfanul Haq Siddiqui** (2011) | Investigation of flow behavior and inclusion removal mechanism in a multi strand tundish with strand blockage

16. **Abhishek Kumar Karn** (2011) | Studies of refined high strength cast hypereutectic Al-Si alloy
17. **Gaurav Aggarwal** (2011) | Heat transfer and fluid flow in continuous slab caster mould
18. **Manoj Kumar Singh** (2012) | Simulation of stir casting for manufacturing MMC.
19. **Uday Gupta** (2012) | Study of SCC and fracture toughness behaviour of FSW joint of marine alloy system
20. **Ankush Kumar** (2012) | Grade transition study in combined tundish mold arrangement in continuous casting process
21. **Vijay Shidhappa Malage** (2013) | Study of refined high strength cast hypereutectic Al-Si alloy
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24. **Ajay Mathew** (2013) | Phenomenon of wear in metal matrix composite
25. **Rakesh Babu Ningala** (2013) | Characterization of MMCs developed using different molding material
26. **Pravin Kumar Prajapati** (2014) | Stress analysis in solidification process applied to continuous casting
27. **Akansha Yadav** (2014) | Mathematical modelling of friction stir welding of Mg alloy with respect to tool design and process parameter development
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31. **Debolina Sen** (2016) | Corrosion behaviour of friction stir welded Aluminium alloys
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34. **Abhishek Kumar** (2017) | Two phase study of pollutant dispersion study in canal
35. **Harshit Gangwar** (2017) | Investigation of joining of Al based metal matrix composite using friction stir welding
36. **Nitin Singh Solanki** (2019) | Numerical investigation of flow behaviour and wall shear stress in continuous casting tundish
37. **Kamran Igrar** (2020) | Machinability studies of Al-Si-TiB<sub>2</sub> in in-situ MMCs.
38. **Prashant Kumar** (2020) | Parametric study on wear behavior of in-situ MMCs
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