Curriculum Vitae

Prof. Pradeep Kumar Jha | Ph.D.
Professor | Department of Mechanical and Industrial Engineering
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Research Interests

Metal Casting, Modeling and Simulation, Aluminium based Metal Matrix Composites, CFD based Modeling of Steelmaking Processes in Continuous Casting (Physical & Mathematical Modeling)

Professional Experience

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 application no. 202211065567, Date of filling – 16.11.2022

Book Chapters

1. **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.
2. **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.
3. **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.
4. **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.
5. **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

6. **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

7. **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.

8. **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

9. **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.

10. **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

11. **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.

12. **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

13. **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.

14. **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.

15. **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

2022

1. 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
2. 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/TiB2/3p composite", Transactions of the Indian Institute of Metals, 2022. https://doi.org/10.1007/s12666-022-02735-x
3. 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
4. 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
5. 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

6. 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
7. 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
8. 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.
9. S. Mozammil, E. Koshta and **P. K. Jha**, "Abrasive wear investigation and parametric process optimization of in-situ Al-4.5%Cu-xTiB2 composites", Transactions of the Indian Institute of Metals, vol. 74, 2021, pp. 629-648. https://doi.org/10.1007/s12666-020-02180-8

2020

10. 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.
11. S. Mozammil, R. Verma, J. Karloopia and **P. K. Jha**, "Investigation and measurement of porosity in Al + 4.5Cu/6wt%TiB2 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
12. 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
13. S. Mozammil, J. Karloopia, R. Verma and **P. K. Jha**, "Mechanical response of friction stir butt weld Al-4.5%Cu/TiB2/2.5p 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

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14. 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
15. S. Mozammil, J. Karloopia, and **P. K. Jha**, "Effect of varying TiB2 reinforcement and its ageing behaviour on tensile and hardness properties of in-situ Al-4.5%Cu-xTiB2 composite", Journal of Alloys and Compounds, Vol. 793, 2019, pp. 454-466. https://doi.org/10.1016/j.jallcom.2019.04.137

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16. J. Karloopia, S. Mozammil, and **P. K. Jha**, "Machinability, modelling and statistical analysis of in-situ Al–Si–TiB2 composites," Journal of Composites Science, vol. 3, no. 1, 2018, pp. 28. https://doi.org/10.3390/jcs3010028
17. 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
18. 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
19. S. Mozammil, J. Karloopia, and **P. K. Jha**, "Studies on porosity of Al-4.5% Cu-2.5pTiB2 in situ composites," Materials Science Forum, Vol. 928, 2018, pp. 51–55. https://doi.org/10.4028/www.scientific.net/MSF.928.51
20. 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
21. J. Karloopia, S. Mozammil, and **P. K. Jha**, "An experimental study on friction stir welding of Al-Si-TiB2 metal matrix composite," Materials Today: Proceedings, Vol 5, 2018, pp. 17260–17269. https://doi.org/10.1016/j.matpr.2018.04.137
22. 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

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23. 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
24. 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
25. 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

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26. 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
27. 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.

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28. 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
29. 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
30. M. I. H. Siddiqui and **P. K. Jha**, "Assessment of turbulence models for prediction of intermixed amount with free surface variation using coupled level-set volume of fluid method," ISIJ International, Vol 54, 2014, pp. 2578-2587. https://doi.org/10.2355/isijinternational.54.2578
31. S. K. Singh, M. Mishra and **P. K. Jha**, "Nonuniformities in compact heat exchangers—scope for better energy utilization: A review", Renewable and Sustainable Energy Reviews, Vol 40, 2014, pp. 583-596. https://doi.org/10.1016/j.rser.2014.07.207
32. M. I. H. Siddiqui and **P. K. Jha**, "Numerical simulation of flow-induced wall shear stresses in three different shapes of multi-strand steelmaking tundishes," Steel Research International, Vol 86, 2014, pp. 1–12. https://doi.org/10.1002/srin.201400217
33. S. Pattnaik, D. B. Karunakar and **P. K. Jha**, "Parametric optimization of the investment casting process using utility concept and Taguchi method", Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications, Vol 228, 2013, pp. 288-300. https://doi.org/10.1177/1464420713487654
34. S. Pattnaik, D. B. Karunakar and **P. K. Jha**, "A review of rapid prototyping integrated investment casting processes", Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials Design and Applications, Vol 228, 2013, pp. 249-277. https://doi.org/10.1177/1464420713479257

35. S. Pattnaik, D. B. Karunakar and **P. K. Jha**, "Modeling and parametric optimization of investment casting process by uniting desirability function approach and fuzzy logic", Journal of Intelligent and Fuzzy Systems, Vol 26(3), 2014, pp. 1235-1244. https://doi.org/10.3233/IFS-130809
36. S. K. Singh, M. Mishra and **P. K. Jha**, "Experimental investigations on thermo-hydraulic behaviour of triple concentric-tube heat exchanger", Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering, Vol. 229(4), 2014, pp. 299–308. https://doi.org/10.1177/0954408914531118
37. A. Kumar, M. M. Mahapatra, **P. K. Jha**, N. R. Mandal and V. Devuri, "Influence of tool geometries and process variables on friction stir butt welding of Al–4.5%Cu/TiC in situ metal matrix composites", Materials & Design, Vol 59, 2014, pp. 406-414. https://doi.org/10.1016/j.matdes.2014.02.063
38. A. Kumar, **P. K. Jha** and M. M. Mahapatra, "Abrasive wear behavior of in situ TiC reinforced with Al-4.5%Cu matrix", Journal of Materials Engineering and Performance, Vol 23, 2014, pp. 743–752. https://doi.org/10.1007/s11665-013-0836-0
39. S. K. Singh, M. Mishra and **P. K. Jha**, " Transient behavior of co-current parallel flow three-fluid heat exchanger", International Communications in Heat and Mass Transfer, Vol 52, 2014, pp. 46-50. https://doi.org/10.1016/j.icheatmasstransfer.2014.01.001
40. H. K. Narang, M. M. Mahapatra**, P. K. Jha** and P. Biswas, "Optimization and prediction of angular distortion and weldment characteristics of TIG square butt joints", Journal of Materials Engineering and Performance, Vol 23, 2014, pp. 1750–1758. https://doi.org/10.1007/s11665-014-0905-z
41. A. Kumar, M. M. Mahapatra, **P. K. Jha**, "Effect of machining parameters on cutting force and surface roughness of in situ Al–4.5%Cu/TiC metal matrix composites", Measurement, Vol 48(1), 2014, pp. 325–332. https://doi.org/10.1016/j.measurement.2013.11.026
42. M. I. H. Siddiqui and **P. K. Jha**, "Experimental investigation of inter mixing in a tundish-mold arrangement", International Journal of Mechanical Engineering and Robotics Research, Vol 1, 2014, pp. 36-43.
43. A. Maurya, and P. K. Jha, "Effect of casting speed on continuous casting of steel slab," International Journal of Mechanical Engineering and Robotics Research, Vol 1, 2014, pp. 13-21.
44. S. Y. Belete, D. Venkateswarlu, M. M. Mahapatra, **P. K. Jha** and N.R. Mandal, "On friction stir butt welding of Al + 12Si/10 wt%TiC in situ composite", Materials & Design, Vol 54, 2014, pp. 1019-1027. https://doi.org/10.1016/j.matdes.2013.09.034
45. S. Y. Belete, **P. K. Jha** and M. M. Mahapatra, "The key attributes of synthesizing ceramic particulate reinforced Al-based matrix composites through stir casting process: a review", Materials and Manufacturing Processes, Vol 28(9), 2013, pp. 969-979. https://doi.org/10.1080/10426914.2012.677909969
46. S. Y. Belete, M. M. Mahapatra and **P. K. Jha**, "On modeling the abrasive wear characteristics of in situ Al–12%Si/TiC composites", Materials and Design, Vol 50, 2013, pp. 277–284. https://doi.org/10.1016/j.matdes.2013.02.042
47. A. Kumar, M. M. Mahapatra, **P. K. Jha**, "Modelling the abrasive wear characteristics of in-situ synthesized Al-4.5%Cu/TiC composites", Wear, Vol 306, 2013, pp. 170-178. https://doi.org/10.1016/j.wear.2013.08.013.
48. S. Y. Belete**, P. K. Jha** and M. M. Mahapatra, "Effect of sliding distance, applied load, and weight percentage of reinforcement on the abrasive wear properties of in situ synthesized Al–12%Si/TiC composites", Tribology Transactions, Vol 56, 2013, pp. 546-554. https://doi.org/10.1080/10402004.2013.767401
49. S. Pattnaik, D. B. Karunakar and **P. K. Jha**, "Utility-Fuzzy-Taguchi based hybrid approach in investment casting process", International Journal of Interactive Design and Manufacturing, Vol 8, 2013, pp. 77-89. https://doi.org/10.1007/s12008-013-0183-2
50. S. Pattnaik, D. B. Karunakar and **P. K. Jha**, "A prediction model for the lost wax process through fuzzy-based artificial neural network", Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, Vol 228, 2013, pp. 1259-1271. https://doi.org/10.1177/0954406213507701
51. A. Sengupta, P. Mishra, V. Singh, S. Mishra, **P. K. Jha**, S. K. Ajmani and S. C. Sharma, "Physical modelling investigation of influence of strand blockage on RTD characteristics in a multistrand tundish", Ironmaking & Steelmaking, Vol 40, 2013, pp. 159-166, https://doi.org/10.1179/1743281212Y.0000000054
52. S. Y. Belete, M. M. Mahapatra and **P. K. Jha**, "Influence of reinforcement type on microstructure, hardness, and tensile properties of an aluminum alloy metal matrix composite", Journal of Minerals and Materials Characterization and Engineering, Vol 1, 2013, pp. 124-130. https://doi.org/10.4236/jmmce.2013.14022
53. S. Pattnaik, D. B. Karunakar and **P. K. Jha**, "Multi-characteristic optimization of wax patterns in the investment casting process using grey–fuzzy logic", International Journal of Advanced Manufacturing Technology, Vol 67, 2013, pp. 1577-1587. https://doi.org/10.1007/s00170-012-4591-4
54. S. Pattnaik, D. B. Karunakar and **P. K. Jha**, "Optimization of multiple responses in the lost wax process using Taguchi method and grey relational analysis", Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials Design and Applications, Vol 227, 2012, pp. 156-167. https://doi.org/10.1177/1464420712464711
55. S. Pattnaik, D. B. Karunakar and **P. K. Jha**, "Influence of injection process parameters on dimensional stability of wax patterns made by the lost wax process using Taguchi approach", Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials Design and Applications, Vol 227, 2012, pp. 52–56. https://doi.org/10.1177/1464420712451807
56. H. K. Narang, A. Kumar, M. M. Mahapatra and **P. K. Jha**, "Modelling for SAW Square Butt Joints by Using ANFIS to Predict the Weldment Characteristics of Joint", Advanced Materials Research, Vol 585, 2012, pp. 455-459. https://doi.org/10.4028/www.scientific.net/AMR.585.455
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58. S. Pattnaik, D. B. Karunakar and **P. K. Jha**, "Application of computer simulation for finding optimum gate location in plastic injection moulding process", International Journal of Advanced Engineering Research and Studies, Vol 1(2), 2012, 159-161.
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60. S. K. Mishra, **P. K. Jha**, S. C. Sharma and S. K. Ajmani, "Effect of blockage of outlet nozzle on fluid flow and heat transfer in a continuously cast multi strand billet caster tundish", Canadian Metallurgical Quarterly (CMQ), Vol 51, 2012, pp. 170-183. https://doi.org/10.1179/1879139511Y.0000000032
61. H. K. Narang, U. P. Singh, M. M. Mahapatra and **P. K. Jha**, "Prediction and optimization of TIG weldment macrostructure zones using response surface methodology", Journal for Manufacturing Science and Production, Vol 12, 2012, pp. 171–180. https://doi.org/10.1515/jmsp-2012-0012

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63. H. K. Narang, M. M. Mahapatra, **P. K. Jha** and I. Mukherjee, "Modelling and predicting the effects of submerged arc weldment process parameters on weldment characteristics and shape profiles", Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture, Vol 226, 2012, pp. 1230-1240, https://doi.org/10.1177/0954405412441561
64. H. K. Narang, U. P. Singh, M. M. Mahapatra and **P. K. Jha**, "Prediction of the weld pool geometry of TIG arc welding by using fuzzy logic controller", International Journal of Engineering, Science and Technology, Vol 3, 2011, pp. 77-85. https://doi.org/10.4314/ijest. v3i9.6
65. S. K. Mishra, **P. K. Jha**, S. C. Sharma and S. K. Ajmani, "Numerical investigation of the effect of transitory strand opening on mixing in a multistrand tundish", International Journal of Minerals, Metallurgy, and Materials, Vol 18, 2011, pp. 535-542. https://doi.org/10.1007/s12613-011-0474-1
66. S. Kant, **P. K. Jha** and P. Kumar, "Investigation of effect of dam on intermixing during ladle changeover in six strand billet caster tundishes", Ironmaking & Steelmaking, Vol 38, 2011, pp. 391-397. https://doi.org/10.1179/1743281211Y.0000000007
67. S. K. Mishra, **P. K. Jha**, S. C. Sharma, and S. K. Ajmani, "Numerical investigation of fluid flow and heat transfer in a multi-strand steelmaking tundish with closed strands", International Journal of Engineering Science and Technology, Vol 3, 2011, pp. 1137-1146.
68. S. Kant, **P. K. Jha** and P. Kumar, "Investigation of intermixing with the use of flow modifiers in a two-strand slab caster tundish", Indian Foundry Journal, Vol 56, 2010, pp. 39-45.
69. **P. K. Jha**, P. S. Rao and A. Dewan, "Effect of height and position of dams on inclusion removal in a six-strand tundish", ISIJ international, Vol 48, 2008, pp. 154-160. https://doi.org/10.2355/isijinternational.48.154

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70. **P. K. Jha** and S. K., Dash, "Employment of different turbulence models to the design of optimum steel flows in a tundish", International Journal of Numerical Methods for Heat & Fluid Flow, Vol 14, 2004, pp. 953-979. https://doi.org/10.1108/09615530410544283
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72. **P. K. Jha** and S. K. Dash, "Effect of outlet positions and various turbulence models on mixing in a single and multi-strand tundish", International Journal of Numerical Methods for Heat & Fluid Flow, Vol 12, 2002, pp. 560-584. https://doi.org/10.1108/09615530210434296
73. **P. K. Jha** and S. K. Dash, "Global optimization of fluid flow and mixing in a six-strand billet caster tundish", ISIJ International, Vol 42, 2002, pp. 670-672. https://doi.org/10.2355/isijinternational.42.670
74. **P. K. Jha**, S. K. Dash and S. Kumar, "Fluid flow and mixing in a six-strand billet caster tundish: A Parametric Study", ISIJ International, Vol 41, 2001, pp. 1437-1446. https://doi.org/10.2355/isijinternational.41.1437

Conferences (International)

1. V. K. Gupta, **P. K. Jha** and P. K. Jain, "Influence of electromagnetic stirrer parameters on solidification and interface behaivour 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/TiB2 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 TiB2 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/TiB2", 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 TiB2 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-TiB2 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.
13. **P. K. Jha** and A. Maurya, "Study of mold level fluctuation with electromagnetic stirring in continuous casting mold", International Conference on "Processing and Fabrication of Advanced Materials XXV", Auckland, New Zealand, 2016, pp. 217-226
14. M. I. H. Siddiqui, A. Maurya and **P. K. Jha**, "Physical investigations of grade mixing phenomenon in delta shape steel-making tundish," International Conference CETCME, NIET, Noida, India, 2015.
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 ManufacturingTechnology, Design and Research Conference AIMTDR, IIT Guwahati, India, pp. 341, 2014.

17. M. I. H. Siddiqui and **P. K. Jha**, "Numercal 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.
18. A. Kumar, **P. K. Jha** and M. M. Mahapatra, "Synthesis and mechanical property evaluation of Al-Cu-TiC in-situ metal matrix composites", 22nd International conference on Processing & Fabrication of Advanced Materials, NUS Singapore, 2013.
19. M. I. H. Siddiqui and **P. K. Jha**, "Effect of tundish shape on wall shear stress and mixing in continuous casting tundish steelmaking", 2nd Annual International Conference on Materials Science, Metal and Manufacturing(M3-2012), GSTF, Nov 19-20, Singapore, 2012.
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
8. MOOCS Online course (NPTEL) on Modeling of Tundish Steelmaking in Continuous Casting (duration: 8 Weeks) during Jan-March 2020

Research Grants

A. Current Projects

- **Multiphase analysis of inclusion transport and removal in continuous casting products with use of electromagnetic stirring | 2020 - Ongoing**
  Science and Engineering Research Board
  PI – Prof. P. K. Jha

B. Completed Projects

- **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
  4. **Belete Sirahbiyzy Yigezu** (2014) – Some studies on wear, machinability, and weldability of Al-12%Si-TiC in-situ composite
  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
  7. **Sanjay Kumar Singh** (2015) | Numerical and experimental investigation on three fluid heat exchangers
  8. **Md Irfanul Haque Siddiqui** (2015) | Investigation of grade intermixing in tundish during ladle change over
  9. **Ambrish Maurya** (2017) | Investigation of in-mold electromagnetic stirring in continuous casting mold
  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-TiB2 metal matrix composite
  12. **Shaik Mozammil** (2021) | Synthesis, characterization, and modeling studies on in-situ TiB2 reinforced Aluminium metal matrix composite
  13. **Rajneesh Kumar** (Ongoing) | Analysis of solidification in continuous casting
  14. **Vipul Kumar Gupta** (Submitted) | Multiphase modelling in continuous casting process
  15. **Sudhir Ranjan** (Ongoing) | Fabrication and characterization of in-situ developed aluminium hybrid metal matrix composite
  16. **Prabhash Kumar Jha** (Ongoing) | Machining of Aluminium metal matrix composite
  17. **Dilip Gehloth** (Ongoing) | Experimental investigation and modelling of ECDM
  18. **Kapil Kumar Sharma** (Ongoing) | Multiphase modelling for slag entrapment in continuous steel casting slab.
  19. **Dheeraj Kumar Saini** (Ongoing) | 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

- 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
  8. **Eddy Irwanto** (2009) | Numerical investigation of water distribution
  9. **Ambrish 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
  22. **Rohit Singh** (2013) | Machinability studies on Aluminum based metal matrix composite
  23. **Rajneesh Kumar** (2013) | Investigation of tundish and mold intermixing using parametric approach
  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
  28. **Chandresh Chhipa** (2015) | Study of inclusion removal in tundish during ladle change over
  29. **Kamlesh Singh** (2015) | Thermomechanical analysis in secondary cooling zone of continuous casting
  30. **Navdeep Singh Dhiryan** (2016) | Water quality modelling through CFD
  31. **Debolina Sen** (2016) | Corrosion behaviour of friction stir welded Aluminium alloys
  32. **Manish Harit** (2017) | Effect of heat treatment on mechanical properties of metal matrix composite
  33. **Praveen Kumar Singh** (2017) | Weldability study of Aluminium base MMCs
  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-TiB2 in in-situ MMCs.
  38. **Prashant Kumar** (2020) | Parametric study on wear behavior of in-situ MMCs
  39. **Mohammad Farhan** (2021) |Inclusion removal and floatation in tundish for steelmaking
  40. **Arvind Kumar Yadav** (2022) | CNC tool path optimization using ACO algorithm for surface machine