

Updated, December 2022



CURRICULUM VITAE
of
DR. DIPAK MAZUMDAR

**Professor, Department of Materials Science &
Engineering
Indian Institute of Technology
Kanpur, 208016 (INDIA)**

CV at a glance



Professor Dipak Mazumdar, a *distinguished Alumnus* of NIT Jamshedpur, obtained his Doctoral degree in 1985 in Process Metallurgy from McGill University, Montreal, Canada, with honours. Following his Ph.D. and Post Doctoral Research Associateship at McGill, *Dr. Mazumdar* returned to India during early 1987 and joined IIT Kanpur, where he is currently a professor, since 1995. *Dr. Mazumdar* has also worked with the McGill Metals Processing Centre, McGill University, Montreal and the Department of MSE, University of California, Berkeley, during the periods he was on leave from IIT Kanpur. He has over one hundred seventy five publications to his credit and has written two text books on, “Modelling of Steelmaking Processes (2009)” and a “A first course in Iron and steelmaking (2015)”.

Numerous awards and accolades have been bestowed on Professor Mazumdar for his seminal contributions to steelmaking research and education. These include, Kamani Gold Medal of IIM (1990), International Scientific Exchange Award from NSERC, Canada (1992), Metallurgists of the Year Award (2000) from the Ministry of Steel, Govt. of India, SAIL Gold Medal (2001,2012 and 2020) from the Indian Institute of Metals, the GD Birla Gold Medal of the Indian Institute of Metals (2009) and the coveted INAE Chair Professorship in 2011 and the Ministry of Steel Chair professorship during 2012-2017. For his pioneering contribution to the domestic steel production sector, he has been awarded the Vasvik Industrial Research Award in 2010. Professor Mazumdar has been a recipient of the “Distinguished Industry Professorship-2013” award from the Indian National Academy of Engineering. For his sustained contribution to contribution to ethics, teaching and research, Prof. Mazumdar received the “IIM Distinguished Educator Award (2014)” from the Indian Institute of Metals, “Outstanding Teacher Award (2015) from INAE as well as “Excellence in Teaching Award (2021) from IIT Kanpur. In 2019, Professor Mazumdar was honoured with the “National Metallurgist award (Academic and R&D)” by the Ministry of Steel, Govt. of India.

He is a Fellow of The Indian National Academy of Engineering & The Indian Institute of Metals and served as Editorial Board members for Materials & Metallurgical Transactions B, ISIJ International and Transactions of the Indian Institute of Metals and works closely with more than a dozen, domestic steel and refractory industries.

Name: Dipak Mazumdar

Date of birth: February 9th,1958

Place of birth: Dhubri, Assam(India)

Present position: Ministry of Steel Chair Professor,
Department of Materials &
Metallurgical Engineering, I.I.T
Kanpur, 208016

Mailing address: Department of Materials and
Metallurgical Engineering,
Indian Institute of Technology,
Kanpur, U.P, 208016 (INDIA)
Tel: +91-(0512)-592801
Fax: +91-(0512)-590260
E-mail:dipak@iitk.ac.in

EDUCATIONAL QUALIFICATIONS:

Year	Institution/University	Degree	Rank
1980	Regional Institute of Technology, Jamshedpur	B.Sc.Engg.(Metallurgy)	1st in Ranchi University
1982	Indian Institute of Technology, Kanpur	M.Tech.(Metallurgy)	1st in a class of 25
1985	McGill University, Montreal,Canada	Ph.D.(Metallurgy)	Dean's Honour

Area of specialisation: Steelmaking; Physical and mathematical modelling of metals and materials processing operations.

PREVIOUS POSITIONS:

(i) Post-Doctoral Research Associate in the Department of Mining & Metallurgical Engineering, McGill University, Montreal, Canada (1985-1986).

(ii) Assistant Professor in the Department of Metallurgical Engineering, I.I.T, Kanpur, India (1987-1992).

(iii) International visiting scholar, McGill Metals Processing Centre, McGill University, Montreal, Canada (1992-94).

(iv) Associate Professor in the Department of Materials and Metallurgical Engineering, IIT, Kanpur (1993-1995)

(v) Visiting Professor, McGill Metals Processing Centre, McGill University, Montreal, Canada (1998-99)

(vi) Visiting Scientist, Department of Materials Sc. And Engg., University of California, Berkeley, 94720, USA (May-July, 2001)

(vi) Visiting Scientist, Department of Materials Sc. And Engg., University of California, Berkeley, 94720, USA (May-July, 2003)

(vi) PE Hearst International Scholar, Department of Materials Sc. and Engg., University of California, Berkeley, 94720, USA (July2006-June 2007)

(vii) Chairperson, Department of Materials Sc. and Engg., IIT Kanpur (Jan.2009-Dec.2011)

TEACHING EXPERIENCE:

1985-to date; at both under - graduate and post - graduate levels; the following subjects were taught:

(i) Steelmaking

(ii) Heat and Mass Transfer

(iii) Computing Applications in Metallurgy

(iv) Metallurgical Kinetics

(v) Application of Transport Phenomena in Metals Processing[#]

(vi) Modelling of steelmaking processes[#]

(vii) Secondary steelmaking[#]

Developed at IIT Kanpur

PROFESSIONAL AWARDS:

(i) **Kamani Gold Medal** of the Indian Institute of Metals for best paper published in Transactions of IIM (1989)

- (ii) **International Scientific Exchange Award** of NSERC, Canada (1992-1993)
- (iii) Best oral presentation award in non-ferrous section of **the 49th Annual Technical Meeting** of the IIM (1995).
- (i) **Metallurgists of the year award** by the Ministry of Steel and Mines, Govt of India (Nov.2000)
- (v) **SAIL Gold Medal** of the Indian Institute of Metals for best paper published in Transactions of The Indian Institute of Metals (2001)
- (vi) Best oral presentation award in “Modelling session” of **the 61st Annual Technical Meeting** of the IIM (2007).
- (vii) **GD Birla Gold Medal** of the Indian Institute of Metals (2009)
- (viii) **SAIL Gold Medal** of the Indian Institute of Metals for best paper published in Transactions of The Indian Institute of Metals (2012)
- (ix) **Vasvik Industrial Research Award** (2013)
- (x) **Distinguished Educator Award**, Indian Institute of Metals (IIM)(2014)
- (xi) **Outstanding Teacher Award**, Indian National Academy of Engineering (INAE) (2015)
- (xii) **National Metallurgist Award**, Ministry of Steel, Govt. of India, 2019
- (xiii) **SAIL Gold Medal** of the Indian Institute of Metals for best paper published in Transactions of The Indian Institute of Metals (2020)
- (xiv) **Excellence in Teaching** award, Indian Institute of Technology, 2021.
- (xv) **Distinguished Alumnus Award** , NIT Jamshedpur, 2023.

ACADEMIC HONOURS:

- (i) Place in the **Dean's Honour List** for the entire Ph.D. programme of studies at McGill University (Fall 1985 graduation)
- (ii) Member, **Editorial board of Materials and Metallurgical Transactions**, TMS, USA(2001-2018)
- (iii) **Fellowship of the Indian National Academy of Engineering (INAE)** (2002)
- (iv) **Editor of Transactions of the Indian Institute of Metals** (2003-05,2012-16)
- (v) Elected a **Fellow of the Indian Institute of Metals (IIM)** (2005)
- (vi) **Indian National Academy of Engineering (INAE)** Chair Professorship (2011-2013)
- (vii) **Ministry of Steel, GoI**, Chair Professorship (2012-2017)
- (viii) **INAE Distinguished Industry Professor** (2013)
- (ix) **4th COEST (IIT-Bombay) Annual lecture** (2016)

- (x) **8th CNR RAO** Distinguished lecture series speaker (IIT Kanpur, 2017)
- (xi) Advisory Board Member, **ISIJ International, Iron and steel Institute of Japan** (2021-2024)

POST GRADUATE RESEARCH SUPERVISION:

(a). M.Tech

- (i) **Devulapalli Balaji** (1989); Thesis topic: "*Mathematical modelling of combination blown steelmaking processes.*"
- (ii) **Amarendra Kumar Singh** (1990); Thesis topic: "*Mathematical modelling of thermal fields during heat treatment of steel*"
- (iii) **Chaitanya Bhanu**(1997); Thesis topic: "*Hydrodynamic modelling of steelmaking tundish systems*"
- (iv) **Rakesh Kumar** (1997); Thesis topic: "*Modelling of mixing and mass transfer phenomena in gas agitated reactors*" (Co-supervisor: Prof. B.Deo, Dept. of MME, IIT, Kanpur)
- (v) **Asish Robert** (1998); Thesis topic: "*Mathematical Modelling of flow and Residence Time Distributions in different tundish designs*" .
- (vi) **Kamalesh Mandal** (1998); Thesis topic: "*Physical and mathematical modelling of flow and mixing in CAS systems with large aspect ratio*"
- (vii) **Binod Bihari Mahato** (2001); Thesis topic: "*Modelling of flow and mixing in gas stirred ladle under transient conditions*"
- (viii) **Projit Mitra** (2001); Thesis topic: "*Mathematical Modelling of three dimensional turbulent flows in some steelmaking operations*"
- (ix) **Santosh K Rout** (2001); Thesis topic: "*Modelling of steady and transient flows in gas stirred ladle systems*"
- (x) **Jayanta Mandal** (2003); Thesis topic: "*Mixing times in ladles stirred with dual porous plugs*"
- (xi) **D.Satish** (2003); Thesis topic: "*Flow , mixing and mass transfer in dual plug stirred ladles in the presence of an upper buoyant slag phase*"
- (xii) **M. Madan** (2004); Thesis topic: "*Numerical simulation of flow phenomena in rotating viscometers*"
- (xiii) **D.Chatterjee** (2005): Thesis topic "A computational and experimental study of fluid flow phenomena in a hollow jet Nozzle"
- (xiv) **Sujoy Patil** (2005): Thesis topic "Mixing models for slag covered ladles"
- (x) **Rajeev K Singh** (2007): Thesis topic "Mathematical Modeling of fluid flow, mixing and hydrodynamic refractory wear in gas stirred ladles for different bottom designs"
- (xi) **S.Anand** (2008): Thesis topic "Fluid flow and residence time distributions in two different slab casting tundish designs"

- (xii) **A. Muthuchammy (2009)**: Thesis topic “ A thermo-chemical model for charge proportioning in an Energy optimizing Furnace”
- (xiii) **K. Rajasekar (2009)**: Thesis topic “Modeling of inclusion removal kinetics in steelmaking tundish”
- (xiv) **M.Peranandhanathan (2010)** Thesis topic “Slag eye area: measurements and correlations”.
- (xv) **Sumanta Bagui (2010)**: Thesis topic “The role of a near strand dam on the metallurgical performance of slab caster tundish” .
- (xvi) **Ranjeet K.Singh (2010)**: Thesis topic” Measurements and modeling of heat flow in high temperature furnace and steelmaking reactors”
- (xvii) **Bapin K Rout (2011)**: Thesis topic “ Physical modeling of transport processes in an Energy Optimizing Steelmaking furnace”
- (xviii) **Ishant Jain (2011)**: Thesis topic “ Thermal modeling and measurements in high temperature steelmaking operations”
- (xix) **Anurag Nandwana: (2011)** Thesis topic “ Physical & mathematical modeling of fluid flow phenomena in slab casting mold of different section size (>1500mm)
- (xx) **Aniket Dutt (2012)**: Thesis topic “The role of tundish design on residence time distributions (RTD) and slag entrainment phenomena”
- (xxi) **Sharvana Kumar R(2012)**: Thesis topic “Modeling and optimization of argon rinsing practice in ladle metallurgy steelmaking operations”
- (xxii) **K Murlikrishna(2012)**: Thesis topic “ Physical modeling of grade intermixing phenomena in a four strand bloom casting tundish”
- (xxiii) **P.Dhandapani (2013)**: Thesis topic “Modeling and Optimization of slag eye area and mixing time in ladle metallurgy steelmaking”
- (xxiv) **Suvajit Choudhary (2014)**: Thesis topic:” Modeling of material and thermal mixing in steelmaking tundish systems”
- (xxv) **Goutam Mandal (2014)**: Thesis topic “ Modelling and measurement of heat flow during solidification of metals and alloys”
- (xxvi) **Pari R (2014)**: Thesis topic: “Modeling and measurement of intermixing time in a slab casting tundish fitted with different flow control devices”
- (xxvii) **Soumava Chakraborty (2015)**: Thesis topic: “Modeling of solidification of large, round steel ingots and validation against industrial scale measurements”
- (xxviii) **Lipsa Das (2016)**: Thesis topic “Simultaneous teeming of two ladles into a launder, hydrodynamic, thermal and material mixing”

(xxix) **Rishikesh Misrha (2016:BT-MT)**: Thesis topic: “Physical and Mathematical modeling of slag entrainment during drainage of steelmaking ladles”

(xxx) **Rohan Sharma (2016:BT-MT)**: Thesis topic: “Transient, multi-phase modeling of tundish hydrodynamics during end of sequence casting operation”

(xxxii) **Krshnavtar (2017:BT-MT)**: Thesis topic: “Mathematical modeling of grade intermixing phenomena in a four strand bloom casting tundish” (*Best Master Degree thesis award in Materials and Metallurgical Engineering , IIM , 2017*)

(xxxiii) **Subham Ranjan(2017:BT-MT)**: Thesis topic “Inert gas injection into steelmaking tundish and possible improvement in steel cleanliness”

(xxxiiii) **Rohit K. Tiwari (2018)**: Thesis topic “Fluid dynamic and thermal modeling of homogeneous and two phase flows in ladle shroud”.

(xxxv) **Sayantana Chakraborty(2019)**: Thesis topic:“ Physical and mathematical modelling of intermixing time in steelmaking tundish under constant throughput rate”.

(xxxvi) **Zunaid Alam (2020)**: Thesis topic “Modelling of Flow and Mixing in a mechanically agitated steelmaking ladle and comparison with equivalent gas stirred ladle”.

(xxxvii) **Ankur Agnihotri (2022)**: Thesis topic:” Tundish process performance evaluation via numerically predicted RTD and its correspondence with plant scale measurements”.

(b).Ph.D

(i) **Shiv Kumar Choudhary (1994)**:Thesis topic:” *A study on fluid flow, heat transfer, morphology and macro segregation in continuous casting of steel*” (Co-supervisor: Prof. A. Ghosh, Met.Engg.)

(ii) **Anil Kumar (2005)**: Thesis topic: “*Physical and mathematical modelling of flow and Residence Time Distributions in a multi strand continuous casting tundish*” (Co-Supervisor: Prof. S.C.Koria)

(iii) **Prince K Singh (2019)**: Thesis topic: “*A Physical and mathematical modeling investigation of two-phase flows in ladle shrouds and attendant influence on tundish hydrodynamic performance*”

(iv) **Suvam Mukherjee (2023)** Thesis topic: “*Argon shielding and air ingress phenomena in ladle shroud: a modeling, design and industrial scale study*”

(v) **Rishikesh Mishra (on going)** Thesis topic: “*A fundamental study of Multiphase flow and mass transfer in inert gas stirred ladles*”

(vi) **Krshnavtar (on going)**: Thesis topic: “*Swirling and chemically reacting flows in Steelmaking reactors: Application to continuous bloom casting and AOD converters*”

(vii) **Subham Ranjan (on going)** Thesis topic: "A Reacting, multiphase modelling study of hot-metal flow in a blast furnace trough"

SPONSORED RESEARCH:

(i) **MHRD** funded project for INR.2.0 x 10⁶ on "*Specialised training program on applied mathematical modelling and process simulation*"(1988-1991), (Co - investigators: Profs. B.Deo and N.Chakraborty)

(ii) **NMIS** funded project for INR 1.2 x 10⁶ on "*Some fundamental studies of continuous casting of steel*" (1989-1992) (Co - Investigators: Profs. A.Ghosh and S.C.Koria)

(iii) **RDCIS (SAIL)** funded sponsored project for INR 0.6 x 10⁶ on "*Mathematical modelling of transport phenomena in steelmaking tundishes*" (1996-1998)

(iv) **Ministry of Steel** funded sponsored project for INR 1 x 10⁶ on "*Mixing and Mass transfer in Ladles stirred with dual porous plug*" (2001-2004)

(v) **Department of Science and Technology** , Govt of India funded sponsored project for INR 1.2x10⁶ on "*Control of superheat in continuous casting through Hollow Jet Nozzle*" (2003-2006) .

(vi) **Department of Science and Technology** , Govt. of India funded sponsored project for INR 2.8x10⁶ on "*Measurement and modeling of temperature in steelmaking*" (2009-2011) .

(vii) **Ministry of Steel** , Govt. of India funded sponsored project for INR 6.187x10⁶ on "*Setting up of a comprehensive water modeling laboratory for steelmaking process analysis and design*" (2011-2013)

(viii) **Ministry of Steel**, Govt. of India funded sponsored project for INR. 2.0x10⁶ titled "*A study on requirement and availability of technical manpower for steel industry in India (2014-2015)*"

ix) **Ministry of Steel**, Govt. of India funded sponsored project for INR. 154x10⁶ titled "*Fundamental process engineering to minimize reoxidation of steel during teeming via a ladle shroud leading to improved castability and cleanliness*" (2018-2020)"

INDUSTRY FUNDED RESEARCH:

(i) "**Dense phase powder injection in metallurgical reactors**" sponsored by Shawinigan carbide, Shawinigan, Canada, 1983

(ii) "**Physical and mathematical modelling of MINTEQ tundish designs**" sponsored by MINTEQ International Inc., Easton, PA, USA, 1993

- (iii) **"Modelling studies for ladle addition of ferroalloys"** sponsored by Elkem Development Centre, Pittsburgh, USA, 1993
- (iv) **"Enhancing productivity at Ispat's Dolvi plant through improvement of tundish performance"** Sponsored by ISPAT Industries, Dolvi, Maharashtra(India, Jan-April,2004)
- (v) **"On the relocation of porous plugs in LF for superior process performance at Dolvi plant through physical and mathematical modelling"** Sponsored by ISPAT Industries, Dolvi, Maharashtra (India, Oct.04- Jan, 2005)
- (vi) **"Performance enhancement and optimisation of tank degasser"** at the Hospet Steels, Ginigera, Karnataka ,Sponsored by Mukand Ltd., Mumbai (Aug.,2005-Nov.,2005)
- (vii) **"Enhancing productivity at Hospet steel plant through improvement in tundish design"** Sponsored by Mukand steel Hospet Karnataka, India, Feb-May, 2006.
- (viii) **"Improving yield and steel cleanliness in the 32T new tundish"** Sponsored by JSW steel Ltd., Torangallu, (India, July-Sept., 2007)
- (ix) **"Improving yield from the 36T slab casting tundish at JSPL , Raigarh"** Sponsored by JSPL, Raigarh(India, December, 2007 –March 2008).
- (x) **"A charge calculation model for increased throughput operation of the Energy Optimising Furnace (EOF) at Hospet Steel, Hospet"** Sponsored by Hospet Steel., Hospet (India , September, 2008)
- (xi) **"Improving yield and steel cleanliness in the 27T four strand bloom casting tundish at RINL's Vizag steel works"** Sponsored by Vishakhapattnam steel plant, Vishakhapattnam (India, August, 2008-January, 2009)
- (xii) **"Improving yield and steel cleanliness in the four strand combicaster tundish at JSPL, Raigarh"** Sponsored by Jindal Steel and Power Limited, Raigarh (India, August, 2009-January, 2010)
- (xiii) **"Reduction in tap to tap time for EOF (Energy Optimizing Furnace Operations) at Hospet Steel"** Sponsored by Hospet Steel., Hospet (India , January, 2010)
- (xiv) **"Defect free casting of larger section continuously cast slabs(>2500mm) at JSPL, Raigarh"** Sponsored by Jindal Steel and Power Limited, Raigarh (India, November 2010)
- (xv) **"Minimisation of transition bloom volume from the 27T four strand bloom casting tundish at RINL, Vishakhapattnam"** Sponsored by Vishakhapattnam steel plant, Vishakhapattnam (India, September 2011- January 2012)
- (xvi) **"Improving yield and steel cleanliness in the three strand T shaped tundish"** Sponsored by MUSCO, Khopoli(India, October, 2011-March,2012)
- (xvii) **"Technical audit of ferroalloy production at CFP Chandrapur and possible means for plant performance"**

enhancement” Sponsored by SAIL, Delhi (August –December 2014).

(xviii) **“ The origin of surface cracks in large round ingots and means for its elimination”** Sponsored by Mahindra Sanyo Special Steel, Khopoli (September 2014- February 2015)

(xix) **“A study on the scope of in-situ conversion of scrap into steel sheet/strip via the induction melting-ingot casting and hot rolling route”** Sponsored by IFB Industries , Bangalore (February, 2015-May, 2015)

(xx)**“Steelmaking process performance improvement and knowledge management”** Sponsored by Vardhman Special Steels Limited, Ludhiana (April 2015-March 2016).

(xxi) **“Perspex water models of industrial continuous casting tundish systems, water modeling and technical manpower training”** Sponsored by Hi-Tech Group Limited, Jamshedpur (October 2015-September 2016).

(xxii) **“ Reduction of ladle balance and improvement of yield from the 140 ton steel at RINL’s Vizag steel works”** Sponsored by Vishakhapatnam Steel Plant (Feb.1st 2016-July 31st, 2016).

(xxiii) **“An assessment of CONARC process performance and strategy for improved furnace performance”** Sponsored by JSW, Dolvi (March-December 2017)

(xxiv) **“Modelling of steelmaking processes”** Sponsored by MN Dastur and Co., Kolkata (June 2017-May 2018).

(xxv) **“Operating data based regression model for prediction of BF Trough wear”** Sponsored by Calderys India Refractories, Nagpur (January 2020-June 2020)

(xxvi) **“Improving steel cleanliness by engineering of ladle – Shroud-Tundish steel processing circuitry”** Sponsored By Sunflag Steel Limited, Nagpur (February2020-August 2020)

(xxvii) **“Numerical prediction of flow, heat transfer and inclusion trajectory in a conventional continuous slab casting mould”** Sponsored by Dalmia Bharat Refractories (June2022 - August2022).

(xxviii) **“Study of Ladle-shroud-Tundish operations at SLR Metaliks and improvement of steel cleanliness through CFD and plant scale measurements”** Sponsored by SLR Metaliks, Hospet (April-Dec.2023)

INTENSIVE/SHORT-TERM COURSES:

(i) **“Secondary Steelmaking”** offered to industrial, academic & R & D engineers (Dec.1990 and Dec.1991) (Joint Convenor: Prof.A.Ghosh, Dept.of Met. Engg.,IIT/K)

- (ii) "**Modelling of modern steelmaking processes**" offered to Industrial and R & D engineers (Jan.96 and Sept.97) (Joint Convenor: Prof. B. Deo, Dept. of MME, IIT/K)
- (iii) "**Modelling in metals processing: concepts, theory and application**" offered to Industrial and R & D engineers (February 2005, December, 2005; December 2007; January, 2009)
- (iv) "**Iron and Steelmaking (Foundation and advanced level)**" offered to Engineers from steel and refractory industries (May, June 2009; May 2010, May 2011)
- (v) "**EAF and Secondary Steelmaking**" offered to Engineers from Steel and Refractory Industries (August 2008 and September 2011)
- (vi) "**Tundish Metallurgy: Towards improved productivity and clean steel**" offered to Engineers from steel and refractory industries (September 2012; August 2013)
- (vii) "**Ladle Metallurgy Steelmaking: Towards better productivity and product quality**" offered to Engineers from steel and refractory industries (August 2014 and August 2015).
- (viii) "**Inclusions in steel and clean steel technology**" offered to Engineers from steel and refractory industries (August 2016).
- (ix) "**Clean steel technology**" offered to Engineers from steel and refractory industries (August 2017).
- (x) "**Steelmaking, refractories and plant practises**" offered to engineers from steel, refractory and design organisations (August 2018, and 2019)
- (xi) "**Tundish Metallurgy and Clean Steelmaking**" offered to Engineers from steel and refractory industries (February 2020). [Co-Instructor, Prof. Kinnor Chattopadhyay, University of Toronto, Canada]
- (xii) "**Steelmaking and refractories**" offered twice to engineers from steel, refractory and design organisations (Nov. 2022 and March 2023)
- (xiii) "**Material and Energy balance in an Energy optimising steelmaking furnace**", training programme for Hospet steel Engineers at Hospet, Dec. 2022.
- (xiv) "**Defects related to processing and casting of steel**" training programme for Neco-Jayaswal Industries limited Engineers at Raipur (June 2023)

PATENTS:

A tundish adapted for reduction in residual metal losses and a method thereof

No: 1397/MUM/2008

List of inventors: D Satish Kumar, **Dipak Mazumdar**, B.Reddi Prasad, Sujay Pandit Patil, Abijit Sarkar, P.C.Mahapatra & Madhu Ranjan

PROFESSIONAL BODY

MEMBERSHIP:

- (i) Life Member of the **Indian Institute of Metals**
- (ii) Member of the **Association of Iron and Steel technology (AIST)**
- (iii) Member, Programme Advisory Committee, **MMME, DST, Govt. of India**, (2012-2015, 2015-2018, 2019-2021).
- (iv) Member, Governing Council, **Indian National Academy of Engineering**, (2016-2018, 2019-2021).
- (v) Member, Board of Governors, **National Institute of Secondary Steel Technology, Ministry of Steel, Govt. of India**, (2015-2017).
- (vi) Member, Education and Publication Committee, **Indian Institute of Metals**, (2010-2020).

PUBLICATION SUMMARY:

H-Index=32: Total citations:3567 (Google scholar) No. of Publication in refereed journals: One Hundred Twenty seven (127); No. of Publication in Proceedings: Fifty-seven (57) (as on 1st April,2023).

Video lectures/on-line courses

(1) National Programme on Technology Enhanced Learning (NPTEL, Govt. of India)

D. Mazumdar and S.C. Koria: Steelmaking, <http://nptel.ac.in/syllabus/113104013/>

(2) YouTube Channel and Video Lectures

<https://youtube.com/channel/UCPssttUWomJxGNSPA vbmpPg>

(2) Books

(1) P. Assis, B. Deo, D. Mazumdar and N. Chakraborty: *Modelling and Simulation of Iron and Steelmaking*, Revista Escola de Minas, Ouro Preto, Brazil,1998.

(2) D. Mazumdar and J. W. Evans: *Modeling of Steelmaking Processes*, CRC Press, Boca Raton, Florida,USA ,2009.

(3) D. Mazumdar and J. W. Evans: *Solution manual for Modeling of Steelmaking Processes*, CRC Press, Boca Raton, Florida, USA , 2009.

(4) D. Mazumdar: *A first course in Iron and Steelmaking*, Universities Press, Hyderabad, 2015.

(3) Book Chapters

(1) Dipak Mazumdar: Modelling of secondary steel making processes, in " Secondary steelmaking " by A.Ghosh, CRC Press, 2000, pp.199-217

(4) Review Articles

(1) Dipak Mazumdar and R.I.L.Guthrie: The physical and mathematical modelling of gas stirred ladle systems, ISIJ International, Vol.35(1),1995,pp.1-20.

(2) Dipak Mazumdar and Roderick I.L.Guthrie: The physical and mathematical modelling of continuous casting tundish systems , ISIJ International, Vol. 39(6), 1999, pp.525-548

(3) Dipak Mazumdar and J.W.Evans: Macroscopic models for gas stirred ladles: a Review ISIJ International , pp.447-461, 2004.

(4) Dipak Mazumdar: " Review, analysis and modelling of continuous casting tundish systems", Steel Research International (Special issue; Ed. Prof. Zhou Chen), First published on line October 2018).

(5) Subham Ranjan, Dipak Mazumdar, Indra Nath Chakraborty, Saumen Sinha and Raja Sarkar: Review and analysis of metallurgical processes in blast furnace main trough and trough performances, Trans. IIM , Vol.75, 2022

(5) Feature Articles

(1) D. Mazumdar: The role of modelling in steelmaking Metal News, Indian Institute of Metals, Vol. 1&2, pp. 16-20 and 5-11, 2004.

- (2) Dipak Mazumdar: Industry-research-academia synergy: An overview of industry aided collaborative research in steelmaking at IIT Kanpur, Metal News, 1, 2012, pp. 14-20.
- (3) Dipak Mazumdar, Prince K. Singh, Rishikesh Mishra and Suvam Mukherjee: " Enhancing ladle shroud performance during industrial steel teeming practices", Journal of Indian Refractory Makers Association (IRMA), Vol.3, 2018, pp. 67-75.
- (4) D. Mazumdar: "Shrouded, ladle to tundish transfer practices for better product quality and steel plant performance, IIM Metal News, Vol.22, 2019, No. 9, pp. 16-21.
- (5) D. Mazumdar: "Special steels and the competitiveness of the Indian special steel sector". Metal news, Indian Institute of Metals, Vol. 4 and 5, 2020, pp 9-21.

(6) Letters and Discussion

- (1) Dipak Mazumdar and R.I.L.Guthrie: "Considerations concerning the numerical computation of mixing times in steelmaking ladles", ISIJ International, Vol.33(4), 1993, pp.513-516.
- (2) Dipak Mazumdar and R.I.L.Guthrie: "A note on the determination of mixing times in gas stirred ladle systems", ISIJ International, Vol.35(2),1995,pp.220-222.
- (3) Dipak Mazumdar and R.I.L.Guthrie: Discussion on "Mixing time and fluid flow phenomena in liquids of varying kinematic viscosities agitated by bottom gas injection", Metallurgical and Materials Transactions, Vol.30B, 1999, pp.349-351.
- (4) Dipak Mazumdar and R.I.L.Guthrie: Discussion on "Decay of fluid motion in a filling ladle after tapping", Metallurgical and Materials Transactions, Vol.30B, 1999, pp.628-629.
- (5) D. Mazumdar and R.I.L. Guthrie: Discussion on "Review of Physical and Numerical Approaches for the Study of Gas Stirring in Ladle Metallurgy", Materials and Metallurgical Transactions Vol. 51B, 2020, pp. 412-416.
- (6) D.Mazumdar and S.A.Argyropoulos: Discussion on "Numerical Study of Desulphurization Behavior during Kanabara Reactor Hot Metal Treatment", Materials and Metallurgical Transactions Vol. 53B, 2022, pp. 1958-1962.

(7) TRANS. IIM Award Winning Papers

- (1) Dipak Mazumdar and Ravi Verma: A predictive mathematical model for analysis of continuous casting of steel, Trans.I.I.M., Vol.42(5),1989, pp.447-459 (**Kamani Gold Medal , 1989**).
- (2) Dipak Mazumdar: " Some fundamental considerations concerning gas injection operations in steelmaking ladles", Transactions of the Indian Institute of Metals, Vol.53,2000, pp.49-61. (**SAIL Gold Medal, 2001**).
- (3) Dipak Mazumdar, O.P.Singh ,Joy Dutta, Shaktimoy Ghosh, D.Satish and Chakraborty : "Reduction of tundish skull and yield improvement in steel plants through physical modeling of steelmaking tundish system", Transaction of Indian Institute of Metals, Vol.64(6), 2011, pp.593-606.(**SAIL Gold Medal 2012**).
- (4) Ankur Agnihotri, Prince K Singh, Rishikesh Mishra and Dipak Mazumdar: " Steady state materials and enthalpy balance: applications to ferroalloy production and industrial scale validation" , Transactions of Indian Institute of Metals, Vol.72, 2019, pp.455-473 (**SAIL Gold Medal 2020**).

(8) Technical Articles

- (1) Dipak Mazumdar and Ahindra Ghosh: Production of semi-killed steel with optimum porosity, Part II: Experimental measurements, Trans.I.I.M., Vol.38(1),1985, pp.55-63.

- (2) Dipak Mazumdar and R.I.L.Guthrie: Hydrodynamic modelling of some gas injection operations in ladle metallurgy operations, *Metall.Trans.*, Vol.16B,1985,pp.83-90.
- (3) Dipak Mazumdar and R.I.L.Guthrie: The hydrodynamics of the C.A.S.method of alloy addition, *Ironmaking and Steelmaking*, Vol.12(6),1985,pp.256-264.
- (4) Dipak Mazumdar and R.I.L.Guthrie: Numerical computation of flow and mixing in ladle metallurgy steelmaking operations (the C.A.S.method), *Applied Mathematical Modelling*, Vol.10(1),1986,pp.25-32.
- (5) Dipak Mazumdar and R.I.L.Guthrie: On the reduction in steady translational drag forces in bubbly Newtonian liquid, *Chemical Engineering Science*, Vol.41(11), 1986, pp.2965-2967.
- (6) Dipak Mazumdar and R.I.L.Guthrie: Mixing models for gas stirred ladle systems, *Metall.Trans.*, Vol.17B, 1986,pp.725-733.
- (7) Nakajima, Dipak Mazumdar and R.I.L.Guthrie: Effect of overlying slag phase liquids on the hydrodynamics of gas stirred ladle systems, *Tetsu-to-Hagane*, 1987, pp.S949.
- (8) Dipak Mazumdar and R.I.L.Guthrie: An analysis of numerical methods for solving the particle trajectory equation, *Applied Mathematical Modelling*, 1988, pp.398-401.
- (9) Dipak Mazumdar, H.Nakajima and R.I.L.Guthrie: Possible roles of upper slag phases on the fluid dynamics of gas stirred ladles, *Metall.Trans.*, Vol.19B, 1988,pp.705-708.
- (10) Dipak Mazumdar: A consideration about the concept of effective thermal conductivity in continuous casting, *ISIJ International*, Vol.29(6), 1989, pp.524-528.
- (11) Dipak Mazumdar: On effective viscosity models for gas stirred ladle systems, *Metall.Trans*, Vol.20B,1989, pp.967-969.
- (12) Dipak Mazumdar: Dynamic similarity considerations in gas stirred ladle systems, *Metall.Trans.*, Vol. 21B,1990,pp.925-928.
- (13) Dipak Mazumdar and R.I.L.Guthrie: Hydrodynamic modelling of slag - metal interactions in gas stirred ladle systems,*Trans.I.I.M*, Vol.43(3), 1990, pp.139-148.
- (14) Dipak Mazumdar, S.K.Kajani and A.Ghosh: Mass transfer between solid and liquid in vessels agitated by bubble plume, *Steel Research*, Vol.61(8), 1990, pp.339-346.
- (15) Dipak Mazumdar and S.Ramani: Computation of transient diffusion phenomena via FORTRAN library routines, *Trans. I.I.M.*, Vol.43(3), 1990, pp.183-186.
- (16) Dipak Mazumdar and R.I.L.Guthrie: Hydrodynamic modelling of gas stirred ladle systems, *Trans.I.I.M.*, Vol.44(6), 1991,pp.139-149.
- (17) D.Balaji and Dipak Mazumdar: Numerical computation of flow phenomena in gas stirred ladle systems, *Steel Research*, Vol.62(1),1991, pp.16-23.
- (18) A.K.Singh and Dipak Mazumdar: Comparison of several numerical prediction methods for thermal fields during phase transformation of plain carbon steel, *ISIJ International*, Vol.3(12), 1991, pp.1441-1445.
- (19) Dipak Mazumdar, Neeraj Kumar and Vinaya Verma: Heat and mass transfer rates between solid and liquid in gas stirred ladle systems, *Ironmaking and Steelmaking*, Vol.19,1992, pp.152-155.
- (20) A.K.Singh and Dipak Mazumdar: Mathematical modelling of thermal fields during heat treatment of steel, *Steel Research*, Vol.63(5), 1992, pp.194-200.
- (21) Dipak Mazumdar, Tanuj Narayan and Paramjit Bansal: Mathematical modelling of mass transfer rates between solid and liquid in high temperature gas stirred melts, *Applied Mathematical Modeling*, Vol.16(5),1992, pp.255-262.
- (22) D.Balaji and Dipak Mazumdar: Mathematical modelling of flows induced by co-axial submerged and impinging gas jet systems, *Trans.I.I.M.*, Vol.45(1),1992, pp.25-32.
- (23) A.Bhattacharjee and Dipak Mazumdar: Mathematical modelling of fluid flow, alloy dissolution and mixing in industrial argon stirred ladles, *Trans.I.I.M.*, Vol.45(3), 1992, pp.153-161.

- (24) G.G.Roy, V.Singh and Dipak Mazumdar: Mathematical modelling of fluid flow in filling ladles, *Trans.I.I.M.*, Vol.45(3), 1992, pp.147-152.
- (25) Dipak Mazumdar, R.I.L.Guthrie and Y.Sahai: On mathematical models and numerical solutions of gas stirred ladle systems, *Applied Mathematical Modelling*, Vol.17(5), 1993, pp. 255-262.
- (26) M.Tanaka, Dipak Mazumdar and R.I.L.Guthrie: Motions of alloying additions during furnace tapping in steelmaking processing operations, *Metall.Trans.*, Vol.24B, 1993, pp.639-648.
- (27) Dipak Mazumdar and R.I.L.Guthrie: Motions of alloying additions in the C.A.S Steelmaking operations, *Metall.Trans.*, Vol.24B, 1993, pp.649-655.
- (28) Dipak Mazumdar and R.I.L.Guthrie: On the numerical calculation and non-dimensional representation of velocity fields in bubble stirred ladle systems, *Steel Research*, Vol.64(6), 1993, pp.286-291.
- (29) S.K.Choudhary, Dipak Mazumdar and A.Ghosh: Mathematical modelling of heat transfer phenomena in continuous casting of steel, *ISIJ International*, Vol.33(7),1993, pp.764-774.
- (30) Dipak Mazumdar: On the mathematical approximation of infinitely long cylinders in rate phenomena, *Trans.I.I.M* , Vol.46(6),1993,pp.387-390.
- (31) Dipak Mazumdar: An improved quasi single phase calculation procedure for hydrodynamic modelling of gas stirred ladle system, *Trans.I.I.M.*, Vol.46(6),1993,pp.353.362.
- (32) Dipak Mazumdar and R.I.L.Guthrie: A comparison of three mathematical modelling procedures for simulation of fluid flow phenomena in bubble stirred ladle systems, *Metall.Trans.*, Vol.25B, 1994, pp.308-312.
- (33) Dipak Mazumdar and R.I.L.Guthrie: An assessment of a two phase calculation procedure for hydrodynamic modelling of submerged gas injection in ladles, *ISIJ International*, Vol.34(5), 1994,pp.384-392.
- (34) S.K.Choudhary and Dipak Mazumdar: Mathematical modelling of transport phenomena in continuous casting of steel, *ISIJ International*, Vol.34(7), 1994, pp.584-592.
- (35) S.K.Choudhary and Dipak Mazumdar: Mathematical modelling of fluid flow, heat transfer and solidification phenomena in continuous casting of steel, *Steel Research*, Vol.66(5),1995, pp.199-205.
- (36) Dipak Mazumdar, Guler Yamanoglu, Ramani Sankarnarayanan and Roderick.I.L.Guthrie: Similarity considerations in the physical modelling of steelmaking tundish systems, *Steel Research*, Vol.66(1),1995,pp.14-19
- (37) Dipak Mazumdar and R.I.L.Guthrie: On the numerical computation of turbulent fluid flow in C.A.S. steelmaking operations, *Applied mathematical Modelling*, Vol.19(9),1995,pp.519-524.
- (38) Dipak Mazumdar: A correlation for the estimation of mass transfer rates from solids in gas stirred ladles, *Steel Research*, Vol.67(7),1996,pp.263-267.
- (39) V.Sudhakar and D.Mazumdar: A unified representation of two phase plume characteristics in gas stirred ladle systems , *Materials and Metallurgical Transactions*, Vol.27B,1996,pp.704-708.
- (40) Dipak Mazumdar, Santanu Das and Sudhendu Bajpayee: Mixing time correlation for gas stirred ladle systems , *ISIJ International*, Vol.37(2), 1997, pp.194-196.
- (41) A.K.Singh and D.Mazumdar: Mass transfer between solid and liquid in gas stirred ladle systems, *Materials and Metallurgical Transactions*,27B,1997,pp.95-102
- (42) Himansu Singh and Dipak Mazumdar: On the modelling of flow phenomena in air agitated Pachuka tank, *Materials and Metallurgical Transactions*, Volume 28B,1997, pp.727-731.
- (43) Dipak Mazumdar, Guller Yamanoglu and Roderick.I.L. Guthrie: Hydrodynamic performance of Metallurgical tundish systems: A comparative study of three different tundish designs , *Steel Research*, Vol.68(7), 1997, pp.293-300.

- (44) Chaitanya Bhanu and Dipak Mazumdar: Numerical prediction of melting rates in gas bubble driven systems , Trans. I.I.M., Vol.50, 1997, pp.249-258.
- (45) Kamallesh Mandal and Dipak Mazumdar: Dimensional analysis and mixing phenomena in bubble stirred ladles, ISIJ International , Vol.38(10),1998, pp.1150-1152
- (46) G.Yamanoglu, R.I.L.Guthrie and Dipak Mazumdar: Study of powder injection into water using an on line particle detection system, Canadian Metallurgical Quarterly, Vol.38, No.1, 1999, pp.61-80.
- (47) Chenguo Tian, Dipak Mazumdar and R.I.L.Guthrie: "Analyses of the dynamic processes of liquid metal filtration", Metallurgical and Materials transactions, Vol.30B, 1999, pp.891-890.
- (48) Dipak Mazumdar and R.I.L.Guthrie: "Mixing time and correlations for gas stirred ladle systems", ISS Transactions, Vol.9,1999,pp.89-96.
- (49) Chaitanya Bhanu and Dipak Mazumdar: "On the prediction of melting rates in gas bubble driven systems" , Trans. I.I.M., Vol.52,1999,pp.159-163.
- (50) Daniel Sunder, Dipak Mazumdar and V.S.S.R. Murthy: "Modelling of composite growth in directed melt nitridation processes", Materials and Metallurgical Transactions A, Vol.30A, 1999, pp.2951-2958..
- (51) Dipak Mazumdar: "On the estimation of heat transfer coefficients in metallic melts", Transactions of the Indian Institute of Metals ", Vol.52,1999, pp.403-411.
- (52) Dipak Mazumdar, H.B.Kim and R.I.L.Guthrie: " Modelling criteria for flow simulation in gas stirred ladle systems: An experimental study" , Ironmaking Steelmaking , Vol.27,2000, pp.302-309.
- (53) S.A.Argyropoulos, A.C.Mikrovas, D.Mazumdar and D.Doutre: Dimensionless correlations for forced convection in liquid metals , Part II : Two phase flows, Metallurgical and Materials Transactions, 32B, 2001, pp347-352.
- (54) Ashish Robert and Dipak Mazumdar: Physical and Mathematical modelling of Flow and Residence Time Distributions (RTD) in Different Tundish Design, Steel Research, Vol.72,2001, pp.97-105
- (55) Kamallesh Mandal and Dipak Mazumdar: The role of vessel aspect ratio on the fluid flow and mixing phenomena in CAS steelmaking operation: a physical & mathematical modelling investigation, Trans. I.I.M , Vol.54,2001,pp105-115 .
- (56) D.Mazumdar, R.Yadav and B.B.Mahato: Transient flow and mixing in steelmaking ladles during the initial period of gas stirring, ISIJ International ,Vol.42,2002, pp.106-108.
- (57) D.Mazumdar: On the estimation of plume rise velocity on gas stirred ladles@, Materials and Metallurgical Transactions , Vol.33B, 2002, pp. 937-941
- (58) D.Mazumdar, Kamlesh K Singh and Ahindra Ghosh: Measurement and computation of Drag forces in thermo-gravimetric studies Metals and Materials Transactions, Vol.33B, 2002, pp.891-896.
- (59) D.Mazumdar, D.Steingard, C.Seybert and J.W.Evans:Transient flows in gas stirred vessels during the initial and post gas injection periods , ISIJ International ,Vol.43,2003, pp.132-134.
- (60) Projit Mitra, Dipak Mazumdar, Gaurav K.Gupta, Atul Tamrakar and Jayanta Mandal: Development of a three dimensional turbulent flow calculation procedure and its application to ladles stirred with dual porous plug@, Trans. IIM, Vol.56, 2003, pp.95- 105
- (61) D.Mazumdar and J.W.Evans: "Some considerations concerning empirical correlations for plume (spout) eye area in slag covered metallic melts", ISIJ International,Vol.43, 2003, pp.2076-2078.
- (62) D. Mazumdar and J.W.Evans: "A model for estimating exposed plume eye area in steel refining ladles covered with thin slag" Materials and Metallurgical Transactions, Vol.35B, 2004, pp.400-404

- (63) Anil Kumar, S.C.Koria and D.Mazumdar: "An assessment of flow and RTD computations in steelmaking tundish system", ISIJ International, 2004, Vol.44(8), pp.1234-1240.
- (64) M.Madan and D.Mazumdar: "A computational assessment of viscosity measurement in rotating viscometer through exact numerical simulation", Materials and Metallurgical Transactions B, Vol.35B(4), 2004, pp.754-758.
- (65) M.Madan, D.Satish and Dipak Mazumdar: "Mathematical modelling fluid flow and mixing phenomena in a twin plug stirred ladle", ISIJ International, Vol. 45 , 2005, pp.677-68
- (66) J.Mandal ,D.Mazumdar, M.Madan and S.Patil: Mixing Time and correlation for ladles operated with dual porous plugs , Materials and Metallurgical Transactions B , Vol.36B, 2005, pp.479-487.
- (67) Anil Kumar, D.Mazumdar and S.C .Koria: "Experimental validation of flow and tracer dispersion models in a water model of a four strand billet casting tundish" Materials and Metallurgical Transactions B , Vol.36B, 2005, pp.777-785
- (68) S.Halder and Dipak Mazumdar: "Modelling of time ~temperature evolution during heating of steel ingots and slabs", Trans.I.I.M, Vol.58(5),2005, pp.873-882.
- (69) Nabonita.Mazumdar, Arjun .Mahadevan , M.Madan and D.Mazumdar: "Impact of ladle design on bath mixing" ISIJ International, Vol. 45, 2005, pp.1941-1944.
- (70) Emila Panda, Dipak Mazumdar and S.P.Mehrotra : "Mathematical modelling of particle segregation during centrifugal casting of metal matrix composites", Materials and Metallurgical Transactions , Vol. 27A, 2006, p.1675
- (71) Sujoy Pandit Patil and Dipak Mazumdar: "Prediction of strand super heat in continuous casting: modelling and industrial scale measurements in in steelmaking tundish systems", Steel Grips, vol.7, 2007, pp.119-126.
- (72) Dipak Mazumdar and J.W.Evans: "Modeling of slag eye formation over a metal bath due to gas injection", Materials and Metallurgical Transactions , Vol.38B, 2007, pp.497-499
- (73) Debasish Chatterjee, Dipak Mazumdar and Sujoy Pandit Patil: "Physical and mathematical modelling of two phase flows in a hollow jet nozzle", Materials and Metallurgical Transactions B, Vol.28B, 2007, pp.819-831.
- (74) Anil Kumar, S.C.Koria and D.Mazumdar: "Basis for systematic analysis of a multi strand tundish", ISIJ International, 2007, Vol.47(11), pp.1618-1624.
- (75) Anil Kumar, D.Mazumdar and S.C.Koria: "Modeling of fluid flow and residence time distribution in a multi strand tundish for inclusion removal", ISIJ International, 2008, Vol.48(1), pp.38-47.
- (76) Rajiv Singh, Dipak Mazumdar and A.K.Ray: "Mathematical modeling and validation of wall shear stresses in gas stirred vessels", ISIJ International, Vol. 48(7), 2008, pp.1033-1035.
- (77) D.Mazumdar and R.I.L.Guthrie: "Modeling energy dissipation in slag-covered steel baths in steelmaking ladles", Materials and Metallurgical Transactions B, Vol.41 (5),2010, pp.974-987
- (78) S.P.Patil, D.Satish, M.Peranandhanathan and .D.Mazumdar: "Mixing models for slag covered ladles" ISIJ International, 2010, Vol.50(8),pp.1117-1124.
- (79) M.Peranandhanathan and .D.Mazumdar: "Modeling of slag eye area in argon stirred ladles " ISIJ International, Vol.50 (11), 2010, pp.1622-1631.
- (80) D. Mazumdar, S. Bagui, J. Dutta , S. Ghosh , M.M.Sangamnerker, Anju Shama, SB Sahoo, NP Sinha and SC Srivastava : "Yield improvement at JSPL Raigarh through reduction of tundish skull", Metal News, Indian Institute of Metals, Vol.14(3), 2011, pp.7-12.
- (81) A.Muralikrishna, S.Bagui and Dipak Mazumdar: "Modeling and measurements of intermixing time in a water model of a four strand steelmaking tundish system", Transaction , IIM, Vol.66, No.3, 2013, p.281-295.

- (82) D.Mazumdar: "Tundish Metallurgy: Towards increased productivity and clean steel" , Transactions of IIM, Vol.66, 2013, pp. 597-610.
- (83) Ishant Jain, Ranjeet K Singh, Dipak Mazumdar: "Measurements of some thermal properties of steel refractory systems and heat losses from steelmaking furnaces", Transactions of IIM, Vol.68 (3), 2015, pp.383-392.
- (84) S.Anand, S.K.Rajasekhar, D.Satish, Joy Dutta, D.Satish and Dipak Mazumdar: Metallurgical performance of different slab casting tundish designs: Modeling and industrial scale trials, AIST Transactions, Vol.12, No.4, 2015, pp.329-338.
- (85) Bapin K Rout, O.P. Singh and Dipak Mazumdar: "Swirling flows in side blown reactors and possible advantages", Transactions of IIM, Vol.68 (5), 2015, pp.669-673.
- (86). Soumava Chakraborty and Dipak Mazumdar: "Modeling of heat flow and solidification time in industrial scale, ingot casting operation" Transactions of Indian Institute of Metals, October 2016, Vol. 69, pp. 1-13.
- (87) Dipak Mazumdar, P. Dhandapani and S. Shravan Kumar : "Modeling and optimisation of argon stirred ladles", ISIJ International, Vol. 57 (2017), No. 2. pp. 286-295.
- (88) Dipak Mazumdar, Soumava Chakraborty, Ankur Agnihotri, S.Bhambure and S.Patil: "Heat flux and temperature measurements during industrial scale ingot casting and their potential applications "AIST Transactions, Vol. 6, 2017, pp. 1-13.
- (89) Prince K Singh and Dipak Mazumdar: A physical model study of to phase gas-liquid flows in ladle shroud ", Materials and Metallurgical Transactions B, Vol. 48, 2018, pp. 1945-1962.
- (90) Dipak Mazumdar, Prince K Singh and Rohit Tiwari: "Shrouded transfer of molten steel from ladle to tundish: current understanding, mathematical modelling and new insight" , Vol. 58, No. 8, 2018, pp. 1545-1547.
- (91) Krishnavtar and Dipak Mazumdar: " Transient, multiphase simulation of grade intermixing in tundish under constant casting rate and validation against physical modelling", Vol. 70, No.10, 2018, pp.2139-2148.
- (92) Rishikesh Mishra and Dipak Mazumdar: " Numerical analysis of turbulence inhibitor performance towards inclusion separation efficiency in a tundish, Transactions of Indian Institute of Metals Vol.72, 2019, pp.889-898.
- (93) Prince K Singh and Dipak Mazumdar: " Mathematical modelling of gas-liquid, two-phase flows in a ladle shroud" Materials and Metallurgical Transactions B, Vol. 50B, 2019, pp. 1091-1103.
- (94) A.N. Conejo, Rishikesh Mishra and D. Mazumdar: "Effect of nozzle radial position, separation angle and gas flow partitioning on mixing, eye area and wall shear stress in dual plug fitted ladles", Materials and Metallurgical Transactions B, Vol.50 (3), pp. 1490-1502, 2019.
- (95) Rohit Tiwari, Prince K Singh, Ankur Agnihotri and Dipak Mazumdar: " Shrouded transfer of molten steel from a ladle to tundish: thermal modelling and industrial scale measurements", AIST Transactions, Vol.16, No.2, 2019, pp. 1-16.
- (96) D. Mazumdar, Ankur Agnihotri, Manoj Karnick, Sanjay Mehta, D. Sathish and Siddhartha Misra: "Assessment of tundish process performance at industrial scale", Trans. IIM, Vol.73, 2020, pp. 3079-3093.
- (97) D. Mazumdar: "Tundish process performance parameters and their direct estimation from a new, plant measurement based formalism", Metallurgical Transactions B, Vol.52(1),pp.23-29-2021.
- (98) Subham Ranjan, Suvam Mukherjee, Ankur Agnihotri and Dipak Mazumdar: "Physical modelling of nitrogen variation in continuously cast blooms resulting from atmospheric exposure of steel in tundish during initial stages of teeming", ISIJ International, Vol.62(3), 2022,pp.609-612

- (99) Zunaid Alam and Dipak Mazumdar: "Fluid flow and mixing phenomena in mechanically agitated and gas stirred ladle systems and their comparisons" ISIJ International, Vol. 62 (2022), No. 1, pp. 112–123.
- (100) Zunaid Alam, Chandan Kumar, Krishnavtar and Dipak Mazumdar: "Modelling of fluid flow and bulk liquid mixing phenomena in a mechanically agitated ladle", Materials and Metallurgical Transactions, Vol.53B,2022, pp.304-319
- (101) Suvam Mukherjee and Dipak Mazumdar: "Physical and mathematical modelling of argon flow and distribution around a ladle shroud-collector nozzle (LS-CN) assembly", Materials and Metallurgical Transactions B 2022, Vol.53B, pp.2600-2617 .
- (102) Suvam Mukherjee and Dipak Mazumdar: "A new inert gas delivery design for improved shielding of ladle shroud-collector nozzle (LS-CN) assembly: Modelling, design, and industrial-scale validations", Steel Research International 2022,pp.1-17 .
- (103).Subham Ranjan, Suvam Mukherjee and Dipak Mazumdar: "Mathematical and Physical modelling of prior inertization and control of tundish atmosphere during continuous casting of steel" , Trans IIM, (in Press, Sept.2022).
- (104) Suvam Mukherjee and Dipak Mazumdar: " Air ingress in ladle shrouds, tundish open eye formation, their inter-dependence and correlations: a physical model investigation" Materials and Metallurgical Transactions B (in Press, August 2022).
- (105) Krishnavtar, Dipak Mazumdar and Ankur Agnihotri: "Considerations concerning numerical modelling of flow and heat transfer phenomena in continuous casting of steel", ISIJ International, Vol. 63 (2023), No. 3, pp. 596–600.
- (106) Krishna Avatar and Dipak Mazumdar: "An Assessment of Physical and Mathematical Modelling approaches in the study of Flow and Solidification Phenomena in Continuous Casting of Steel", Trans IIM, 2022.
- (107) Rishikesh Misra and Dipak mazumdar: Critical Considerations for Numerical Simulation of Multiphase Fluid Dynamics in Gas-Stirred Vessels, Trans IIM, 2023.

(9) Technical articles in conference proceedings:

- 1.Dipak Mazumdar and R.I.L.Guthrie: *Alloying in ladles with C.A.S*, Proc., **5th International Iron and Steel Congress** (Washington D.C.),1986,pp.1147-1157.
- 2.Dipak Mazumdar: *Dynamics of slag metal interactions in gas stirred ladle systems*, Proc., **Symposium on Kinetics of Metallurgical Processes** (Kharagpur), 1987, pp.45-59.
- 3.Dipak Mazumdar and R.I.L.Guthrie: *Scaling equations for gas stirred ladle systems*, Proc., **6th Iron and Steel Congress (Nagoya)**, Vol.1, 1990, pp.460-468.
- 4.Dipak Mazumdar and S.K.Choudhary: *On the applicability of the effective thermal conductivity concept to the mathematical modelling of continuous casting of steel*, Proc. **International Conference on Chemical Metallurgy** (Bombay),1991, pp.381-401.
- 5.Dipak Mazumdar: *Mathematical modelling of ferro-alloy dissolution in argon stirred ladles*, Proc., **2nd International Symposium on Modelling of Iron and Steelmaking processes** (10th PTD conference, Toronto), Vol.10, 1992, pp.151-159.
- 6.Dipak Mazumdar and R.I.L.Guthrie: *Numerical simulation of turbulent fluid flow in gas stirred metallurgical reactors*, Proc., **2nd International Symposium on Computer software in Chemical and Extractive Metallurgy** (C.I.M. 93, Quebec City), 1993, pp.183-192.
7. Dipak Mazumdar: *Modelling of mass transfer rates between solid and liquid in gas stirred ladle systems*, Proc. of a **workshop on Transport Phenomena in Metallurgical Processing**,

National Metallurgical Laboratory, Jamshedpur, 1996, pp.75-88.

8. Manish Gupta and Dipak Mazumdar: *Modelling of mixing phenomena in axisymmetric gas stirred ladle systems*, Proc. **International Conference on "Recent advances in Metallurgical processes"**, Indian Institute of Science, Bangalore (India), 1997, pp.421-426.

9. Daniel Sunder, Dipak Mazumdar and V.S.S.R. Murthy: *Mathematical Modelling of Infiltration Phenomena in ceramic preforms*, Proc. **International Conference on "Recent advances in Metallurgical processes"**, Indian Institute of Science, Bangalore (India), 1997, pp.403-408.

10. Chaitanya Bhanu, Ashish Roberts and Dipak Mazumdar: " *Hydrodynamic modelling of metallurgical tundish systems*", Proc. of the **International Conference QUACON'97**, Ranchi (India), 1997, pp.165-172.

11. Ashish Robert and Dipak Mazumdar: *A computational and experimental study of Residence Time Distributions (RTD) in different tundish designs*, Proc. , **Steelmaking Conference, ISS**, 2000, pp.291-299

12. Dipak Mazumdar: "Some fundamental considerations concerning gas injection operations in steelmaking ladles" Proc., **2000 Ironmaking conference (PTD section)**, ISS, , pp.531-540.

13. D. Mazumdar: *Physical and mathematical modelling in steelmaking* , Proc. "**National Workshop on ladle-tundish-mold operations: principles and practices**", IIT, Kanpur, Jan.2003, pp.110-125.

14. A. Kumar, S.C. Korla and D. Mazumdar: *An experimental and computational study of flow and Residence Time Distributions (RTD) in a tundish*, Proc. - **Asia Steel 2003 Conference**, Vol.2, 2003, pp.1.5.1-1.5.6

15. Jayanta Mandal, Gaurav K. Gupta, Atul Tamrakar and Dipak Mazumdar: *An experimental and computational study of Mixing times in ladles stirred with dual porous plugs*, Proc. **Asia Steel-2003 Conference**, Vol.2, 2003, pp.d.6.1-d.6.6

16. D. Mazumdar, C. Seybert, D. Steingart and J.W. Evans: *Transient flow phenomena in steelmaking ladles: A computational and experimental study*, Proc. **Asia Steel-2003 Conference**, Vol.2, 2003, pp.d.7.1-d.7.7

17. D. Mazumdar: "Sharing our experiences with Fluent: Modelling of some fundamental and applied problems in steelmaking", Proc. of the **Ist south East Asia USG Meeting (Fluent)**, 2003, pp.1-8.

18. D. Mazumdar and D. Satish Kumar: "Mixing times and correlation for dual plug stirred ladle: Quantifying the role of an upper buoyant phase", Proc. **Oxygen Steelmaking (Metsoc, CIM)**, 2004, pp.311-323 , Hamilton, Canada.

19. D. Mazumdar: *Transport phenomena in Ladle Metallurgy*, **Annals of Indian National Academy of Engineering**, Vol.1, No.1, 2004, pp.127-133.

20. Sujay P. Patil, D. Chatterjee and Dipak Mazumdar: " Prediction and control of superheat during continuous casting of Steel" , Proc. **International conference on past, present and future of continuous casting of steel**, Jamshedpur, 2005, pp.7-14.

21. D. Chatterjee and Dipak Mazumdar: "Physical and mathematical modelling of two phase flows in a hollow jet nozzle" , Proc. **ICAMMP-2006**, Kharagpur (India), pp.671-681.

22. S. Eck, A. Ludwig, D. Mazumdar and J. W. Evans: "Experimental and numerical modelling of Cu~Sn casting with adjustable solidification front" **Proceedings, SMP-2007**, Sheffield (UK)(CD Rom Version).

23. Dipak Mazumdar: *Modeling Energy Dissipation in Argon stirred ladles*, in Proc. **Advances in the Theory of Iron and Steelmaking (ATIS)**, Bangalore, India, 2009, pp.374-381, (Keynote Paper)

24. W. Zhongshua, AS Mujumdar and D. Mazumdar: *Exploration of some new tundish designs via simulation*, Proc., **Advances in the theory of Ironmaking and Steelmaking (ATIS)**,

Bangalore, 2009, pp.402-409.

25. Dipak Mazumdar: *Physical modeling of slab caster tundish to improve yield and quality of steel* ; **Jim Evans Honorary Symposium, TMS2010**, Seattle, pp.191-197.
26. Dipak Mazumdar: *Modeling and optimization of steel processing in EOF, ladle and tundish: An overview of collaborative research at IIT Kanpur*, **Guthrie Honorary symposium**, Montreal , Canada, 2011, pp.369-375. (Keynote Paper)
27. Anurag Nandwana and Dipak Mazumdar: *Modeling and high temperature studies of continuous casting of wider section(1500~2500mm) steel slabs*, **ATCOM 2011**, Ranchi , India , Procd. CD –ROM , MS/KP/1.
28. Dipak Mazumdar: *Academia, research and industry synergy: An overview of decade long steel industry funded research at IIT Kanpur*, **ICAMMP2011**, Procd., CD ROM , IP(3):1-8
29. Dipak Mazumdar: *The role of modeling in steelmaking*, Procd., **IREFCON12**, Kolkata, pp.76-82.
30. Dipak Mazumdar: *Some considerations concerning thermal modeling during deformation and heat treatment processes*, Procd., **RAFTS-2012** (CD ROM version) Ranchi, 2012.
31. Dipak Mazumdar: *Tundish Metallurgy: towards better productivity and clean steel*, Procd. **International symposium on challenges in steelmaking**, Jamshedpur, 2012 (Trans IIM special issue, 2013,pp.169-177), (Keynote paper).
32. Dipak Mazumdar: *Modeling of steelmaking processes: Efforts at IIT Kanpur*, Procd. **SIMPRO-2012**, Ranchi , pp.461-472.
33. Dipak Mazumdar: *Metallurgical performance of slab casting tundish: Towards a generic tundish design*, Procd., Advances in refractories and clean steel, **ARCS2013**, Ranchi(CD ROM version).
34. Dipak Mazumdar: *Tundish process performance improvement: Some Indian case studies*, Procd. **Ralph Lloyd Harris Memorial Symposium, M&MT2013, Montreal** (CD ROM version), 2013.
35. Dipak Mazumdar: *Ladle metallurgy Steelmaking: The role of physical and mathematical modeling*, Procd. **Science and Technology of Iron and Steel, STIS13 (CD Rom version)** , Jamshedpur, 2013 (Keynote Paper)
36. Ankit Karwa, Madhusudan Sharma and Dipak Mazumdar: *Physical and mathematical modeling of grade intermixing phenomena in a single strand slab casting tundish*, Procd.**IREFCON-14**, Kolkata, pp.195-200.
37. Dipak Mazumdar, OP Singh and Sanjay Mehta : *Steelmaking: Theory , practice and plant performance*”, **ICS-2015**, Beijing,(Keynote Paper);pp.39-43.
38. Soumava Chakraborty, Dipak Mazumdar, Sachin Bhambure and Sanjay Patil: “*An experimental and computational analysis of casting of large round steel ingots*”, **Asia Steel 2015**, Yokohoma , Japan (Keynote Paper),pp.244-245.
39. Dipak Mazumdar: “*The Indian Iron and Steelmaking Scenario: A perspective on Future, Technical manpower and R&D*”, Procd. **IREFCON-2016**, Hyderabad, pp.43-48.
40. Dipak Mazumdar: “*The role of CFD in steelmaking: single and multi-phase modeling of argon-steel-slag interactions in ladle metallurgy and casting processes*”, Procd., **SIMPRO-2016** (Simulation of Metallurgical Processes), CD ROM version, 2016 .
41. Prince K. Singh, Suvam Ranjan and Dipak Mazumdar: “*Gas-liquid flows in ladle shroud and their impact on tundish process performance and steel quality*”, Procd. Advances in High Strength Steel (AHSS 2017), Jamshedpur , CD rom version.
42. Dipak Mazumdar: “*Direct measurements of thermal contact resistance during industrial scale, ingot casting operation*”, Procd., **STEELSIM2017 Conference**, Qingdao, China, CD rom version

43. Krshnavtar and D.Mazumdar: *Transient, two phase simulation of grade intermixing phenomena under constant throughput condition* , Proc., 3rd International Conference on Science and technology of Ironmaking and Steelmaking(STIS-2017), 2017, IIT, Kanpur, pp.431-434.
44. Rishikesh Mishra and Dipak Mazumdar: *Mathematical modeling of teeming of steelmaking ladles*, Proc., 3rd International Conference on Science and technology of Ironmaking and Steelmaking(STIS-2017), 2017, IIT, Kanpur, pp.423-426.
45. Rohan Sharma and Dipak Mazumdar: *The role of pre-existing flows on the onset of slag vortices during emptying of a tundish: a numerical investigation*, Proc., 3rd International Conference on Science and technology of Ironmaking and Steelmaking(STIS-2017), 2017, IIT, Kanpur, pp.371-374.
46. Prince K Singh and Dipak Mazumdar :*Macroscopic modeling of argon-steel flows inside a ladle shroud*, Proc., 3rd International Conference on Science and technology of Ironmaking and Steelmaking(STIS-2017), 2017, IIT, Kanpur, pp.399-402.
47. Zunaid Alam, Krshnavtar and Dipak Mazumdar: *Modelling of mechanical agitation and throughput control in steelmaking transfer vessels: numerical simulation and experimental validation*, Proc. CD-rom version, ICS2018. Italy.
48. Dipak Mazumdar and Rishikesh Mishra: *Improvement of steel cleanliness in tundish operations: physical modeling, CFD and industrial scale validation*, Proc. Cleansteel10 (CD-rom version), Budapest, 2018.
49. Prince K Singh, Rohit K Tiwari, Dipak Mazumdar, Abhishek Dutta: *Modelling of two phase, gas-liquid flows in ladle shrouds*, Proc. CD-rom version, ICS2018, Italy.
50. Dipak Mazumdar, Prince K.Singh, Rishikesh Mishra and Krshnavtar: “*Simulation of steelmaking processes: an assessment of reduced and full scale water modelling, numerical simulation vis a vis plant scale measurements*”, Proc., STEELSIM2019 (AIST), Toronto , Canada, Aug.13-15th , 2019 .
51. Rishikesh Misra and Dipak Mazumdar: “*An assessment of numerical approaches towards multi-phase hydrodynamic modelling of inert gas stirred ladle systems*”, Proc., STEELSIM2019 (AIST), Toronto , Canada, Aug.13-15th , 2019 .
52. Sayantan Chakraborty and Dipak Mazumdar: “*The role of an upper slag phase and thermal inhomogeneity in melt on grade intermixing in a tundish at constant throughput rate*” 178th ISIJ Meeting (Contribution of Steelmaking technology for the Sustainable development in Asia), Okayama City (Japan), CAMP-ISIJ, Vol.32,2019, pp.482-485.
53. Suvam Mukherjee and Dipak Mazumdar: “*Ladle shroud performance enhancement: a process modelling investigation*”, Proceeding (CD-Rom), SteelSIM2021, Vienna (Austria).
54. Dipak Mazumdar and Ankur Agnihotri: “*Measurement based criteria for direct evaluation of tundish process performance at industrial scale*”, Proceeding,(CD ROM), Asia Steel, 2021, South Korea.
55. Dipak Mazumdar ,Ankur Agnihotri and Rishikesh Misra: “*On the inference of inclusion floatation efficiency in steelmaking tundish systems from RTD measurements*”, Proceeding,8th ICS (AIST), Montreal, 2022. .
56. R. Mishra and D. Mazumdar: “*Insights on Multiphase Treatment towards Modeling the Fluid Dynamics of Gas-stirred baths*”, Pocrd. 4th Intl Conf Sci Tech of Ironmaking Steelmaking, 2022, pp 400-403.
- 57.

PRESENTATIONS: SPECIAL AND MEMORIAL LECTURES:

1. **G.D.Birla Gold Medal lecture (2009)**, The Indian Institute of Metals, Kolkata, India, November 14th, 2009.

Title: “The knowledge based foundation of steelmaking and application in steel melt shop”

2. **4th Annual COEST Steel Colloquium lecture (2016)**, Indian Institute of Technology, Mumbai.

Title: “Engineering in Steelmaking”

3. **8th CNR Rao Distinguished lecture (2017)**, Indian Institute of Technology, Kanpur.

Title: “Steelmaking: Challenges and opportunities”

4. **Invited guest lecture on Vision of Metallurgy, Beijing, China (2019).**

Title: “On shaping future ferrous metallurgy education: A perspective of an educationist”

MAJOR INDUSTRIAL COLLABORATORS (2001-2022)

Integrated steel plants	Special steel plants	Refractory industries	Ferro-alloy industries
1. Ispat Industries, Dolvi 2. Jindal South West Steels Limited (JSW), Dolvi and Toranagallu 3. Jindal Steel and Power Limited (JSPL), Raigarh 4. Rashtriya Ispat Nigam Limited (RINL), Vishakhapatnam	1. Hospet Steels Limited, Ginigera, Karnataka 2. Mahindra Sanyo Special Steels Limited, Khopoli 3. Vardhman Special Steels Limited, Ludhiana 4. Sunflag iron and Steel Limited, Nagpur	1. Hi-Tech Refractories, Jamshedpur 2. Calderys India Refractories, Nagpur 3. Dalmia OCL Ltd, Rajgangpur, Odhisa	1. Chandrapura Ferroalloy Plant (SAIL), Chandrapura Maharashtra