

CURRICULUM VITAE

ALBERTO N. CONEJO

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Birth Date/Place: September 25th, 1959/Cuitzeo del Porvenir, Michoacán, México
Age: 59 years
Marital status: Married, 2 boys (30 and 28 years old).
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Academic Background

1977-1980 Bachelor's degree in Ferrous metallurgy. ITM. Morelia, México
1981-1982 Master of Science degree in Ferrous metallurgy. Specialty in Heat treatment of steel. ITM. Morelia, México
1992-1995 PhD in Metallurgical Engineering. Thesis: "Conversion of hematite to iron carbides by gas phase carbidization", Colorado School of Mines. Golden CO, USA.

Employment record

June 1982-June 1985 Several positions such as trainee, head of the heat treatment department and welding supervisor at different metallurgical plants
Sep 1985-Oct 1987 Manager of R&D at NKS, a manufacturer of capital goods (casted and forged)
June 1988-August 2018 Professor at the Metallurgy department of Morelia Technological Institute (ITM).
September 2018-Present Professor at the University of Science and Technology Beijing (USTB). School of Metallurgical and Ecological Engineering. Beijing China.
Ferrous Metallurgy Research Institute (FeMRI) México.
Principal researcher on ironmaking and steelmaking.

Awards:

- [Editor of Metallurgical Research and Technology](#) (previously known as *Revue de Metallurgie*). Since January 2017
- [National award](#) (2nd place): Technology and Science award granted by the Mexican Steel Producers Association (Canacero). 2010/2011. Work on EAF modeling.
- Michoacán [State award](#): Technology award, 2005. Work on EAF slag foaming.

- Best paper award, [Charles W. Briggs award](#) 2002, Iron and steel society, USA. EAF steelmaking.
- Member of the [National System of Researchers](#) (SNI). Level II (top 18% nationwide). Current period: 2018-2021. Level II from 2014-2017. Previously level I from 1989-1993, 2002-2013.
- [Visiting professor](#), Tohoku University, IMRAM, Kitamura laboratory, Sendai [Japan](#). 3 months, July-September 2009.
- [Visiting professor](#), ArcelorMittal R&D, Avilés [Spain](#), 6 months, Feb-July 2011.
- [Visiting professor](#), School of Metallurgical and Ecological Engineering of the University of Science and Technology Beijing (USTB), [P.R. China](#), One year, August 2014-July 2015. One month; June 28-July 30, 2016.
- [Visiting professor](#), Indian Institute of Technology Kanpur, Department of Materials Science and Engineering, Kanpur, Uttar Pradesh, India. 5 months, December 2017-May 2018.

List of publications in referred journals:

1. **CONVERSION OF HEMATITE TO IRON CARBIDES BY GAS PHASE CARBIDIZATION**
[A.N. Conejo](#) & G.P. Martins. ISIJ International, Vol. 37, 1997, Nr. 10, 967-976. Japan
2. **EQUILIBRIUM REACTOR PERFORMANCE ANALYSIS FOR THE PRODUCTION OF IRON CARBIDE**
[A.N.Conejo](#) & G.P.Martins. Ironmaking and Steelmaking, vol 26, No. 2, 1, 1999. 111-116. England
3. **INDUSTRIAL ANALYSIS OF REDUCTION OF IRON OXIDE BY INJECTION OF CARBON PARTICLES INSIDE THE EAF (In Spanish).**
[A.N.Conejo](#), R. Torres and E.Cuellar. Revista de Metalurgia, , vol 35 (2) March-April, 1999. pp. 111-125.
4. **ALTERNATIVE PROCESSES TO THE BLAST FURNACE: A REVIEW (In Spanish).**
[A.N. Conejo](#). Revista de Metalurgia, vol 36, (6), November-December 2000, pp. 420-434.
5. **SOOTING BEHAVIOR DURING THE CARBIDIZATION OF IRON OXIDES.**
[A.N. Conejo](#). Journal of the Chinese Institute of Chemical Engineers,, Vol 32 (4), 2001, 311-317. Taiwan PRC.
6. **A MATHEMATICAL SIMULATOR FOR THE EAF STEELMAKING PROCESS USING DIRECT REDUCED IRON.**
R. D. Morales, H. Rodríguez and [A. N. Conejo](#). ISIJ international, Vol 41 (5), 2001. 426-435. Japan.
7. **OPERATIONAL RESULTS DURING THE MELTING OF 100% DRI OF HIGH CARBON-HIGH METALLIZATION AT IMEXSA**
R. Lule, F. López, R. Torres, [A. N. Conejo](#) and R. D. Morales. Iron and Steelmaker, vol 28, May 2001, 47-52. USA.
8. **THEORETICAL ANALYSIS OF THE INTERFACIAL PHENOMENA DURING THE INJECTION OF CARBON PARTICLES INTO EAF SLAGS.**
H.H. Rodríguez, [A. N. Conejo](#) and R. D. Morales. Steel research, vol. 72, nr. 8, 2001, pp. 298-303. Germany
9. **PROCESS DYNAMICS OF ELECTRIC ARC FURNACE DURING DIRECT REDUCED IRON MELTING**
[A. N. Conejo](#), R. D. Morales and H. H. Rodríguez. Metallurgical and Materials Transactions B, Vol 33B, 2002, 187-199. USA.

10. **CONCEPT OF DYNAMIC FOAMING INDEX AND ITS APPLICATION TO CONTROL OF SLAG FOAMING IN ELECTRIC ARC FURNACE STEELMAKING**
R. D. Morales, H. Rodríguez-Hernández, Vargas-Zamora, A. and [A. N. Conejo](#). Ironmaking and Steelmaking (UK), vol. 29, no. 6, pp. 445-453, Dec. 2002. England.
11. **THERMODYNAMIC ASSESSEMENT OF THE Fe-C-H-O SYSTEM.**
[A.N. Conejo](#), R. Estrada and R. Rodríguez. Journal of steel and related materials, vol 1, Nr, 2, 2003, pp. 113-119.
12. **PRODUCTION OF IRON CARBIDE USING THE METASTABLE Fe-C-H-O SYSTEM.**
[A.N. Conejo](#), R. Estrada and R. Rodríguez. Journal of steel and related materials, vol 1, Nr, 2, 2003, pp. 120-125.
13. **REDUCTION KINETICS OF PARTICULATE HEMATITE WITH H₂-CO MIXTURES FROM 550 TO 650°C**
R.A.D. Rodriguez, [A.N. Conejo](#) and E. Bedolla: Iron and Steelmaker, vol 30, Nr. 1, 2003, USA. pp. 25-33.
14. **A NEW HOLE CLEANING CRITERIA FOR DRILLING OPERATIONS OF OIL WELLS.**
H. H. Rodríguez, O.M. Hernández, E.R. Acevedo, D. C. Velázquez, [A.N. Conejo](#) and R. D. Morales. J. of Petroleum Science and Technology, vol. 21, Nrs 5&5, 2003, pp. 839-861. USA.
15. **ANNULAR FLOW ANALYSIS BY TRACERS IN DRILLING OPERATIONS.**
H. H. Rodríguez, J.B. Ramírez, D. C. Velázquez, [A.N. Conejo](#) and J.A. Martinez. J. of Petroleum Science and Engineering, vol. 41, 2004, pp 287-296. USA.
16. **CREEP PROPERTIES OF 1.25 Cr-1Mo-0.25V STEELS FOR TURBINE CASINGS**
S. G. Hernández and [A.N. Conejo](#). Revista Escola de Minas, 58, (2), Abr.jun 2005. pp. 165-173. Brasil
17. **RECYCLING MgO-C REFRACTORY IN THE EAF OF MITTAL STEEL LAZARO CARDENAS**
R. Lule, F. López R. Rodríguez and [A. N. Conejo](#), Iron and Steel Technology, February 2006, 76-84. USA
18. **RECYCLING MgO-C REFRACTORY IN ELECTRIC ARC FURNACES**
R. Lule, [A. N. Conejo](#), F. Lopez and R. Rodriguez, Resources, Conservation and Recycling, Vol 49, Nr.1, Nov 2006, 14-31, USA.
19. **OPTIMIZATION OF ALUMINUM DEOXIDATION PRACTICE IN THE LADLE FURNACE**
[A.N. Conejo](#) and D. Hernández . Materials and Manufacturing Processes, Vol 21, 2006, 1-8. USA
20. **VISCOSITY OF THE WORKOVER FLUID FAPX.**
H. H. Rodriguez, D.Azpeitia and [A.N. Conejo](#). J. of Petroleum Science and Technology, Journal of petroleum science and technology, Vol 24, Nr 8, August 2006, pp. 871-886, USA.
21. **THERMODYNAMIC ASSESSMENT OF THE Fe-C-H-O-S SYSTEM**
[A.N. Conejo](#) and R.Carreño. Journal of steel and related materials, vol 4, Nr, 4, 2006, 273-278. Germany.
22. **LOW TEMPERATURE FORMATION OF IRON CARBIDE FROM IRON OXIDE WITH CO-H₂ GAS MIXTURES**
[A.N. Conejo](#) and R. Estrada. Steel Research International, Vol 78, Nr 1, January 2007, 3-9, Germany.
23. **KINETIC MODEL OF STEEL REFINING IN A LADLE FURNACE**
[A.N. Conejo](#) and F. R. Lara, M. Macias-Hernández and R.D. Morales. Steel Research International, Vol 78, Nr 2, February 2007, 141-150, Germany.
24. **MELTING BEHAVIOR OF SIMULATED DRI IN LIQUID STEEL**
O.J.P.Gonzalez, Y.I.C. Guzman, M.A. Ramírez-Argaez and [A.N. Conejo](#). Archives of metallurgy and materials, Vol 53, Nr 2, 2008, 359-364, Editor: Polish Academy of Sciences. Poland. ISSN 1733-3490.

25. **POWER DELIVERY FROM THE ARC IN AC ELECTRIC ARC FURNACES WITH DIFFERENT GAS ATMOSPHERES.**
J.L.G. Sanchez, M.A. Ramírez-Argaez and [A.N. Conejo](#). Steel Research International, Vol 80, Nr 2, January 2009, 113-120, Germany
26. **FLUID FLOW PHENOMENA IN BOTTOM GAS-STIRRED LADLES WITH TOP LAYER: PART I. FLUID FLOW.**
[A.N. Conejo](#) and Shin-Ya Kitamura. Bulletin of the Advanced Materials Processing Building, IMRAM, Vol 65, Nr 1,2, December 2009, 26-35, Japan.
27. **FLUID FLOW PHENOMENA IN BOTTOM GAS-STIRRED LADLES WITH TOP LAYER: PART II. PRACTICAL CONSIDERATIONS.**
[A.N. Conejo](#) and Shin-Ya Kitamura. Bulletin of the Advanced Materials Processing Building, IMRAM, Vol 65, Nr 1,2, December 2009, 36-46, Japan.
28. **EFFECT OF ARC LENGTH ON FLUID FLOW AND MIXING PHENOMENA IN AC ELECTRIC ARC FURNACES.**
O.J.P.Gonzalez, M.A. Ramírez-Argaez and [A.N. Conejo](#). ISIJ International, Vol 50 (2010) Nr. 1, pp. 1-8, Japan.
29. **MATHEMATICAL MODELING OF THE MELTING RATE OF METALLIC PARTICLES IN THE ELECTRIC ARC FURNACE.**
O.J.P.Gonzalez, M.A. Ramírez-Argaez and [A.N. Conejo](#). ISIJ International, Vol 50 (2010) Nr. 1, pp. 9-16, Japan.
30. **INFLUENCE OF THE TOP SLAG LAYER ON THE FLOWDYNAMICS IN AC-ELECTRIC ARC FURNACES.**
M.A. Ramírez-Argaez, [A.N. Conejo](#), Y. I. Guzmán and G. Trapga. Int. J. Engineering Systems Modelling and simulation, Vol 50 (2010) Nr. 1, pp. 9-16, Japan.
31. **EVALUATION OF BUBBLE EYE AREA TO IMPROVE GAS/LIQUID REACTION RATES AT BATH SURFACES.**
N. Maruoka, F. Lazuardi, T. Maeyama, S-J, Kim, [A.N. Conejo](#), H. Shibata and S. Kitamura. ISIJ International, Vol 51 (2011) Nr. 2, pp. 236-241, Japan.
32. **EFFECT OF BOTH RADIAL POSITION AND NUMBER OF POROUS PLUGS ON CHEMICAL AND THERMAL MIXING IN AN INDUSTRIAL LADLE INVOLVING TWO PHASE FLOW**
F.D. Maldonado-Parra. M.A. Ramirez-Argaez, [A.N. Conejo](#) and C. Gonzalez. ISIJ International, Vol 51 (2011) Nr. 7, pp. 1110-1118, Japan.
33. **EFFECT OF FOAMY SLAG HEIGHT ON HOT SPOTS FORMATION INSIDE THE ELECTRIC ARC FURNACE BASED ON A RADIATION MODEL**
J.L.G. Sánchez, [A.N. Conejo](#) and M.A. Ramirez-Argaez.; ISIJ International, Vol. 52 (2012), No. 5, pp. 808-817
34. **EFFECT OF TOP LAYER, NOZZLE ARRANGEMENT, AND GAS FLOW RATE ON MIXING TIME IN AGITATED LADLES BY BOTTOM GAS INJECTION**
[A N. Conejo](#), S. Kitamura, N. Maruoka and S.-J. Kim.: Metall. and Mater. Trans B , Vol. 44 (2013), pp. 914-923. ISSN: 10735615. DOI: 10.1007/s11663-013-9829-5
35. **EFFECT OF SLAG PROPERTIES ON MIXING PHENOMENA IN GAS-STIRRED LADLES BY PHYSICAL MODELING**
A. Amaro-Villeda, M.A. Ramirez-Argaez and [A.N. Conejo](#) and.; ISIJ International, Vol 54 (2014), No. 1, pp.1-8. ISSN: 09151559. DOI: 10.2355/isijinternational.54.1
36. **PROCESS IMPROVEMENT THROUGH PHYSICAL MODELING OF BOTTOM GAS STIRRING IN METALLURGICAL LADLES**
A. Amaro-Villeda, M.A. Ramirez-Argaez and [A.N. Conejo](#); SEAI Quarterly Journal, vol 43 (2014) No.1, pp. 30-38. ISSN: 0129-5721

37. **MATHEMATICAL MODELING OF THE MELTING RATE OF METALLIC PARTICLES IN THE EAF UNDER MULTIPHASE FLOW**
M.A. Ramirez-Argaez , [A.N. Conejo](#) and M.S.C. Lopez. ISIJ International, Vol. 55 (2015) No. 1, pp. 117-125. ISSN: 09151559. DOI: 10.2355/isijinternational.ISIJINT-2015-190
38. **EFFECT OF NOZZLE DIAMETER ON MIXING TIME DURING BOTTOM GAS INJECTION IN METALLURGICAL LADLES**
M.A.C. Terrazas and [A.N. Conejo](#). Metallurgical and Materials Transactions B, Vol. 46 (2015) pp. 711-718. ISSN: 10735615. DOI: 10.1007/s11663-014-0263-0
39. **MATHEMATICAL MODELING OF THE MELTING OF SPONGE IRON IN A BATH OF NON-REACTIVE MOLTEN SLAG**
Eduardo Pineda-Martínez, Constantin A. Hernández-Bocanegra, [A.N. Conejo](#), and Marco Aurelio Ramirez-Argaez. ISIJ International, Vol. 55 (2015) No. 9, pp. 1906-1915. ISSN: 09151559. DOI: 10.2355/isijinternational.55.117
40. **EFFECT OF SUPERHEAT, COOLING RATE AND REFRACTORY COMPOSITION ON THE FORMATION OF NON-METALLIC INCLUSIONS IN NON-ORIENTED ELECTRICAL STEELS**
Y. Luo, [A. N. Conejo](#), L. Zhang, L. Chen and L. Cheng. Metallurgical and Materials Transactions B, Vol. 46B, October 2015, pp. 2348-2360. ISSN: 10735615. DOI: 10.1007/s11663-015-0401-3
41. **EXTRACTION, THERMODYNAMIC ANALYSIS AND PRECIPITATION MECHANISM OF MnS-TiN COMPLEX INCLUSIONS IN LOW SULFUR STEELS**
Yang Liu, Lifeng Zhang, Haojian Duan, Ying Zhang, Luo Yan, and [Alberto N. Conejo](#). Metallurgical and Materials Transactions A, Vol. 47, (June 2016), pp. 3015-3025. ISSN: 10735623. DOI: 10.1007/s11661-016-3463-1
42. **INVESTIGATION ON THE EFFECT OF NOZZLE NUMBER ON THE RECIRCULATION RATE AND MIXING TIME IN THE RH PROCESS USING VOF+DPM MODEL**
Haitao Ling, Fei Li, Lifeng Zhang and [Alberto N. Conejo](#). Metallurgical and Materials Transactions B, Vol. 47, (June 2016) pp. 1950-1961. ISSN: 10735615. DOI: 10.1007/s11663-016-0669-y
43. **ANALYSIS ON THE DEFLECTION ANGLE OF COLUMNAR DENDRITES OF BEARING STEELS UNDER THE INFLUENCE OF M-EMS**
S. Wang, L. Zhang, S. Seetharaman and [A. N. Conejo](#). Metallurgical and Materials Transactions A, 47 (2016) 11, pp. 5496-5509. ISSN: 10735623. DOI: 10.1007/s11661-016-3695-0
44. **STRUCTURE CHARACTERISTICS AND COMBUSTIBILITY OF CARBONACEOUS MATERIALS FROM BLAST FURNACE FLUE DUST**
Di Zhao, Jianliang Zhang, Guangwei Wang, [Alberto Conejo](#), Runsheng Xu, Haiyang Wang and Jianbo Zhong. Applied Thermal Engineering, 108 (2016), pp. 1168-1177. ISSN: 13594311. DOI: 10.1016/j.applthermaleng.2016.08.020
45. **EFFECT OF SNORKEL SHAPE AND NUMBER OF NOZZLES ON MIXING PHENOMENA IN THE RH PROCESS BY PHYSICAL MODELING**
H. Ling, C. Guo, [A. N. Conejo](#), F. Li and L. Zhang. Metall. Res. Technol., Vol. 114, (2017) Nr1, pp. 111-. ISSN: 22713646. DOI: 10.1051/metal/2016058
46. **EFFECT OF SEPARATION ANGLE AND NOZZLE RADIAL POSITION ON MIXING TIME IN LADLES WITH TWO POROUS PLUGS**
A. G. Sánchez, [A. N. Conejo](#) and R. Zenit. Journal of Applied Fluid Mechanics. Vol. 11 (2018) Nr. 1, pp. 11-20
47. **PRECIPITATION OF NITRIDES IN NON-ORIENTED SILICON STEEL**
Yan Luo, Lifeng Zhang, Wen Yang, Ying Ren & [Alberto N. Conejo](#), Ironmaking and Steelmaking, Accepted for publication. Online version 12 November 2017.
48. **OPTIMIZING GAS STIRRED LADLES BY PHYSICAL MODELING AND PIV MEASUREMENTS**

L. Jardón, A. Amaro, [A. N. Conejo](#), C. González and M. A. Ramírez. Materials and Manufacturing Processes, Vol 33 (2018) 8, pp. 882-890.

49. NUMERICAL MODELLING OF LIQUID-LIQUID MASS TRANSFER AND THE INFLUENCE OF MIXING IN GAS STIRRED LADLES

Quynh N. Hoang, Marco A. Ramírez-Argáez, [Alberto N. Conejo](#), Bart Blanpain and Abhishek Dutta. Journal of metals, Vol 70 (2018) 2109-2118.

50. FLUID FLOW, DISSOLUTION, AND MIXING PHENOMENA IN ARGON-STIRRED STEEL LADLES.

H. Duan, L. Zhang, B. G. Thomas and [A. N. Conejo](#). Metallurgical and Materials Transactions B. Vol. 49B, October 2018, pp. 2722-2743.

PAPERS TO BE SUBMITTED

51. MATHEMATICAL MODELING OF MELTING AND DISSOLUTION PHENOMENA OF ALUMINUM SPHERES IN ITS OWN MELT

L. P. Jardón, M.A. Ramirez-Argaez and A.N. Conejo.

Publications in National Journals (in Spanish):

1. ANALYSIS OF NON-ISOTHERMAL FLUID FLOW IN THE TUNDISH

J. Barreto, G. Barrera, E. López, [A. Conejo](#) and A. Maciel: Journal Ideas, UAEM, 14, Sep. 1998.

2. RECENT ADVANCES IN STEELMAKING IN IMEXSA

R. Torres, R. Lule and [A. Conejo](#)., ISS-México, Vol II, 9, Mayo 1998, 7-10.

3. SLAG FOAMING

[A. Conejo](#), Revista Siderurgia, Vol 16, 139, jun/jul 2006, pp. 16-21.

Publications in Proceedings of International Conferences.

1. SPALLING OF BACK UP ROLLS (In Spanish)

A. N. Conejo. X-Interamerican Conference on Materials Technology, The South West Research Institute, San Antonio-Texas, USA, April 1989. pp 23-21/23-30.

2. ENGINEERING OF EAF SLAGS:

A. N. Conejo. 50th Electric Furnace Conference Proceedings, The Iron and Steel Society, Atlanta GA, USA, November 10-12, 1992, pp. 205-212

3. PRE-DEOXIDATION WITH CARBON DURING STEEL TAPPING (In Spanish)

A.N. Conejo and S. Aguilar. 11th Congreso Argentino de Siderurgia, Instituto Argentino de Siderurgia (IAS), Buenos Aires Argentina, November 1997, San Nicolás Argentina, 315-323

4. PHASE STABILITY ANALYSIS AND KINETICS OF GAS PHASE CONVERSION OF HEMATITE TO CEMENTITE

A.N.Conejo, J. López & G.P.Martins. Second International Congress on the Science and Technology of Ironmaking (ICSTI'98), ISS, Toronto, Canada, March 23, 1998. 849-859

5. NEW TRENDS IN SECONDARY METALLURGY: THE IMEXSA EXPERIENCE

A. N. Conejo, R. Torres, J.J. Barreto, A. Maciel y W. López. Third International Symposium of the ESIQIE, IPN-ESIQIE, México City, México, Mayo 1998, pp. 513-525

6. ESTUDIO CINETICO DE LA REDUCCION DE OXIDO DE HIERRO DURANTE LA FUSION DE FIERRO ESPONJA

- A. N. Conejo y J.J.Barreto. Congreso Metalurgia '98. Palacio de las Convenciones de la Habana y Antillana de Acero. 14-18 julio 1998. Cotorro Ciudad Habana, Cuba
7. **SOOTING BEHAVIOR DURING THE CARBIDIZATION OF IRON OXIDES.**
A. N. Conejo. V Congreso Metalúrgico Cubano. Palacio de las Convenciones de la Habana y Antillana de Acero. 12-15 julio 1999. Cotorro Ciudad Habana, Cuba.
 8. **EQUILIBRIUM COMPUTATIONAL ANALYSIS DESCRIBING THE EFFECTS OF PRESSURE ON THE PHASE FIELDS FOR IRON OXIDES AND IRON CARBIDES AT LOW TEMPERATURES (I).**
V. V. Vega and A. N. Conejo. International Materials Research Congress, Symposium 10 on process metallurgy and structural engineering, Cancún, México, Agosto 27-31, 2000, pp. 104-114
 9. **EVOLUTION OF REFRACTORY PERFORMANCE AND METALLURGICAL PRACTICES AT IMEXSA.**
Raul Torres, Saul Aguilar and Alberto N. Conejo, 58th EAF Conference, Orlando FL, USA, November 12-15, 2000, pp. 415-423.
 10. **DEVELOPMENT OF TERNARY DIAGRAMS APPLIED TO THE FORMATION OF IRON CARBIDE (PART 1).**
R. Rodríguez and A. N. Conejo. 60th Ironmaking Conference, ISS, March 25-28, 2001, Baltimore MD, USA, pp. 669-674
 11. **MATHEMATICAL MODELING OF THE EAF PROCESS USING DIRECT REDUCED IRON**
A. N. Conejo, R. Morales and H. Rodríguez. 59th Electric Arc Furnace Conference, ISS, November 2001, Phoenix, AZ, USA, pp. 797-810
 12. **KINETICS OF REDUCTION OF Fe₂O₃ PARTICLES WITH H₂-CO MIXTURES AT LOW TEMPERATURES.**
Roberto A. D. Rodríguez , Alberto N. Conejo and Egberto B. Bedolla. 61st Ironmaking Conference, ISS, March 10-13, 2002, Nashville TN, USA, pp.
 13. **THERMODYNAMIC ASSESSEMENT OF IRON CARBIDE FORMATION: METASTABLE TERNARY C-H-O DIAGRAMS**
A. N. Conejo, R. Rodríguez and R. Estrada. 7th European Electric Steelmaking Conference, Associazione Italiana di Metallurgia, May 26-29, 2002, Venice, Italy, pp.
 14. **SLAG-CARBON PARTICLES INTERACTION DURING FOAMING IN ELECTRIC STEELMAKING.**
A. N. Conejo, R. Morales and H. Rodríguez. 7th European Electric Steelmaking Conference, Associazione Italiana di Metallurgia, May 26-29, 2002, Venice, Italy, pp.
 15. **ANALYSIS OF METALLURGICAL OPERATIONS AFFECTING METALLIC YIELD USING 100% DRI IN ELECTRIC ARC FURNACES.**
Raúl Torres, Ruben Lule, Francisco López and A. N. Conejo. 14th Steelmaking Conference, Buenos Aires, Argentina, 13 de Noviembre 2003, pp. 547-558
 16. **ANALYSIS OF ALUMINUM DEOXIDATION IN THE LADLE FURNACE.**
A. N. Conejo. AISTech 2005, May 9-13, 2005, Charlotte North Carolina, USA, pp. 947-957
 17. **RECYCLING MgO-C REFRACTORY IN THE EAF OF IMEXSA.**
R. Lule, A. N. Conejo, F. López and R. Rodríguez,. AISTech 2005, May 9-13, 2005, Charlotte North Carolina, USA, pp. 605-615
 18. **KINETICS OF REFINING OPERATIONS IN A LADLE FURNACE.**

F. Lara and A. N. Conejo, Simulation and modeling of metallurgical processes in steelmaking, STEELSIM 2005, Brno Czech Republic, 25-27 October 2005.

19. **LOW TEMPERATURE FORMATION OF IRON CARBIDE FROM IRON OXIDE WITH CO-H₂ GAS MIXTURES**
A.N. Conejo and R. Estrada. 5a. Conferencia de Reducción, Instituto Argentino de Siderurgia, San Nicolás Argentina, 8-10 Noviembre 2005.
20. **ENERGY CONSUMPTION IN THE EAF WITH 100% DRI**
A.N. Conejo and J.G.G. Cárdenas. AISTech 2006, AIST, Cleveland Ohio, USA, May 1-4, 2006, pp. 529-535.
21. **REDUCIBILITY OF IRON ORE CONCENTRATES**
C. Hernández, A.N. Conejo and P. Gárnica, ICSTI 2006, ISIJ-U.OSAKA, Osaka, Japan, November 26-30, 2006, pp. 303-306.
22. **OPTIMIZATION OF ENERGY CONSUMPTION IN ELECTRIC ARC FURNACES OPERATED WITH 100% DRI**
A.N. Conejo and J.G.G. Cárdenas. METAL 2007, Hradec nad Moravici, Czech Republic 23-25 May 2007.
23. **MATHEMATICAL MODELING OF THE MELTING PROCESS IN AC ELECTRIC ARC FURNACES.**
J.J. Espinoza, M.A. Ramírez-Argaez, and A.N. Conejo. 16th IAS Steelmaking Conference, Rosario Argentina, November 6-8, 2007.
24. **MATHEMATICAL MODELING OF THE MELTING PROCESS IN AC ELECTRIC ARC FURNACES.**
M.A. Ramírez-Argaez, J.J. Espinoza and A.N. Conejo. International Steelmaking Conference, ATS 2007, Paris- France, December 13-14, 2007.
25. **RADIATION MODEL IN A THREE PHASE EAF.**
J.L.G. Sanchez, M.A. Ramírez-Argaez, and A.N. Conejo. AISTech 2008, Pittsburgh, PA., USA, May 5-8, 2008. volume I, EAF Process Modeling Section.
26. **MELTING BEHAVIOR OF SIMULATED DRI IN LIQUID STEEL.**
O.J. Gonzalez, Y.I.C. Guzmán, M.A. Ramírez-Argaez, and A.N. Conejo. 9th European Electric Furnace Conference, EEC 2008, Cracow-Poland, May 19-21, 2008. Raw Materials Section.
27. **FLUID FLOW INVOLVING SLAG AND LIQUID STEEL IN AC ELECTRIC ARC FURNACES.**
Y.I.C. Guzmán, M.A. Ramírez-Argaez, A.N. Conejo and G.M. Trapaga. 40° Steelmaking seminar international, May 24-28, 2009. São Paulo-SP-Brazil.
28. **INFLUENCE OF THE TOP SLAG LAYER ON THE FLOWDYNAMICS IN AC ELECTRIC ARC FURNACES.**
Y.I.C. Guzmán, M.A. Ramírez-Argaez, A.N. Conejo and G.M. Trapaga. International Conference on the Advances in Theory of Ironmaking and Steelmaking, 9-11 December 2009, Indian Institute of Science, Bangalore, India.
29. **EFFECT OF TOP LAYER, NOZZLE ARRANGEMENT AND GAS FLOWRATE ON MIXING TIME IN AGITATED LADLES BY BOTTOM GAS INJECTION.**
A.N. Conejo , S. Kitamura, N. Maruoka and J. Kim: 15th International Metallurgy and Materials Congress, UCTEA Chamber of Metallurgical Engineers, Istanbul Turkey, 11-13 November 2010.

30. **EFFECT OF SLAG ON MIXING TIME IN GAS-STIRRED LADLES ASSISTED WITH A PHYSICAL MODEL.**
A.M. Amaro-Villeda, A. N. Conejo and M. A. Ramirez-Argaez, XXI International Materials Research Congress, MRS, Cancún México, August 12-17, 2012.
31. **MELTING RATE OF DRI IN THE ELECTRIC ARC FURNACE.**
M.A. Ramirez-Argaez, A.N. Conejo and M.S.C. López, 10th European Electric Steelmaking Conference (EESC 2012) Graz, Austria, 25-28 September 2012.
32. **MATHEMATICAL MODELING OF THE DECARBURIZATION KINETICS IN THE ELECTRIC ARC FURNACE: C-O REACTION.**
A.N. Conejo, M.A. Ramirez-Argaez, and E.N. Rodriguez, 5th International Congress on the Science and Technology of Steelmaking (ICS 2012) Dresden, Germany, 1-3 October 2012.
33. **PROCESS IMPROVEMENT THROUGH PHYSICAL MODELING OF BOTTOM GAS STIRRING IN METALLURGICAL LADLES.**
A. Amaro-Villeda, M.A. Ramirez-Argaez and A.N. Conejo, 2013 SEASI Conference, Dusit Thani Pattaya, Thailand, June 3-6, 2013.
Also published in: SEASI Quarterly 2014, Vol. 43, No. 1. ISSN: 0129-5721
34. **MATHEMATICAL MODELING OF BOTTOM GAS INJECTION IN INDUSTRIAL METALLURGICAL LADLES IN THE PRESENCE OF A TOP SLAG LAYER.**
D. Nuñez, M.A. Ramirez-Argaez and A.N. Conejo, PRICM 2013 Conference, Hawaii, USA, August 4-9, 2013, pp. 2941-2948.
35. **EXPERIMENTAL AND THEORETICAL STUDY ON MELTING KINETICS OF SPHERICAL ALUMINUM PARTICLES IN LIQUID ALUMINUM**
Ramírez-Argáez, M., Jardón, E., Conejo, A.N., González-Rivera, C., AIP Conference Proceedings, Volume 1648, 10 March 2015, Article number 850119, International Conference on Numerical Analysis and Applied Mathematics 2014, ICNAAM 2014; Rodos Palace Hotel, Rhodes; Greece; 22 September 2014 through 28 September 2014.
36. **PHYSICOCHEMICAL PROPERTIES OF STEEL SLAGS: CHALLENGES OF THE MEXICAN STEEL INDUSTRY.**
A.N. Conejo, Shechtman International symposium, Editor Flogen, June 29-July 4, 2014, Cancun México.
37. **EFFECT OF NOZZLE DIAMETER, NOZZLE RADIAL POSITION AND A TOP SLAG LAYER ON MIXING TIME DURING BOTTOM GAS INJECTION IN METALLURGICAL LADLES**
M. S. C. Terrazas and A.N. Conejo. 6th International Congress on the Science and Technology of Steelmaking (ICS2015). 12-14 May 2015, Beijing, China. pp. 175-178.
38. **PHYSICAL MODELING OF BOTTOM GAS INJECTION IN METALLURGICAL LADLES: STATUS AND CURRENT CHALLENGES**
A. N. Conejo, European Steel Technology and Application Days 2017 (ESTAD 2017), June 26 – July 1, 2017. Vienna, Austria. pp.
39. **COMPARISON BETWEEN SYMMETRIC AND NON-SYMMETRIC RADIAL POSITION OF GAS INJECTION ELEMENTS ON MIXING TIME USING TWO NOZZLES WITH DIFFERENT SEPARATION ANGLES**
Key note speaker. A. N. Conejo, 3rd International Conference on Science and Technology of Ironmaking & Steelmaking 2017 (STIS 2017), December 11-13, 2017. Kanpur, Uttar Pradesh, India. pp. 187-190.

40. EFFECT OF GAS FLOW RATE, NOZZLE RADIAL POSITION AND SLAG THICKNESS ON BOTH MIXING TIME AND LADLE EYE DUE TO BOTTOM GAS INJECTION WITH ONE NOZZLE

Plenary lecture. O. Guzmán and A. N. Conejo, International Conference on Recent Advances in Metallurgy for Sustainable Development (IC-RAMSD 2018), Department of Metallurgical and Materials Engineering, Faculty of Technology and Engineering, The M.S. University of Baroda, Vadodara India, February 1 – 3, 2018.

41. CURRENT CHALLENGES IN THE STEELMAKING INDUSTRY

A. N. Conejo and Lifeng Zhang, Proceedings of 2018 China Symposium on Sustainable Steelmaking Technology, CSST 2018, Chinese Society for Metals, October 25-26, 2018, Tianjin China, pp. 166-171.

List of Publications in National Conferences (In Spanish)

1. VARIABLES THAT CONTROL DUPLEX GRAIN SIZE

A. Conejo. Seminario de metalurgia extractiva y transformación, Universidad Autónoma de San Luis Potosí, SLP- México, August 1984.

2. METALLOGRAPHIC AND DIMENSIONAL ANALYSIS OF CARBURIZED GEARS

A. Conejo. I Seminario de Metalurgia Extractiva y Transformación, Universidad Autónoma de San Luis Potosí, SLP-Mexico, August 1984.

3. EFFECT OF INSOLUBLE ALUMINUM ON AUSTENITIC GRAIN SIZE IN Cr-Mo STEELS

A. Conejo. VI Encuentro de Investigación Metalúrgica, Instituto Tecnológico de Saltillo, Saltillo, Coah.-México, 21-23 de November 1984, pp. 286-320

4. DEOXIDATION WITH FERROALUMINUM

A. Conejo. IX Encuentro Nacional de Investigación Metalúrgica, Instituto Tecnológico de Saltillo, Saltillo, Coah.-México, September 1987, pp 200-223.

5. HYDRODYNAMIC AND KINETIC ASPECTS OF STEEL DEGASSING

R. Morales, A. Conejo y O. Arroyo. IX Simposio Nacional de Siderurgia, Instituto Tecnológico de Morelia, Morelia, Mch.-México, Noviembre 1987, pp. 5.1-5.9.

6. ANALYSIS OF QUALITY PROPERTIES OF METALLURGICAL LIME

A. Conejo. I Congreso Nacional sobre Tecnología Metalúrgica, Instituto Mexicano del Petróleo, México, D.F.-México, 2-4 de December 1987.

7. REFRACTORIES FOR STEELMAKING: A REVIEW

A. Conejo. X Simposio Nacional de Siderurgia, Instituto Tecnológico de Morelia, Morelia, Mich., México, November 1988. pp 1-1/1-38.

8. MECHANICAL PROPERTIES OF COLD WORK ROLLS:

A. Conejo. XIV Congreso Nacional, Academia Nacional de Ingeniería, Zacatecas, Zac., México, September 1989.

XI Simposio Nacional de Siderurgia, Instituto Tecnológico de Morelia, Morelia, Mich.-Mexico, November 1989. pp 206-218.

9. MACHINABILITY OF CALCIUM TREATED STEELS

A. Conejo. VII Encuentro Nacional de Siderúrgicos, Sociedad de Acereros y Proveedores, AC., México, D.F.-Mexico, October 1990. pp. 1.1-1.27.

10. STEEL DEOXIDATION: THERMODYNAMICS AND KINETICS

- A. Conejo. I Encuentro de Difusión Científica y Tecnológica, Instituto Tecnológico de Lázaro Cárdenas, Cd. Lázaro Cárdenas, Mich.-Mexico, October 1990. pp. 2.1-2.27.
11. A DECADE OF THE GRADUATE PROGRAM IN FERROUS METALLURGY AT ITM
A. Conejo y G. Gutiérrez. V Congreso Nacional de Estudios de Posgrado, Instituto Tecnológico de Celaya-UAM, Celaya, Gto., México, Omnia, 14-16 de November 1990, p31.
 12. STATUS OF R&D IN FERROUS METALLURGY IN MEXICO
A. Conejo y S. Ibarra. I Congreso Nacional sobre "Excelencia de la Enseñanza en Metalurgia", Universidad Autónoma Metropolitana-Azcapotzalco México, D.F.-México, Aril 1991, pp. 195-218
 13. ENDOGENOUS MODEL TO CREATE SCIENCE AND TECHNOLOGY
A. Conejo. I Congreso Nacional de Divulgación de la Ciencia, Somedicyt, Morelia, Mich., México, 17-19 de April 1991.--
 14. SLAGS
A. Conejo. SIBALSA: 3 años de Desarrollo Tecnológico, Grupo SICARTSA, Cd. Lázaro Cárdenas, Mich.-México, November 1991. vol. II, pp. 1-20
 15. ANALYSIS OF OXIDATION STATE OF SLAGS BALANCING CARBON AND OXYGEN IN THE EAF
A.N.Conejo y F. López. XIV Encuentro Nacional de Siderurgicos, Soc. de Acereros y Proovedores A.C., Ixtapa Guerrero, 2-3 October de 1997, 1-12
 16. FOAMY SLAG STABILITY IN THE EAF
A.N.Conejo y F. Magaña. XIX Simposio Nacional de Siderurgia, Instituto Tecnológico de Morelia, Morelia, Mich.-Mexico, November 1997. PP. 2.1-2.6
 17. INDUSTRIAL ANALYSIS OF IRON OXIDE REDUCTION BY INJECTION OF CARBON PARTICLES INSIDE THE EAF
A.N.Conejo, Raúl Torres and E. Cuellar. XV Encuentro Nacional de Siderúrgicos, Soc. de Acereros y Proovedores A.C., San Luis Potosí, 2-3 October de 1998, 1-12
 18. ALTERNATIVES TO THE BLAST FURNACE: A REVIEW
A. N. Conejo. XX Simposio Nacional de Siderurgia, Instituto Tecnológico de Morelia, Morelia Mich., México, 24-26 de November de 1999, 13-1 a 13-10.
 19. THERMODYNAMIC ANALYSIS OF CARBON ACTIVITY IN CO-H₂ MIXTURES
R.A.D. Rodríguez y A.N. Conejo. XVI Congreso Nacional de Termodinámica. Colima-México, 3-7 September 2001, pp. 298-308.
 20. REDUCTION OF HEMATITE POWDERS AT LOW TEMPERATURES
R.A.D. Rodríguez y A.N. Conejo. XXII Simposio Nacional de Siderurgia, Instituto Tecnológico de Morelia, Morelia Mich., México, 28-30 November 2001, pp. 10.1-10.17
 21. THE CONCEPT OF A DYNAMIC FOAMING INDEX FOR METALLURGICAL SLAGS
R..D. Morales, H.H. Rodríguez, A.N. Conejo and A.Z. Vargas. XXII Simposio Nacional de Siderurgia, Instituto Tecnológico de Morelia, Morelia Mich., México, 28-30 November 2001, pp. 13.1-13.18
 22. CREEP PROPERTIES OF 1.25Cr-1Mo-0.25V STEELS FOR TUBINE CASINGS
S.H. Rodríguez and A.N. Conejo. XXIII Simposio Nacional de Siderurgia, Instituto Tecnológico de Morelia, Morelia Mich., México, 27-29 November 2002.
 23. MATHEMATICAL MODELING OF STEEL REFINING IN THE LADLE FURNACE

- F. R. Lara and A. Conejo, VII Jornadas Nacionales de Ingeniería en Materiales, Instituto Tecnológico de Morelia, Morelia, Mich., 22 April 2005.
24. RECYCLING MgO-C REFRACTORY IN THE EAF TO PROMOTE FOAMING
R. Lule, F. López, R. Rodríguez, O. Tapia and A. N. Conejo. XXV Simposio Nacional de Siderurgia, Morelia Mich., 12 October 2005.
 25. ANALYSIS OF ELECTRIC ENERGY CONSUMPTION IN THE EAF.
J.G.G. Cárdenas, A.N. Conejo y G.G. Gutierrez, Tercer Foro de Ingeniería e Investigación en Materiales, UMSNH, Morelia, Mich., December 2006, pp. 238-243
 26. KINETICS OF REDUCTION OF IRON ORE CONCENTRATES.
O.C. Hernández and A.N. Conejo, 3° Congreso y Exposición Nacional de la Industria del Acero, CONAC 2007, November 11-14, 2007, Monterrey, N.L. México, AIST Capítulo México.
 27. PHYSICAL AND MATHEMATICAL MODELING OF BOTTOM GAS STIRRING IN METALLURGICAL LADLES: CURRENT CHALLENGES.
A.N. Conejo, VII Congreso Internacional de Metalurgia y materiales, April 3-4, 2014, Monclova Coahuila México. Facultad de Metalurgia de la Universidad Autónoma de Coahuila y Altos Hornos de México.
 28. STEEL SLAGS: CHARACTERIZATION AND ALTERNATIVES OF RECYCLING.
A.N. Conejo, 6° Congreso y Exposición Nacional de la Industria del Acero, CONAC 2014, Marzo 23-25, 2014, Monterrey, N.L. México, AIST Chapter México.
 29. EFFECT OF NOZZLE DIAMETER, NOZZLE RADIAL POSITION AND A TOP SLAG LAYER ON MIXING TIME DURING BOTTOM GAS INJECTION.
M.S.C. Terrazas and A.N. Conejo, 6th International Congress on the Science and Technology of Steelmaking, May 12-14, 2015, Beijing P.R. China. pp. 175- 178. The Chinese Society for Metals.
 30. PHYSICAL MODELING OF BOTTOM GAS INJECTION IN METALLURGICAL LADLES: STATUS AND CURRENT CHALLENGES.
A.N. Conejo, 3rd European Steel Technology Application Days, ESTAD 2017, June 26 – July 1, Austrian Society for Metals, Vienna, Austria.
 31. PHYSICAL MODELING OF BOTTOM GAS INJECTION IN METALLURGICAL LADLES: STATUS AND CURRENT CHALLENGES.
A.N. Conejo, Accepted for presentation at: 3rd European Steel Technology Application Days, ESTAD 2017, June 26 – July 1, Austrian Society for Metals, Vienna, Austria.

Original citations: > 200

h-index: 10

Thesis supervisor/Master of Science: 17 completed. (All in Spanish)

1. **RELATIONSHIP HEAT TREATMENT-MECHANICAL PROPERTIES OF A Ni-SUPERLLOY**
Luis Zamora Rangel. May 1997. Best MSc Thesis, DGIT 1998
2. **DESIGN OF THERMAL CYCLES TO OPTIMIZE MICROSTRUCTURE AND MECHANICAL PROPERTIES OF 2.25Cr-1 Mo STEELS.**
Raúl Villa Castillo. January 2000.
3. **THERMODYNAMIC AND KINETIC STUDY ON THE REDUCTION OF HEMATITE AT LOW TEMPERATURES.**

Roberto Ademar Rodríguez Díaz. January 25, 2002.

4. INFLUENCE OF CREEP TEMPERATURE ON THE MECHANICAL PROPERTIES OF 1.25 Cr-1Mo-0.25V STEEL

Sergio Hernández González. May 3, 2002.

5. KINETICS OF FORMATION OF IRON CARBIDE FROM HEMATITE USING CARBIDIZING GASES

Raúl Estrada Solís.. December 2003.

6. THERMODYNAMIC MODELING OF IRON CARBIDE PRODUCTION

Rafael Carreño Bolaños. December 2004.

7. MATHEMATICAL MODELING OF STEEL DESULFURIZATION IN THE LADLE FURNACE

Fernando Lara Robles. April 2005.

8. REDUCIBILITY OF IRON ORES

Cesar Hernández Carrillo, February 18, 2008

9. MASS AND ENERGY OPTIMIZATION MODEL IN THE EAF

Juan Gilberto Cárdenas González. June 23, 2008.

10. RADIATION MODEL IN AC-EAF

José Luis Sánchez García, December 19, 2008

11. EFFECT OF DRI CHEMICAL COMPOSITION ON ITS MELTING RATE IN THE EAF

Oskar Javier González Pedraza, December 19, 2008

12. EFFECT OF FOAMY SLAG ON THE MELTING RATE OF DRI IN THE EAF

Yosue Israel Guzmán Cedeño, December 19, 2008.

13. MATHEMATICAL MODLEING OF DRI UNDER MULTIPHASE FLOW CONDITIONS IN THE EAF

Monserrat Sofía López Cornejo, February 4, 2011.

14. MATHEMATICAL MODELING OF ARGON INJECTION IN METALLURGICAL LADLES INCLUDING A TOP SLAG LAYER

Diego Alfredo Altamirano Núñez, February 13, 2012.

15. PHYSICAL MODELING OF BOTTOM GAS STIRRING IN METALLURGICAL LADLES INCLUDING A TOP SLAG LAYER: EFFECT OF NOZZLE DIAMETER

Mario Salvador Terrazas Carpio, August 2014.

16. PHYSICAL MODELING OF BOTTOM GAS STIRRING IN METALLURGICAL LADLES INCLUDING A TOP SLAG LAYER: EFFECT OF NOZZLE SEPARATION ANGLE

Alexis Gómez Sánchez, December 2015.

17. COMPUTATIONAL FLUID DYNAMICS (CFD) MODELLING OF THREE-PHASE GAS-STIRRED LADLE: Mass transfer, Mixing and Kinetics Study

NHU Quynh Hoang. Faculty of engineering technology. Campus group T.

Supervisor: Abhishek Dutta, Co-Supervisors: Marco A. Ramírez-Argáez and Alberto N.Conejo

Thesis supervisor/PhD: 2 completed, 3 in progress (PhD thesis co-supervisor at UNAM with Prof. Marco Ramirez and at USTB with Prof. Lifeng Zhang, P.R. China)

1. PHYSICAL AND MATHEMATICAL MODELING OF MIXING AND SLAG/METAL EXCHANGE IN METALLURGICAL LADLES STIRRED WITH A GAS PHASE

Adrián Amaro Villeda, May 2015.

2. MATHEMATICAL MODELING OF FLUID FLOW PHENOMENA AND REMOVAL OF NON-METALLIC INCLUSIONS IN CONTINUOUS CASTING

Haitao Ling, USTB, P.R. China. August 2016.

3. CLEANLINESS OF ELECTRIC STEELS

Yan Luo, USTB, P.R. China.

In progress:

4. PHYSICAL AND MATHEMATICAL MODELING OF MASS TRANSFER DUE TO GAS STIRRING IN LADLES

E. Jardón. UNAM. Mexico City.

Research grants:

1. CONVERSION OF IRON OXIDE INTO IRON CARBIDE BY GAS PHASE CARBIDIZATION

1.1 Main sponsor: National Council for Science and Technology (CONACYT). Project 26376A (1998-2001)

1.2 Additional funding: COSNET, Projects 810.98-P, 2416-P, 2416-PR (1998-1999, 2000-2002)

2. MATHEMATICAL MODELING OF STEEL DESULFURIZATION IN THE LADLE FURNACE

2.1 Main sponsor: National Council for Science and Technology (CONACYT). Project 40737, 2004-2006

2.2 Additional funding: COSNET, Projects 724.99-P (1999-2000), 530.03-P (2003-2004)

3. MASS AND ENERGY OPTIMIZATION MODEL FOR THE EAF

3.1 Main sponsor: COSNET, Project 568.04-P (2004-2005)

4. MATHEMATICAL MODELING OF DRI MELTING IN THE EAF

4.1 Original Sponsor: ArcelorMittal Lázaro Cárdenas (2006-2007).

4.2 Additional funding: DGEST Project 322.06/P. (2007)

4.3 Additional funding: CONACYT Project 80934 (2009-2010)

4.4 Additional funding: COECYT (2009)

5. STEEL SLAGS RECYCLING

5.1 Sponsor: DGEST Project (2012-2014).

6. EFFECT OF TOP SLAG LAYER ON MIXING PHENOMENA IN BOTTOM STIRRED METALLURGICAL LADLES BY PHYSICAL AND MATHEMATICAL MODELING

6.1 Main Sponsor: CONACYT Project 132625 (2011-2015)

7. EFFECT OF ASSYMETRIC GAS INJECTION ON MIXING TIME IN GAS STIRRED LADLES

7.1 Main Sponsor: TecNM (2016-2017).

8. OPTIMIZATION OF STEELMAKING PRACTICES

8.1 Main Sponsor: University of Science and Technology Beijing (2018-2020).

Handbooks:

1. EAF STEELMAKING:

This handbook includes basic chemistry, basic electricity, basic thermodynamics and EAF process engineering. More than 1000 pages. Available as author's notes.

2. BLAST FURNACE:

This handbook includes the coking process, iron ores beneficiation and blast furnace process engineering. More than 1000 pages. Available as author's notes.

Training courses to the industry (In Spanish):

1. HEAT TREATMENT OF STEEL:
Grupo Industrial NKS, Cd. Lázaro Cárdenas, Mich.,-México, 120 hrs. November 1985 - March 1986.
2. MACHINABILITY OF STEELS
Instituto Tecnológico de Morelia, Morelia, Mich.-México, 30 hrs., June 1991.
3. STEEL DEOXIDATION
Instituto Tecnológico de Morelia, Morelia, Mich.-México, 20 hrs. junio 1991.
4. STEELMAKING
ArcelorMittal Lázaro Cárdenas, Cd. Lázaro Cárdenas, Mich., Julio-Agosto, Diciembre 1991
5. CORROSION
Instituto Tecnológico de Morelia, One day short course, 23 Enero 1996
6. DIRECT REDUCTION
Instituto Tecnológico de Morelia, Morelia Mich., October 1996. CO-Instructor Ricardo Viramontes Brown, Managing director HyL.
7. STEELMAKING
Facultad de metalurgia de la Universidad Autónoma de Coahuila, Monclova Coah., del 4 al 8 de Diciembre de 2012. 40 horas.
8. LADLE METALLURGY
Facultad de metalurgia de la Universidad Autónoma de Coahuila, Monclova Coah., del 4 al 8 de Noviembre de 2013. 40 horas.
9. IRON AND STEELMAKING WITH FOCUS ON THE ELECTRIC ARC FURNACE
ArcelorMittal Lázaro Cárdenas, More than 1200 men-hours, 2004-2009.
10. USE OF CALCIUM FLUORIDE IN STEELMAKING
Mexichem Flúor, San Luis Potosí, México. October 2015. 24 hours.
11. SLAGS: CONCEPTS AND APPLICATION IN THE PRODUCTION OF CLEAN STEELS
National Steelmakers Conference (CONAC 2016). Course to be offered during CONAC 2016. Monterrey, México. March 2016. Short course, 8 hours.
12. STEELMAKING
Invited by Colima University, Chemistry and Metallurgy department. November 2016, 15 hours.

Journal reviewer:

- Metallurgical and Materials Transactions B
- Metallurgical Research and Technology
- Journal of metals
- Ceramics transactions
- Vacuum
- Journal of Mechanical Engineering Research
- Revista de metalurgia

Visiting professor at the industry and universities:

1. Steel plant: ArcelorMittal Lázaro Cárdenas (flat products division). EAF steel shop.
Period: One year 1997. Lázaro Cárdenas city, **México**.
2. Steel plant: ArcelorMittal Lázaro Cárdenas (flat products division). EAF steel shop. **México**

- Periods: Multiple visits from 1998-2008. On average 10 weeks per year. Lázaro Cárdenas city, **México**.
2. University: Michoacán State University. Aug- October 1999. Morelia, **México**
 3. Sabbatical year at a University, IPN-ESIQIE. Metallurgy department, August 2000-July 2001. México city, **México**.
 4. Sabbatical year at a University, CINVESTAV IPN-Querétaro, Jan 2008-Jan 2009. Querétaro, **México**. Host. Prof. Gerardo Trápaga.
 5. Visiting Professor, IMRAM-Tohoku University, **Sendai Japan**. 3 months. July-September 2009. Host: Prof. Shin-Ya Kitamura.
 6. Visiting Professor at ArcelorMittal Global R&D, **Avilés Spain**. Six months. February-July 2011. Host: Dr. Pinakin Chhabal
 7. Sabbatical year, University of Science and Technology Beijing (USTB), School of Metallurgical and Ecological Engineering. **Beijing, P.R. China**. August 2014-July 2015, Host. Prof. Lifeng Zhang.
 8. Visiting professor, University of Science and Technology Beijing (USTB), School of Metallurgical and Ecological Engineering. **Beijing, P.R. China**. August-September 2016, Host. Prof. Lifeng Zhang.
 9. Visiting professor, Indian Institute of Technology Kanpur. **Kanpur India**. December 2017-May 2018, Host. Prof. Dipak Mazumdar.

Teaching courses:

1. Courses taught at Graduate level

- 1.1 Physical chemistry of materials: 10 semesters
- 1.2 Kinetics of chemical reactions: 6 semesters
- 1.3 Numerical analysis: 10 semesters
- 1.4 Methods of analysis in process metallurgy: 8 semesters
- 1.5 Heat transfer: 2 semesters

2. Courses taught at undergraduate level

- 2.1 Transport phenomena I (momentum transfer): 2 semesters
- 2.2 Transport phenomena II (Heat transfer): 3 semesters
- 2.3 Momentum transport: 1 semester
- 2.4 Research methodology: 1 semester

List of References:

1. Professor **Shin-Ya Kitamura**, Head Kitamura Laboratory, Tohoku University, Institute of Multidisciplinary Research and Advanced Materials (IMRAM), 1,1 Katahira, 2-Chome, Aoba-ku, Sendai 980-8577, Japan. email: kitamura@tagen.tohoku.ac.jp, Mobile phone: + 81-80-3320-3852
2. Professor **Gordon Irons**, Emeritus Professor, McMaster University, Materials Science and Engineering Department, e-mail: ironsga@mcmaster.ca, Phone: + 905 525-9140 ext. 24974
3. Professor **David G. C. Robertson**, Emeritus Professor, Missouri-Rolla Science and Technology University, Materials Science and Engineering Department, e-mail: davidrob@mst.edu, Phone: + 573 341 6469.
4. Professor **Lifeng Zhang**, Dean of the School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing (USTB), No.30, Xueyuan Road, Haidian District, Beijing 100083, P.R. China, email: zhanglifeng@ustb.edu.cn, Office Phone: +86-10-62332267, <http://zhanglife.ustb.edu.cn/>
5. Dr. **Jeremy A. T. Jones**, President at Continuous Improvement Experts, Dallas/Fort Worth USA jatj@earthlink.net, Mobile phone: +1-716-998-1932.

Languages:

1. Spanish: Mother tongue.
2. English: Proficient in both speaking and writing