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Personal Particulars

Age: 64 years
Date of Birth: March 22, 1955
Marital Status: Married
Citizenship: Japanese.



Position

Professor
Dr. Eng

Academic Qualifications

Bachelor of Eng. Dept. of Material Science, Faculty of Eng. Tohoku Univ., 1978
Master of Eng. Dept. of Material Science, Faculty of Eng. Tohoku Univ., 1980
Doctor of Eng. Awarded for a research thesis on "Research in Highly Efficient Stainless Steel Refining Technologies," Kyushu University, 1991

Experience

April 2015 - March 2018 Head of Process & System Engineering Division
Institute of Multidisciplinary Research for Advanced Materials
Tohoku University

April 2005 - Present Professor
Institute of Multidisciplinary Research for Advanced Materials
Tohoku University

October 2003 - March 2005 Head of R&D Center (General Manager)
Nippon Steel & Sumikin Stainless Steel Corp.

April 2001 - September 2003 General Manager
Hikari R&D Lab., Nippon Steel Corp.

March 2001 - April 1997 Group Leader of Refining Process Research
Steelmaking Research Lab., Nippon Steel Corp.

March 2001 Senior Researcher, Chief Researcher
- November 1993 Steelmaking Research Lab., Nippon Steel Corp.

April 1980 Researcher, Senior Researcher
- October 1993 Yawata R&D Lab., Nippon Steel Corp.

Academic Societies

The Iron and Steel Institute of Japan (ISIJ),
The Japan Institute of Metals (JIM),
The mining and Materials Processing Institute of Japan (MMIJ),
The Technical Association of Refractories, Japan
Association for Iron & Steel Technology (AIST)
The Minerals, Metals & Materials Society (TMS)

Chairperson of Refining Forum, Division of High Temperature Processing, ISIJ (April. 2010-March.2012)

Chairperson of Refining Process Research Committee, JSPS 19th Committee, Steelmaking (April 2010- March 2011)

Councilor of JIM (April 2009-2011)

Councilor of ISIJ (April 2011-2013)

Director of JIM (April 2003 – March 2005)

Research Field

The production process of base metals, such as steelmaking process, has an extremely important role in supporting the development of an eco-friendly human society and it becomes to an age of technical innovation toward an eco-friendly society. For the research and development of this field, we have to consider the following points on four different scales:

1) Giga scale: Consider the global impact of the extraction process of base metals from the earth's resources.

2) Mega scale: Enhance the performance and efficiency of reactors to establish eco-friendly production processes.

3) Micro scale: Identify the physical and chemical factors that control the reaction rate and material characteristics.

4) Nano scale: Control the mass transfer rate of molecules among different phases to increase the reaction rate or produce ultrafine structures.

The following researches based on the above four points are being carried out in the field of steelmaking, which is a core process used to produce high-quality steel.

- Development of eco-friendly process using byproduct of process.
- Development of a process simulation model.
- Study on the kinetics of chemical reactions in steelmaking.
- Direct observation of micro scale phenomena at high temperature.

MAIN RESEARCH PROJECTS

- # Extraction and Recovery of Phosphorus from Steelmaking Slag
Grant-in-Aid for Scientific Research (B), JSP, April 2014-March 2017
- # Recovery of Paddy Field Damaged by Tsunami and Earthquake using Steelmaking Slag
ISIJ Innovative Program for Advanced Technology, ISIJ, April 2012- March 2015
- # Structure and composition change of non-metallic inclusion in solid steel
Research group Project, ISIJ, April 2007-March 2011
- # Separation and Recovery of Rare Metals from By-products of Steelmaking
Grant-in-Aid for Scientific Research (B), JSP, April 2009-March 2012
- # Formation of Metal Emulsion by Rising Bubble
Joint Research Project with Nippon Steel Corporation, April 2009- March 2016
- # Oxide Formation Behavior by Oxygen Top Blowing
Joint Research Project with POSCO (Korea), October 2011-2014

INTERNATIONAL COOPERATIONS

Visiting Professor

- ✧ USTB, China, 2011
- ✧ Indian Institute of Science, India, 2009
- ✧ North Eastern University, China, 2015

Member of International Scientific Committee

- ✧ *7th International Congress on the Science and Technology of Steelmaking* 2018, Italy
- ✧ *1st China Symposium on Sustainable Steelmaking* 2018, China
- ✧ *3rd International Conference on Advances in Metallurgical Process and Materials*, 2018, Ukraine
- ✧ *3rd International Conference on Science and Technology of Ironmaking & Steelmaking*, 2017, India
- ✧ *5th International Slag Valorization Symposium*, 2017, Belgium
- ✧ *10th International conference on Molten Slags, Salts & Fluxes*, 2016, USA
- ✧ *SCANMET V*, 2016, Sweden
- ✧ *6th International Congress on the Science and Technology of Steelmaking*, 2015, China
- ✧ *2nd International Conference on Advances in Metallurgical Process and Materials*, 2015, Ukraine
- ✧ *4th International slag valorization symposium*, 2015, Belgium
- ✧ *Shechtman International Symposium*, 2014, Mexico
- ✧ *5th International Congress on the Science and Technology of Steelmaking* 2012, Germany
- ✧ *Asia Steel International Conference*, 2012, China
- ✧ *8th Korea-Japan Workshop on Science and Technology in Ironmaking and Steelmaking*, 2012, Korea
- ✧ *International Conference on Advanced Materials and Materials Processing*, 2011, India

AWARDS

- **President Award**, Nippon Steel Excellent R&D Project
Hot Metal Pretreatment Process using Converter, 1998
Innovative Vacuum Degassing Process, 1993
Production Technology of Clean Rail, 1993
Segregation Free Technology of Continuous Casting, 1985
- **Wakabayashi Award**, The Technical Association of Refractories, Japan, 2014, 2015

PUBLICATIONS (from 2008.2 to 2019.5)

Book (co-author)

- 1) “1.3 Hot Metal Pretreatment”, Treatise on Process Metallurgy, Volume 3: Industrial Processes, pp.177–222, edited by Seshadri Seetharaman, 2014.1, Elsevier
- 2) “10.2.1 History of Stainless Steelmaking, 10.2.2 Fundamental Reaction of Stainless Steelmaking”, Tekkou Binran ver.5, Volume 1: Ironmaking and Steelmaking, pp.379–384, edited by Iron and Steel institute of Japan, 2014.8
- 3) “11.2 From Iron to Steel”, Tetsu no Jiten, pp.537–540, 2014.12, Asakura Shoten
- 4) “Direction of Alloying Elements Added to Steel”, Risaikuru·Haikibutu Jiten, pp.534-535, 2012.1. Sangyou Chousa kai

Journal Publications

- 1) Takayuki Iwama, Chuan-ming Du, Shohei Koizumi, Shigeru Ueda, **Shin-ya Kitamura**; Extraction of phosphorus and recovery of phosphate from steelmaking slag by selective leaching, *Tetsu-to-Hagané*, 105[4](2019), pp.479-487. (Japanese)
- 2) Dong-jun Shin, Xu Gao, Shigeru Ueda, **Shin-ya Kitamura**; Measurement of the activity coefficients of P and Mn in carbon-saturated Fe-P-Mn-C alloy, *Metall. Mater. Trans. B*, 50B[4], pp.825-833
- 3) Ningning Lv, Xu Gao, Shigeru Ueda, **Shin-ya Kitamura**; Measurement on the interaction parameter between Al and Mo in molten steel, *Tetsu-to-Hagané*, 105[3] (2019) pp.378-381. (Japanese)
- 4) Kengo Sugiyama, Xu Gao, Shigeru Ueda, **Shin-ya Kitamura**; Interaction parameter between Al and Sn in molten high Al steel, *Tetsu-to-Hagané*, 105[3] (2019) pp.373-377. (Japanese)
- 5) Chunyang Liu, Xu Gao, Shigeru Ueda, **Shin-ya Kitamura**; Change in composition of inclusions through the reaction between Al-killed steel and the slag of CaO and MgO saturation, *ISIJ Inter.*, 59[2] (2019) pp. 268-276
- 6) Tsuyoshi Yamazaki, **Shin-ya Kitamura**, Tooru Matsumiya; Effect of liquid phase in flux on hot metal desulfurization by mechanical stirring process, *Tetsu-to-Hagané*, 105[1] (2019) pp.1-9. (Japanese)
- 7) Chuan-ming Du, Xu Gao, **Shin-ya Kitamura**; Measures to decrease and utilize steelmaking slag, *J. Sustain. Metall.*, 5 [1] (2019) pp.141-153.
- 8) Chuan-ming Du, Xu Gao, Shigeru Ueda, **Shin-ya Kitamura**; Effect of Fe²⁺/T.Fe ratio on the dissolution behavior of P from steelmaking slag with high P₂O₅ content, *J. Sustain. Metall.*, 4[4] (2018) pp.434–454.
- 9) **Shin-ya Kitamura**, Ken-ichiro Naito, Goro Okuyama; History and latest trends in converter practice for steelmaking in Japan, *Miner. Process. Extr. Metall.*, 128[1-2] (2019) pp.34–45
- 10) Ningning Lv, Xu Gao, Shigeru Ueda, **Shin-ya Kitamura**; Measurement on interaction parameter between Co and Al in molten high Al steel, *ISIJ Inter.*, 58[12] (2018) pp. 2258–2261
- 11) Yasuhiro Tanaka, Farshid Pahlevani, Karen Privat, Suk-chun Moon, Rian Dippenaar, **Shin-ya Kitamura**, Veena Sahajwalla; Engulfment behavior of inclusions in high-carbon steel: Theoretical and experimental investigation, *Metall. Mater. Trans. B*, 49B[12] (2018) pp.2986–2997
- 12) Chunyang Liu, Motoki Yagi, Xu Gao, Sun-joong Kim, Fuxiang Huang, Shigeru Ueda, **Shin-ya Kitamura**; Dissolution behavior of Mg from magnesia-chromite refractory into Al-killed molten steel, *Metall. Mater. Trans. B*, 49B[10] (2018) pp.2298–2307
- 13) Tsuyoshi Yamazaki, Yuji Ogawa, Masayuki Arai, **Shin-ya Kitamura**, Tooru Matsumiya; Critical condition for formation of accretion at gas-injection nozzle tip and cooling capacity of gas, *Tetsu-to-Hagané*, 104[8] (2018) pp.409-416. (Japanese)
- 14) Chuan-ming Du, Xu Gao, Shigeru Ueda, **Shin-ya Kitamura**; Effect of Slag Composition on the Dissolution of Phosphorus from Steelmaking Slag by Selective Leaching, *ISIJ Inter.*, 58[9] (2018)

pp. 1659–1668

- 15) Takayuki Iwama, Chuan-ming Du, Xu Gao, Sun-joong Kim, Shigeru Ueda, **Shin-ya Kitamura**; Extraction of Phosphorus from Steelmaking Slag by Selective Leaching Using Citric Acid, *ISIJ Inter.*, 58[7] (2018) pp.1351–1360
- 16) Sun-Joong Kim, Hanae Tago, Kyung-ho Kim, **Shin-ya Kitamura**, Hiroyuki Shibata; Diffusion Behavior of Mn and Si Between Liquid Oxide Inclusions and Solid Iron-Based Alloy at 1473 K, *Metall. Mater. Trans. B*, 49B[6] (2018), pp. 977-987
- 17) Lichun Zheng, Kazuya Hosoi, Shigeru Ueda, Xu Gao, **Shin-ya Kitamura**, Yoshinao Kobayashi; Si-rich phases and their distributions in the oxide scale formed on 304 stainless steel at high temperatures, *J. Nucl. Mater.* 507 (2018) pp.327-338
- 18) Lichun Zheng, Kazuya Hosoi, Shigeru Ueda, Xu Gao, **Shin-ya Kitamura**, Yoshinao Kobayashi, Ayako Sudo ; Chemical interactions between pre-oxidized Zircaloy-4 and 304 stainless steel-B4C melt at 1300 °C, *J. Nucl. Mater.* 507 (2018) pp.361-370
- 19) Lichun Zheng, Kazuya Hosoi, Shigeru Ueda,, Xu Gao, **Shin-ya Kitamura**, Yoshinao Kobayashi ; Oxidation behaviour of Zr-1.7Sn-2.3Hf alloy in nitrogen-containing steam at 1200°C, *Corros. Sci.*, 140(2018), pp.363-373
- 20) Chuan-Ming Du, Xu Gao, Shigeru Ueda, **Shin-ya Kitamura** ; Effect of Na₂O Addition on Phosphorus Dissolution from Steelmaking Slag with High P₂O₅ Content, *J. Sustain. Metall.*, 3[4], (2017), pp.671-682.
- 21) Xu Gao, Ryosuke Sasaki, Lichun Zheng, Shigeru Ueda, Sun-joong Kim, **Shin-ya Kitamura**, Yoshinao Kobayashi; Interaction between B₄C, 304 stainless steel, and Zircaloy-4 in H₂O/H₂ atmosphere at 1473 K, *J. Nuclear Sci. & Tech.*, 55[4] (2018), pp.400-409
- 22) Chuan-Ming Du, Xu Gao, Shigeru Ueda, **Shin-ya Kitamura**; Distribution of P₂O₅ and Na₂O Between Solid Solution and Liquid Phase in the CaO-SiO₂-Fe₂O₃-P₂O₅-Na₂O Slag System with High P₂O₅ Content. *Metall. Mater. Trans. B*, 49B[1] (2018), pp.181-187
- 23) Ryosuke Mihara, Xu Gao, Sun-joong Kim, Shigeru Ueda, Hiroyuki Shibata, Min Oh Seok, **Shin-ya Kitamura**; Effect of Si Content on Oxide Formation on Surface of Molten Fe-Cr-C Alloy Bath During Oxygen Top Blowing. *Metall. Mater. Trans. B*, 49B[1] (2018), pp.146-158
- 24) Chunyang Liu, Motoki Yagi, Xu Gao, Sun-joong Kim, Fuxiang Huang, Shigeru Ueda, **Shin-ya Kitamura**; Kinetics of Transformation of Al₂O₃ to MgO·Al₂O₃ Spinel Inclusions in Mg-Containing Steel. *Metall. Mater. Trans. B*, 49B[1] (2018), pp.113-122
- 25) **Shin-ya Kitamura**; Dissolution of solid oxide into molten slag. *Taikabutsu*,69[9], (2017), pp.426-431. (Japanese)
- 26) **Shin-ya Kitamura**; Dissolution behavior of lime into steelmaking slag. *ISIJ Inter.*,57[10], (2017), pp.1670-1676
- 27) Nobuhiro Maruoka, Akihisa Ito, Miho Hayasaka, **Shin-ya Kitamura**, and Hiroshi Nogami; Enhancement of quicklime dissolution in steelmaking slags by utilizing residual CO₂ from quicklime. *ISIJ Inter.*,57[10], (2017), pp.1677-1683
- 28) Masanori Tanno, Jiang Liu, Xu Gao, Sun-joong Kim, Shigeru Ueda, and **Shin-ya Kitamura**; Influence of the Physical Properties of Liquids and Diameter of Bubble on the Formation of Liquid Column at the Interface of Two Liquid Phases by the Rising Bubble. *Metall. Mater. Trans. B*, 48B[6] (2017), pp. 2913-2921
- 29) Jiang Liu, Sun-joong Kim, Xu Gao, Shigeru Ueda, and **Shin-ya Kitamura**; Metal Emulsion Behavior of Droplets with Various Sizes in the Na₂B₄O₇/Sn Alloy System by Bottom Bubbling Gas and its Comparison with the Chloride/Sn System. *Metall. Mater. Trans. B*, 48B[5] (2017), pp. 2583-2594
- 30) Jiang Liu, Sun-joong Kim, Xu Gao, Shigeru Ueda, and **Shin-ya Kitamura**; Metal Emulsion in Sn alloy/oxide system by bottom gas injection. *ISIJ Inter.*,57[4], (2017), pp.615-624
- 31) Kengo Sugiyama, Shigeru Ueda, Xy Gao, Sun-joong Kim, and **Shin-ya Kitamura**; Measurement of interaction parameter between Cu and Al in molten high Al steel. *ISIJ Inter.*,57[4], (2017), pp.625-629
- 32) Xu Gao, Sun-joong Kim, Hideomi Minoshima, Toyoaki Ito, and **Shin-ya Kitamura**; Effect of the

- mineralogical phases in steelmaking slag fertilizer on the dissolution behavior of nutritious elements and rice growth. *J. Sustain. Metall.*,3[2], (2017), pp.207-218
- 33) Duk-Yong Song, Govind. S. Gupta, Nobuhiro Maruoka, Hiroyuki Shibata, **Shin-ya Kitamura**, Victor Rudolph; Study of two phase emulsion systems. *Trans. Indian Inst. Met.*,70[8], (2017), pp.2027-2038.
 - 34) Hiroki Yoshida, Xu Gao, Shohei Koizumi, Sun-joong Kim, Shigeru Ueda, Takahiro Miki , **Shin-ya Kitamura**; Arsenic removal from contaminated water using the CaO-SiO₂-FeO glassy phase in steelmaking slag. *J. Sustain. Metall.*,3[3], (2017), pp.470-485.
 - 35) Chuan-ming Du, Xu Gao, Sun-joong Kim, Shigeru Ueda and **Shin-ya Kitamura**; Effects of Cooling Rate and Acid on Extracting Soluble Phosphorus from Slag with High P₂O₅ Content by Selective Leaching. *ISIJ Inter.*, 57[3] (2017), pp.487-496
 - 36) Duk-Yong Song, Nobuhiro Maruoka, Hiroyuki Shibata, **Shin-ya Kitamura** and Naoto Sasaki; Influence of Bottom Bubbling Rate on Formation of Metal Emulsion in Sn-Sb-Cu Alloy and Molten Salt System. *ISIJ Inter.*, 57 [2] (2017), pp. 236–244
 - 37) Hironori Yoshida, Jiang Liu, Sun-Joong Kim, Xu Gao, Shigeru Ueda, and **Shin-ya Kitamura**; Influence of the Interfacial Tension on the Droplet Formation by Bubble Rupture in Sn(Te) and Salt System. *ISIJ Inter.*, 56[11] (2016), pp. 1902–1909
 - 38) **Shin-ya Kitamura**, Masafumi Zeze and Jyunji Nakashima; Multi-phase Flow of Liquid/Liquid System in Steelmaking Process. *Jap. J. Multiphase Flow*, 30[3](2016), 266-273 (Japanese)
 - 39) Chuan-ming Du, Xu Gao, Sun-joong Kim, Shigeru Ueda, and **Shin-ya Kitamura**; Effects of Acid and Na₂SiO₃ Modification on the Dissolution Behavior of 2CaO·SiO₂·3CaO·P₂O₅ Solid Solution in Aqueous Solutions. *ISIJ Inter.*, 56[8] (2016), pp. 1436–1444.
 - 40) Xu Gao, Toyooki Ito, Hisashi Nasukawa and **Shin-ya Kitamura**; Application of Fertilizer Made of Steelmaking Slag in the Recovery of Paddy Fields Damaged by the Tsunami of 2011. *ISIJ Inter.*, 56 [6](2016), pp.1103–1110.
 - 41) Hironori Yoshida, Jiang Liu, Sun-joong Kim, Xu Gao, Shigeru Ueda, Nobuhiro Maruoka, Shinpei Ono, and **Shin-ya Kitamura**; Direct Observation of Formation Behavior of Metal Emulsion in Sn/Salt System. *Metall. Mater. Trans. B*, 47B[4] (2016), pp.2498-2508.
 - 42) Ryosuke Sasaki, Shigeru Ueda, Sun-joong Kim, Xu Gao and **Shin-ya Kitamura**; Reaction behavior between B₄C, 304 grade of stainless steel and Zircaloy at 1473K. *J. Nuclear Mater.*, 477(2016), pp.205-214.
 - 43) Volodymyr Shatokha, and **Shin-ya Kitamura**; Preface to the Special Topic on AdMet 2015. *J. Sustain. Metall.* 2[2] (2016), p.105
 - 44) Fuxing Huang, Nobuhiro Maruoka and **Shin-ya Kitamura**; Dissolution Behaviors of FeO-MgO Solid solutions in Molten Slags. *Taikabutsu*, 68[4] (2016), pp.165-175 (Japanese)
 - 45) Ryosuke Mihara, Xu Gao, Shigeru Kaneko, Sun-joong Kim, Shigeru Ueda, Hiroyuki Shibata, Min Oh Seok, and **Shin-ya Kitamura**; Observation of Oxide Formation for Molten Fe-Cr-C Alloy at a High Carbon Region by Oxygen Top Blowing. *Metall. Mater. Trans. B*, 47B[2] (2016), pp.1035-1051
 - 46) Sun-Joong Kim, Junpei Suzuki, Xu Gao, Shigeru Ueda, and **Shin-ya Kitamura**; A Kinetic Model to Simulate the Reaction Between Slag and Matte for the Production of Ferromanganese Alloy from Steelmaking Slag. *J. Sustain. Metall.* 2[2] (2016), pp.141-151
 - 47) Takeo Inomoto, **Shin-ya Kitamura** and Masataka Yano; Kinetic Study of the Nitrogen Removal Rate from Molten Steel (Normal Steel and 17 mass%Cr Steel) under CO Boiling or Argon Gas Injection, *ISIJ Inter.*, 55[9], (2015), pp. 1822–1827
 - 48) Ryosuke Sasaki, Shigeru Ueda, Sun-Joong Kim, Xu Gao and **Shin-ya Kitamura**; Reaction between B₄C and austenitic stainless steel in oxidizing atmosphere at temperatures below 1673 K, *J. Nuclear Materials*, 466[11], (2015), pp. 334-342
 - 49) Xu Gao, Nobuhiro Maruoka, Sun-Joong Kim, Shigeru Ueda, and **Shin-ya Kitamura**; Dissolution behavior of nutrient elements from fertilizer made of steelmaking slag under the environment of paddy field after irrigation., *J. Sustain. Metal.*1(2015): DOI:10.1007/s40831-015-0030-8
 - 50) Cheng-Song Liu, Kyung-Ho Kim, Sun-Joong Kim, Jing-She Li, Shigeru Ueda, Xu Gao, Hiroyuki

- Shibata, and **Shin-ya Kitamura** ; Reaction Between MnO-SiO₂-FeO Solid Oxide and Solid Steel Deoxidized by Si and Mn During Heat Treatment at 1473K, *Metallurgical Materials Trans. B*, 46B(2015), pp.1875–1884
- 51) Michimasa Okubo, Nobuhiro Maruoka, Hiroyuki Shibata, Xu Gao, Toyoaki Ito and **Shin-ya Kitamura** ; Long-term Dissolution Characteristics of Various Fertilizer Made of Steelmaking Slag in a Desalted Paddy Soil Environment (Recovery of Paddy Field Damedged by the Tsunami Using Fertilizer Made of Steelmaking Slag-2), *Tetsu-to-Hagané*, 101[8], (2015), pp.457–464 (Japanese)
 - 52) Nobuhiro Maruoka, Michimasa Okubo, Hiroyuki Shibata, Xu Gao, Toyoaki Ito and **Shin-ya Kitamura** ; Improvement of Desalted Paddy Soil by the Application of Fertilizer Made of Steelmaking Slag (Recovery of Paddy Field Damedged by the Tsunami Using Fertilizer Made of Steelmaking Slag-1), *Tetsu-to-Hagané*, 101[8], (2015), pp.445–456 (Japanese)
 - 53) Fuxing Huang, Jiang Liu, Nobuhiro Maruoka and **Shin-ya Kitamura**; Dissolution Behavior of MgO Based Refractories in CaO-Al₂O₃-SiO₂ Slag, *Ironmaking Steelmaking*, 42[7], (2015), pp.553–560
 - 54) Nobuhiro Maruoka, Hiroyuki Shibata, and **Shin-ya Kitamura** ; Phosphorus Distribution Behavior of Solid Iron Reduced from Molten Al₂O₃-CaO-Fe₂O-MgO- SiO₂ System at 1623K, *ISIJ Inter.*, 55[2], (2015), pp.419–427
 - 55) Fuxing Huang, Jiang Liu, Nobuhiro Maruoka, **Shin-ya Kitamura** and Akira Ishikawa; Dissolution Rates of Solid Oxides into Molten Slags, *Int. J. Appl. Ceram. Technol.*, 1-6 (2014).
 - 56) Xu Gao, Michimasa Okubo, Nobuhiro Maruoka, Hiroyuki Shibata Toyoaki Ito and **Shin-ya Kitamura** ; Production and Utilisation of Iron and Steelmaking Slag in Japan and the Application of Steelmaking Slag for the Recovery of Paddy Fields Damedged by Tsunami, *Trans. Inst. Min. Metall. C*, (2014), DOI 10.1179/1743285514Y.0000000068
 - 57) Fuxiang Huang, Nobuhiro Maruoka, and **Shin-ya Kitamura**; Dissolution Behavior of FeO-MgO Solid Solution in Molten Slag, *Journal of the Technical Association of Refractories, Japan*, 34[4], (2014), pp.215–225
 - 58) Ryutaro Shiba, Md. Azhar Uddin, Yoshiei Kato and **Shin-ya Kitamura**; Solid/liquid Mass Transfer Correlated to Mixing Pattern in a Mechanically-stirred Vessel, *ISIJ Inter.*, 54[12], (2014), pp.2754–2760
 - 59) Kyung-Ho Kim, Hiroyuki Shibata, and **Shin-ya Kitamura**. Influence of Sulfur on the Reaction between MnO–SiO₂–FeO Oxide and Fe–Mn–Si Solid Alloy by Heat Treatment, *ISIJ Inter.*, 54[12], (2014), pp.2678–2686
 - 60) Akifumi Harada, Nobuhiro Maruoka, Hiroyuki Shibata, Masafumi Zeze, Norifumi Asahara, Fuxiang Huang and **Shin-ya Kitamura**; Kinetic Analysis of Compositional Changes in Inclusions during Ladle Refining, *ISIJ Inter.*, 54[10], (2014), pp.2569–2577
 - 61) Akifumi Harada, Gaku Miyano, Nobuhiro Maruoka, Hiroyuki Shibata, and **Shin-ya Kitamura**; Dissolution Behavior of Mg from MgO in Molten Steel Deoxidized by Al, *ISIJ Inter.*, 54[10], (2014), pp.2230–2238
 - 62) Kyung-Ho Kim, Sun-Joong Kim, Hiroyuki Shibata and **Shin-ya Kitamura**; Reaction between MnO–SiO₂–FeO Oxide and Fe–Mn–Si Solid Alloy during Heat Treatment, *ISIJ Inter.*, 54[10], (2014), pp.2144–2153
 - 63) Nobuhiro Maruoka, Duk-Yong Song, Govind S. Gupta, Hiroyuki Shibata and **Shin-ya Kitamura**; Behavior Comparison of (Al, Pb, Sn)-Molten Salt Emulsions Involving Gas Bubbling, *Journal of JSEM*, 14 [Special Issue, Sept.], (2014), s200-204.
 - 64) Masanori Numata, Nobuhiro Maruoka, Sun-Joong Kim and **Shin-ya Kitamura**; Fundamental Experiment to Extract Phosphorus Selectively from Steelmaking Slag by Leaching, *ISIJ Inter.*, 54[8], (2014), pp.1983–1990
 - 65) **Shin-ya Kitamura**, and Farshid Pahlevani; Process Simulation of Dephosphorization Treatment of Hot Metal with High Phosphorus Content, *Tetsu-to-Hagané*, 100[4], (2014), pp.500–508 (Japanese)
 - 66) **Shin-ya Kitamura**, Kimihisa Ito, Farshid Pahlevani and Masaki Mori; Development of Simulation Model for Hot Metal Dephosphorization Process, *Tetsu-to-Hagané*, 100[4], (2014), pp.491–499 (Japanese)

- 67) Akifumi Harada, Nobuhiro Maruoka, Hiroyuki Shibata and **Shin-ya Kitamura**; A Kinetic Model to Predict the Compositions of Metal, Slag and Inclusions during Ladle Refining. Part 2. Condition to Control the Inclusions Composition, *ISIJ Inter.*, 53[12],(2013), pp.2118–2225
- 68) Akifumi Harada, Nobuhiro Maruoka, Hiroyuki Shibata and **Shin-ya Kitamura**; A Kinetic Model to Predict the Compositions of Metal, Slag and Inclusions during Ladle Refining. Part 1. Basic Concept and the Application, *ISIJ Inter.*, 53[12],(2013), pp.2110–2217
- 69) Sun-joong Kim, Jun Takekawa, Hiroyuki Shibata, **Shin-ya Kitamura** and Katsunori Yamaguchi; Influence of Slag Basicity and Temperature on Fe and Mn Distribution between Liquid Fe–Mn–Ca–O–S Matte and Molten Slag, *ISIJ Inter.*, 53[10], (2013), pp.1715–1724
- 70) Nobuhiro Maruoka, Shinpei Ono, Hiroyuki Shibata and **Shin-ya Kitamura**; Equilibrium Distribution Ratio of Phosphorus between Solid Iron and Magnesio-wustite-saturated Al_2O_3 –CaO–Fe_tO–MgO–SiO₂ Slag at 1623K, *ISIJ Inter.*, 53[10], (2013), pp.1709–1714
- 71) Sun-Joong Kim, Jun Takekawa, Hiroyuki Shibata, **Shin-ya Kitamura**, Katsunori Yamaguchi and Youn-Bae Kang; Thermodynamic Assessment of MnO and FeO Activities in FeO–MnO–MgO–P₂O₅–SiO₂–(CaO) Molten Slag, *ISIJ Inter.*, 53[9], (2013), pp.1325–1333
- 72) Smita Kamble, Duk-Yong Song, Abitha Dhavamanai, Govind Sharan Gupta, Nobuhiro Maruoka, **Shin-ya Kitamura**, Hiroyuki Shibata; Modeling of Metal-Slag Emulsion, *High Temperatures– High Pressures*, 42(2013), pp.227–236
- 73) Nobuhiro Maruoka, Akira Ishikawa, Hiroyuki Shibata and **Shin-ya Kitamura**; Dissolution behavior of MgO from Flux and Refractory used for BOF Steelmaking Process, *Taikabutsu*, 65[4], (2013), pp.161–167 (Japanese)
- 74) A.N. Conejo, **S. Kitamura**, N. Maruoka and S.-J. Kim; Effects of Top Layer, Nozzle Arrangement, and Gas Flow Rate on Mixing Time in Agitated Ladles by Bottom Gas Injection, *Metallurgical Materials Trans. B*, 44B(2013), pp.914–923
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