

## Tateo USUI Curriculum Vitae

Professor

Professor emeritus (Osaka University)

Visiting Professor (Federal University of Ouro Preto)

**Personal Data:** Male, Married,

Born on September 7, 1946

### **Education:**

Graduated from Osaka University, Department of Metallurgy, in March, 1969

Graduated from Graduate School of Engineering, Osaka University, Department of Metallurgy, in March, 1974 and at the same time got the degree of Doctor of Engineering from Osaka University

### **Professional Career:**

April, 1974 – December, 1982

Academic staff, Department of Metallurgical Engineering, Osaka University

January, 1983 – March, 1987

Assistant Professor, Department of Metallurgical Engineering, Osaka University

April, 1987 – October, 1995

Associate Professor, Department of Metallurgical Engineering, Osaka University

November, 1995 – March, 2010

Professor, Department of Metallurgical Engineering, Osaka University

April, 2010 – March, 2012

Professor, Department of Mechanical Engineering, Fukui University of Technology

April, 2012 – March, 2017

Guest Professor, Joining and Welding Research Institute, Osaka University

### **Research Experiences:**

- (1) Fluid Dynamics, Heat and Mass Transfer Analyses in and around a single particle, in a packed bed and a reactor
- (2) Reduction Behavior of Iron Ore Agglomerates (Pellets and Sinter) and Kinetic Analyses of their Reaction Rates
- (3) Experimental and Kinetic Analyses on Pre-reduction of Iron Oxide Pellets with Coal Carbonization Gas for Minimizing the Amounts of Coal Used in an In-bath Smelting Reduction Total Process
- (4) Basic Studies on Reduction of Carbon Composite Iron Oxide Pellets using Coke,

Semi-char (from Coal), and Semi-charcoal (from Wood) in order to clarify the Rate Enhancement Effect of Residual Volatile Matter

- (5) Experimental Studies on Gas-Solid-Liquid Transport Phenomena in the Lower Part of a Blast Furnace by using Cold Models
- (6) Basic Studies on Impurity Concentration Control and Purification of Metals for Pig Iron Pre-treatment, Steelmaking Reaction, and Resource-making from Slag and Wastes
- (7) Experimental and Thermodynamical Studies on Environmental Problems, such as CO<sub>2</sub> Emission Control in Steelmaker and Dioxin Emission Control in Sinter Plants and Combustion Furnaces
- (8) Analysis and Control of Carburizing Reaction Rate as well as Basic Studies for Minimizing Hydrocarbon Volume in Carburizing Process of Steel

**Distinguished Activities:**

- (1) Chairman of Research Group in ISIJ (the Iron and Steel Institute of Japan) on Iron Ore Sintering Process for Limonite Ore, twice, in 2000 – 2001 and 2001 – 2005
- (2) Chairman of ICSTI'06 (The 4th International Conference of Science and Technology on Ironmaking), in 2003 – 2007
- (3) Chairman of the High Temperature Process Division in ISIJ, in 2005 – 2007
- (4) Chairman of ISISD 2010 (International Symposium on Ironmaking for Sustainable Development), 2009 - 2010

**Main Awards:**

- (1) Prize of JSME (The Japan Society of Mechanical Engineers) from JSME on Theoretical Treatment of Pulsating Turbulent Pipe Flow, in April, 1977
- (2) Nishiyama Commemorative Prize from ISIJ (The Iron and Steel Institute of Japan) on Transport Phenomena and Reduction Rate Analysis of Iron Oxide Pellet, in April, 1986
- (3) Gakujutsu Kouseki Prize (for distinguished services on Academic Activity) from ISIJ on Ironmaking and Steelmaking in Consideration of Resources and Environment, in March, 2006
- (4) Best Paper Prize from High Temperature Society of Japan on Dioxin Emission Control in Combustion Furnace, in May, 2008
- (5) The Poster Award for 17th IFHTSE Congress, 2008 from The Japan Society for Heat Treatment on Relationship between Vacuum Carburizing Conditions and Surface Carbon Concentration of SNCM815, in October, 2008

- (6) Technical Paper Prize from JSEM (The Japanese Society for Experimental Mechanics) on Simple Removal Method of Dioxin from Exhaust Gases and Liquids, in August, 2009
- (7) Tanigawa – Harris Prize (for distinguished services on Academic Activity in High Temperature Metallurgy) from JIM (The Japan Institute of Metals) on Metals Processing mainly on Ironmaking and Steelmaking in Consideration of Resources and Environment, in March, 2011
- (8) Yamaoka Prize (for distinguished Group Research Activities) from ISIJ in Ironmaking Field, 5 times, in 1986, 1993, 1995, 2003, as a member and in 2007 as the chairman
- (9) Kusumoto Prize (for the Best Student in each Department) from Osaka University, in March, 1969
- (10) Osaka University Prize (for outstanding services on Academic Activity) from Osaka University, in January, 2007
- (11) Nishiyama Medal from ISIJ (The Iron and Steel Institute of Japan) on Iron and Steel Processing in Consideration of Resources and Environment, to be in March, 2019

**List of Papers and Others:**

Separate sheets.

(December 23, 2018)