



## Tetsuya Nagasaka

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### ■Education

Bachelor, Master and Ph.D. in Metallurgy, 1980, 1982 and 1985, respectively, Tohoku University, Sendai, Miyagi, Japan

### ■Career summary

Research Associate, Faculty of Engineering, Tohoku University, 1985-1994

Research Associate, MSE Department, Carnegie-Mellon University, Pittsburgh, PA, USA, 1992-1993

Associate Professor, Graduate School of Engineering, Tohoku University, 1994-2002

Professor, Graduate School of Engineering, Tohoku University, 2002-2003

Professor, Graduate School of Environmental Studies, Tohoku University, 2003-2011

Professor, Graduate School of Engineering, Tohoku University, 2011-

Associate Dean, Graduate School of Engineering, 2015-2018

Dean, Graduate School of Engineering, 2018-2021

### ■Awards / Fellowships

Gold Poster Award, The 8th International Conference on Eco Balance, Tokyo, Japan, 2008

Best Paper Award, Env. Div., Association of Iron and Steel Technology, USA, 2011 and 2021

Yonsei Distinguished Lecturer Award, The BrainKorea21PLUS, Yonsei University, Korea, 2015

Jean-Sébastien Thomas Award, Institute de Recherche Technologique Matériaux Métallurgie et Procédés, 2016

Resource Conservation and Recycling 2017 Most Cited Paper Awards, 2018

## ■Research

After completing his Ph.D. at the graduate school of Engineering, Tohoku University, Tetsu has extensively conducted in basic physicochemical researches on the manufacturing process of base metals such as steel, aluminum and so forth. The researchers conducted during this period are classified into the thermodynamic properties of molten iron alloys and slag, heterogeneous kinetics between molten iron/slag and gas, and phase equilibrium of multicomponent oxides. They are widely cited in the iron and steelmaking engineers.

In parallel with these topics, he has also carried out environmental and recycling-related researches such as thermodynamics of base metal scrap recycling, physicochemical studies on waste melting treatment methods, and research on fixation of CO<sub>2</sub> in atmosphere using steelmaking slag. He has also extended this research interests to econometrics, LCA, material flow analysis, etc. and these methodologies were integrated with the conventional research methods based on material manufacturing process engineering. Due to his challenging works, Tetsu is recognized as a pioneer of unique environmental research so-called "Eco-material processing". Recently he focuses on minor elements such as zinc, phosphorus, and manganese that accompany the steel flow, and because of extremely huge main flow of steel, the steel industry plays a decisive role in the recycling of the alloying elements. He asserts this important issue in many papers. Tetsu's total citation and h-index are approximately 4300 and 36, respectively.

#### ■Professional Associations

Executive, Japanese Society for Engineering Education  
Past President, Eight-University Engineering Association,  
Japan

The Engineering Academy of Japan

The Iron and Steel Institute of Japan

#### ■Languages

Japanese / English

#### ■Publications

*"Natural Resource Use of Gasoline, Hybrid, Electric and Fuel Cell Vehicles Considering Land Disturbances"*, Resources, Conservation and Recycling, 2021

*"Carbothermic Reduction of Phosphoric Acid Extracted from Dephosphorization Slags to Produce Yellow Phosphorus"*, International Journal of Materials and Metallurgical Engineering, 2019

*"The Selective Alkaline Leaching of Zinc Oxide from Electric Arc Furnace Dust Pre-treated with Calcium Oxide"*, Hydrometallurgy, 2016

*"Toward the Efficient Recycling of Alloying Elements from End of Life Vehicle Steel Scrap"*, Resources, Conservation and Recycling, 2015

*"Thermodynamic Analysis on the Contamination by Alloying Element in Aluminum Recycling"*, Environmental Science & Technology, 2010

*"Waste Input-Output Approach to Material Flow Analysis: Concepts and Application to Base Metals"*, Journal of Industrial Ecology, 2007

*"Surface Roughness of Solidified Mold Flux in Continuous Casting Process"*, ISIJ international, 1999