

Endowed Research Unit for Non-ferrous Metals Resource Recovery Engineering (JX Metals Endowed Unit)

[Towards Highly Sustainable Society]

Institute of Industrial Science, Endowed Chairs

Non-ferrous Metals Resource Recovery Engineering

<http://www.metals-recycling.iis.u-tokyo.ac.jp/>

Industry-University Collaboration Center to Develop New Recycling Processes for Metals

Sponsor: JX Nippon Mining & Metals Corporation

Recycling of valuable materials is essential for the sustainable growth of a society. High-quality natural resources are getting depleted, and resource nationalism is rising in countries that are rich in natural resources. Therefore, it is very important for the Japanese society to promote recycling of rare metals and base metals.

This unit develops environmentally friendly processes for recycling based on smelting and refining technologies for nonferrous metals. Furthermore, it aims to train young researchers and engineers in collaboration with industrial sectors in this field.

[Period] 1st period: January 2012 to December 2017 (5 years)
2nd period: January 2017 to December 2021 (5 years)

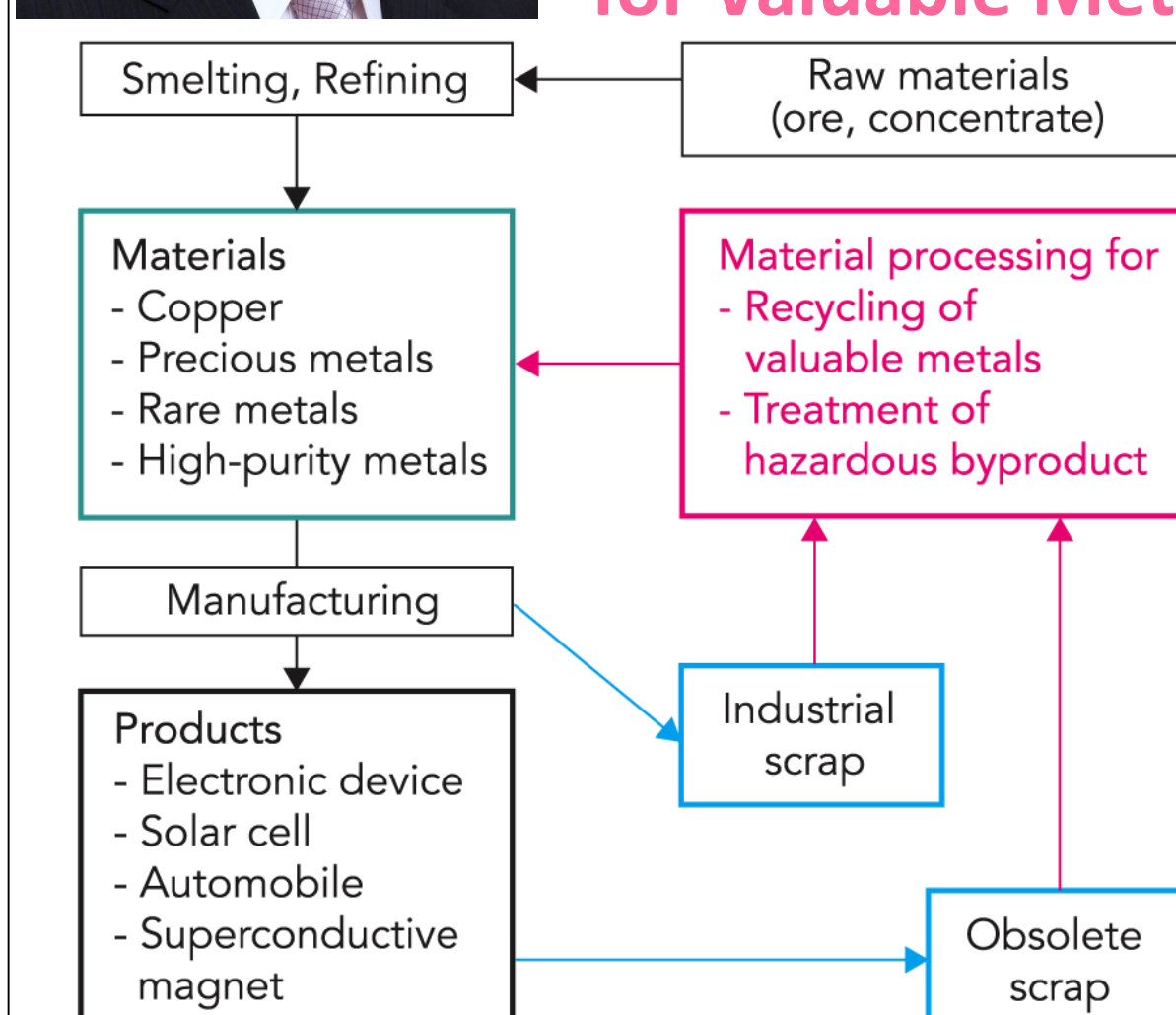
In order to expand the activities of the unit further after five years in the first term, the second term began in January 2017, with the inclusion of Prof. Chiharu Tokoro as a new member. In the second term, this unit will not only further develop the activities undertaken in the first term but also intensify activities to raise awareness of the importance of this field to the general public, especially women and young children (below high-school age).



Project Prof. Masafumi Maeda

Professor, Institute of Industrial Science,
The University of Tokyo

Optimizing Metal Production Processes
& Developing Recycling Methods
for Valuable Metals



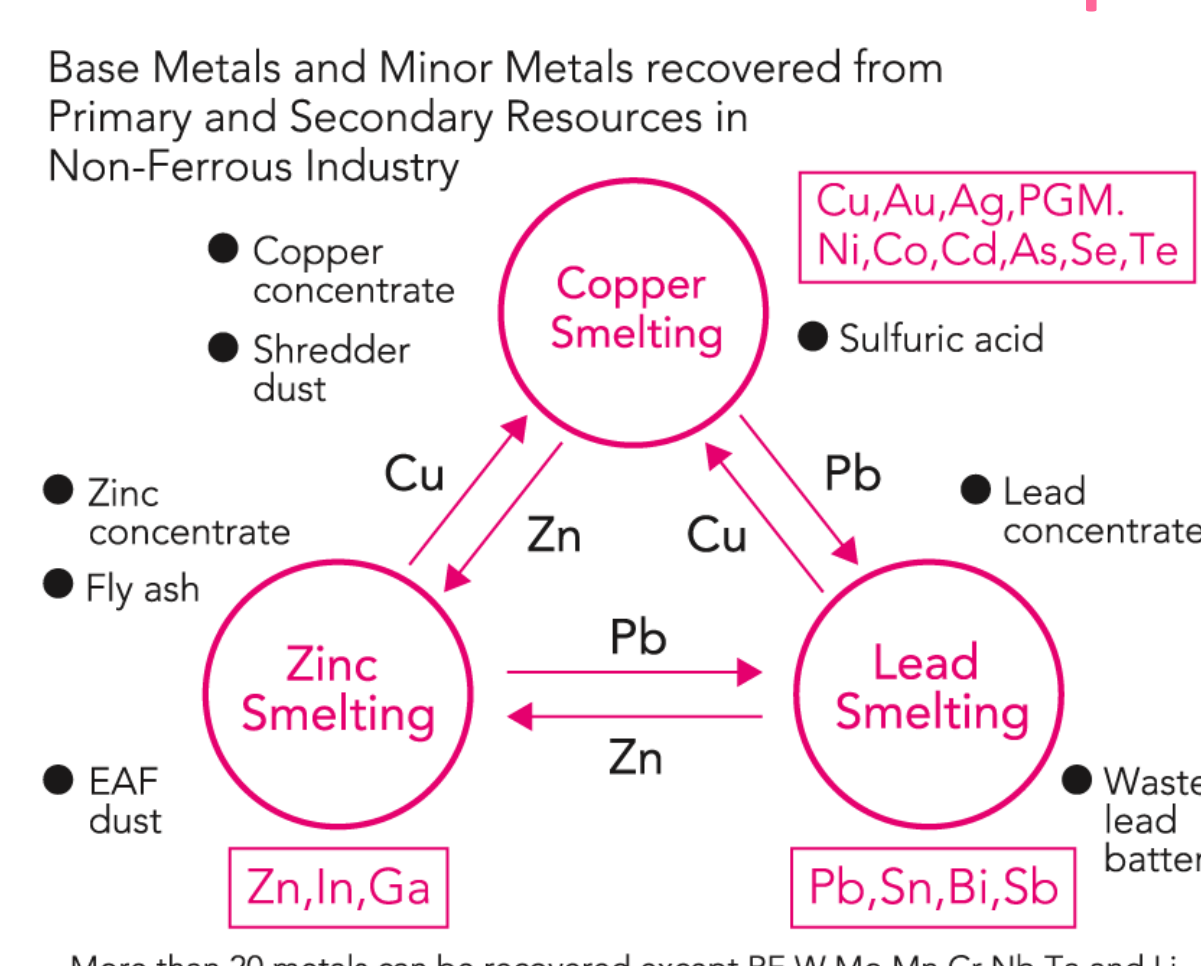
In our laboratory, crucial properties for metal production, such as thermodynamic properties of alloys and oxides and behavior of ions in aqueous solution are investigated. By focusing on chemical thermodynamics and material transfer, improvements in the production processes are realized.



Project Prof. Takashi Nakamura

Professor,
Institute of Multidisciplinary Research
for Advanced Materials,
Tohoku University

Metal Recycling Based on the New Concept
of "Artificial Deposit"



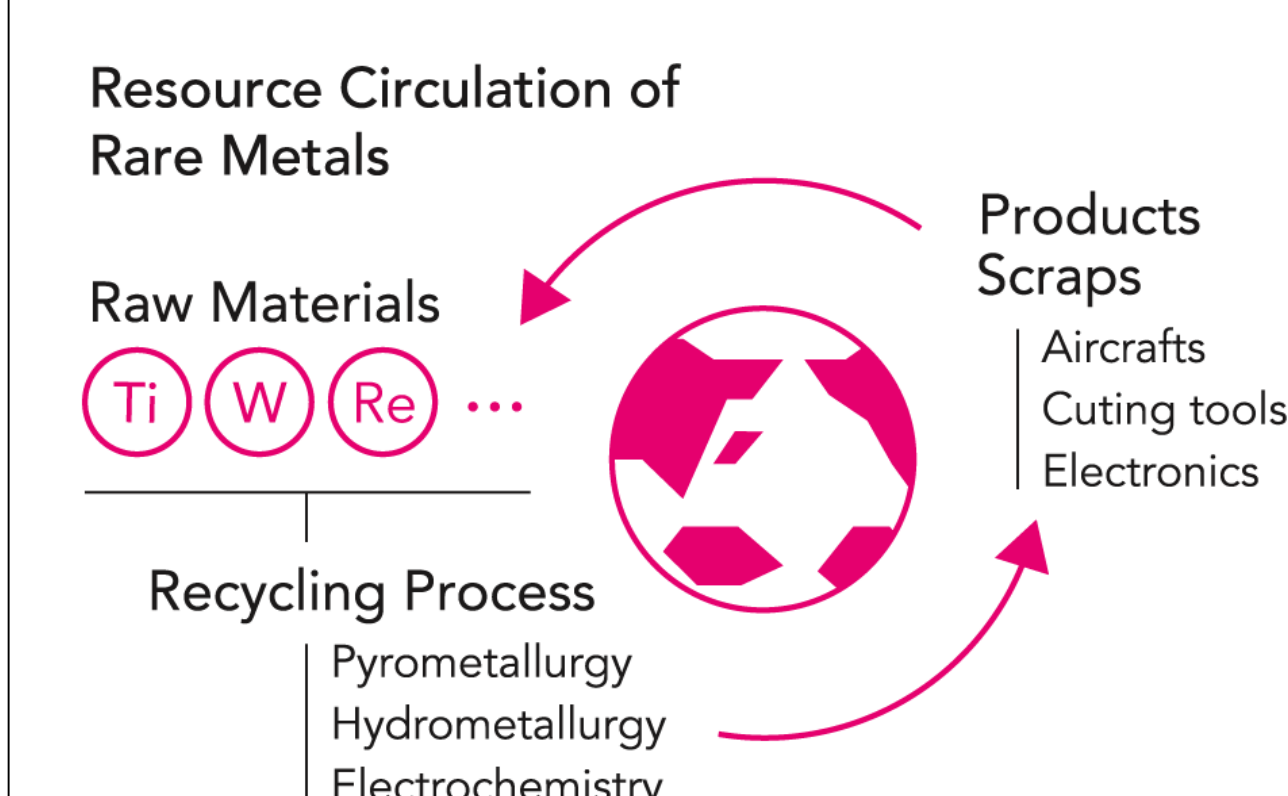
A new concept of "artificial deposit" is proposed. An urban mine has been developed solely on the basis of economic rationality. The wastes, which contain valuable metals that are currently non-recyclable, are reserved as artificial deposits in the proposed system.



Project Prof. Toru H. Okabe

Director Professor,
Integrated Research Center for
Sustainable Energy and Materials,
Institute of Industrial Science, The University of Tokyo

Development of Efficient Recycling Technologies
for Rare Metals



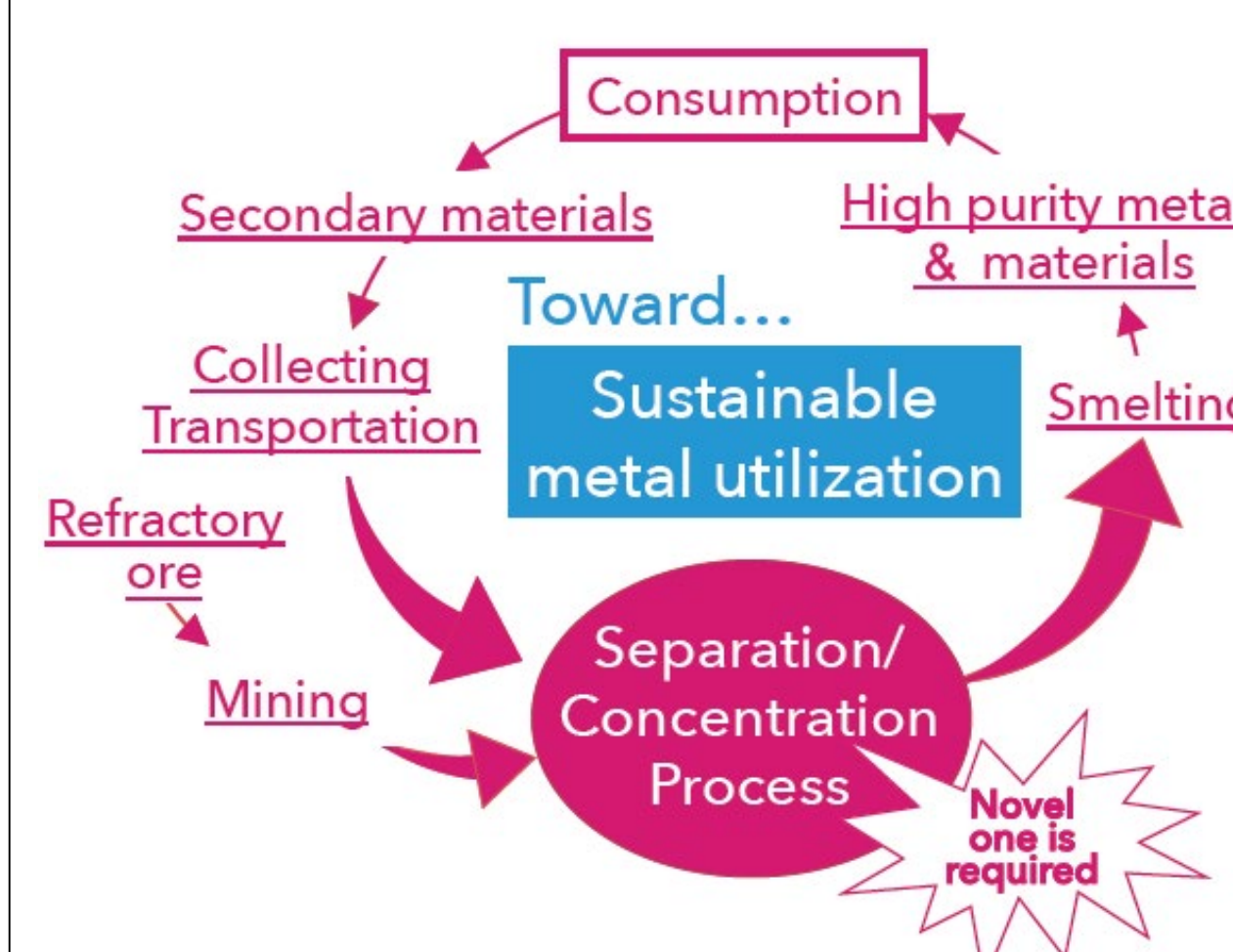
Our laboratory is developing new, efficient and environmentally sound processes to recycle rare metals for which an increase in demand is expected, such as titanium, tungsten, cobalt, rhenium and platinum group metals.



Project Prof. Chiharu Tokoro

Professor, Faculty of Science and Engineering,
Waseda University

Development of Separation and
Concentration Technology to Utilize
Waste/Refractory Ore as "Resource"



In our laboratory, solid / solid separation and concentration technology without heating / dissolving the waste or refractory ore is studied to achieve an energy-saving separation and concentration process. This process is regarded as "pre-treatment" or "middle treatment" before metallurgical / hydrometallurgical process, which produces high-purity metal.