

NAKAMURA LAB.

-Establishment of Sustainable Society from coupling Technology and social system-

International Research Center for Sustainable Materials

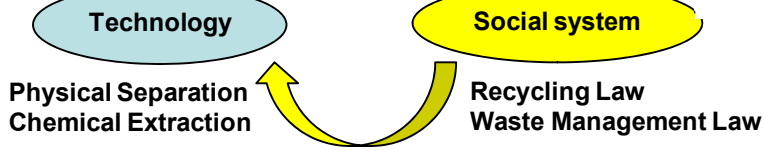
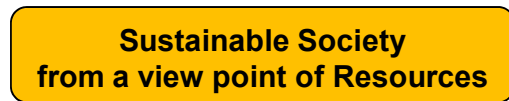
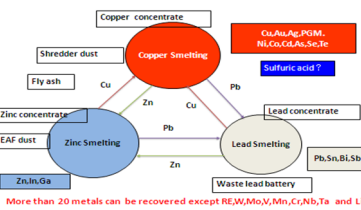
Endowed Research Unit for Non-ferrous Metal Resource Recovery Engineering

Metallurgy and Recycling System for Metal Resources Circulation

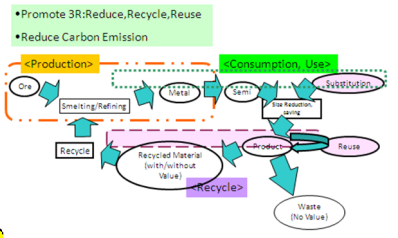
Coupling Technology and social system for Sustainable Society

Concept of Coupling Technology and social system

Base Metals and Minor Metals recovered from Primary and Secondary Resources in Non-Ferrous Industry



Sustainable Material Supply in JAPAN



Our aim is to develop the process technologies and social systems for metal recycling, waste detoxification and energy recovery based on the nonferrous metal smelting industries.

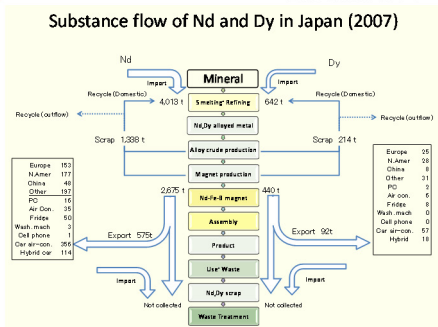
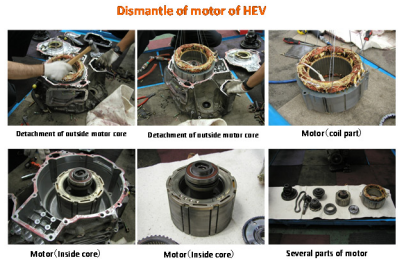
- Thermal and hydro processing for metal recycling and wastes treatment (Chemical Thermodynamics)
- Waste treatments and energy recovery based on the nonferrous metal smelting industries
- Innovative processes of physical separation and washing technology using micro-bubbles and ultrasound (Physical Treatment)

Social System Development Reserve (of Waste) to Stock Project

Artificial Mineral Deposit

- Metal Resource Reservation including Rare Metals
- Management of Harmful Metals contains in the End of Life Products

The definition of resources is "a certain amount of substance with a fixed quality." In many cases, WEEE has a fixed quality, but it is difficult to collect a certain amount. Introducing the concept of "Accumulation", we are aiming the realization of "Resource circulation".



The recovery of Nd and Dy from waste Nd magnet is of great importance. In the research, we investigate a new recycling process of waste magnet which can selectively extract the rare earth elements by using oxide flux.