

SHIBAYAMA LAB.

[Mineral processing and Recycling]

International Research Centre for Sustainable materials

Akita University
Graduate school of
Engineering and
Resource Science

<http://susmat.iis.u-tokyo.ac.jp/>

Mineral processing and Recycling Engineering

Theme1: Investigation of metallurgical process for metals recovery from E-waste



Background

Metallurgical process

Leaching process



Recovery process

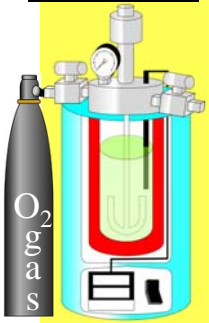
Separation and recovery of metals from the leachate. (Now testing)



High O₂ pressure leaching

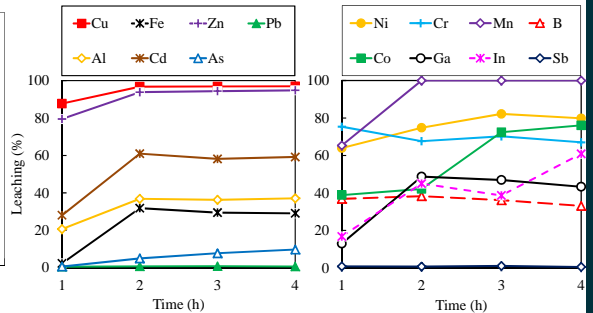
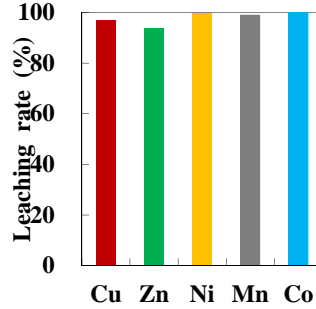
Results

Autoclave

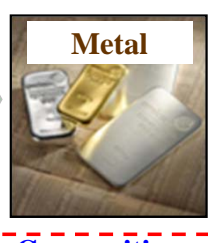
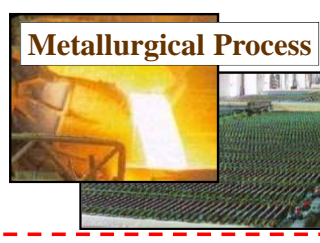


<Leaching conditions>

Time	0.5 h
Temperature	120 °C
O ₂ pressure	2 MPa
H ₂ SO ₄ concentration	1 mol/L
Pulp density	100 g/L



Theme2: Recovery of Valuable Metals in E-waste by Chlorination-Volatilization and Hydrometallurgical Process



Recovery of metals in E-waste by Chlorination - Volatilization and Hydrometallurgical Process

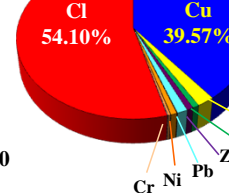
Composition of

Volatilized Products

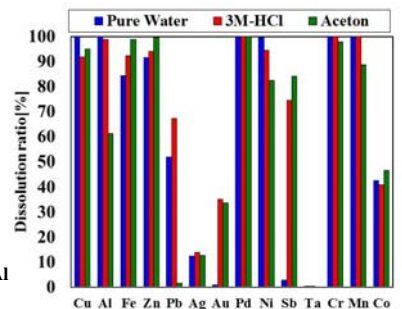
Volatilized Products



Composition of Volatilized Products

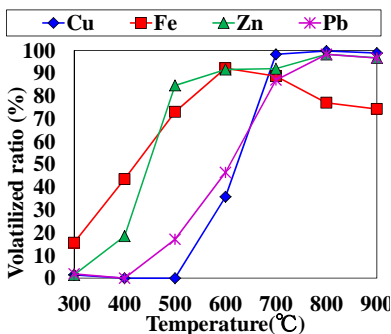


The dissolution test using volatilization product



Effect of temperature on volatilization of metals

Base Metals



Rare & Precious Metals

