

# TOKORO LAB.

## [Resource Circulation, Separation-Concentration Powder Processing]



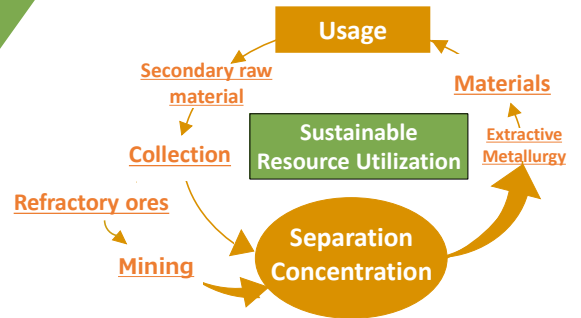
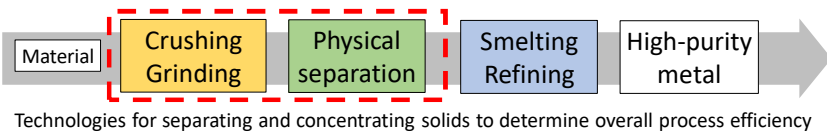
Endowed Research Unit for Non-ferrous Metal  
Resource Recovery Engineering  
(JX Metals Endowed Unit)

Environmental Resource Processing Engineering

<http://www.metals-recycling.iis.u-tokyo.ac.jp/chiharutokoro.html>  
<http://www.tokoro.env.waseda.ac.jp/>

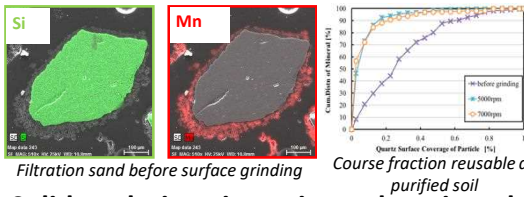
### Technologies for Resource Circulation / Environmental Restoration

Valorization of the urban mine resources and refractory ores by advanced technologies for solid separation and concentration.

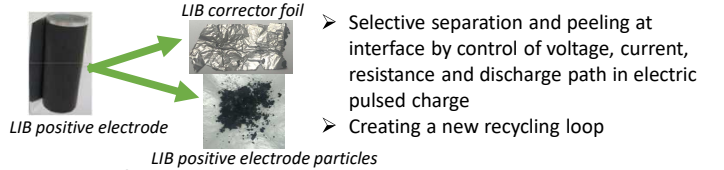


### Special Grinding Technologies for Separation of Solids

#### Soil Remediation by surface grinding

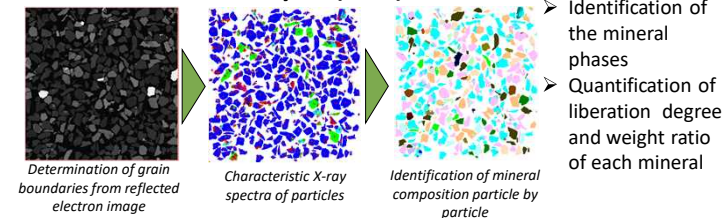


#### High-selective separation by novel electric pulsed charge

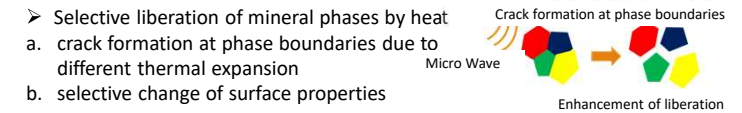


#### Solid analysis to investigate the mineral separation

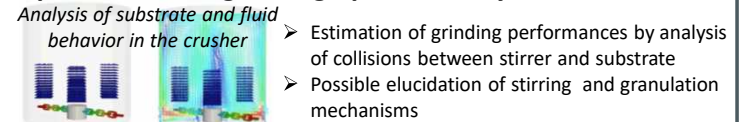
##### Mineral Liberation Analyzer (MLA)



#### Control of minerals separation by microwave irradiation



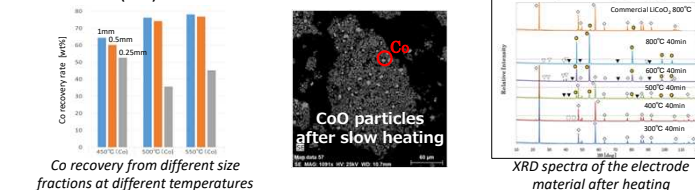
#### Optimization of grinding operations by simulations



### Pretreatment Operations for Improving the Solid Separation

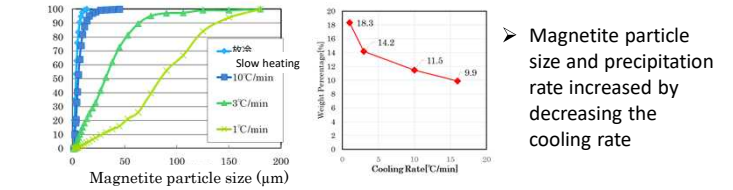
#### Recovery of Co from Li-Ion batteries by slow heating

➢ Process analysis to improve the recovery of valuable metals from Li-ion batteries (LIB)



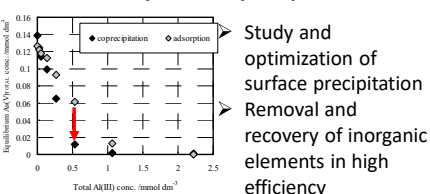
#### Recovery of magnetite by slow-cooling crystallization

➢ Study of the separation of magnetite from an amorphous phase slag via smooth-cooling crystallization and magnetic separation

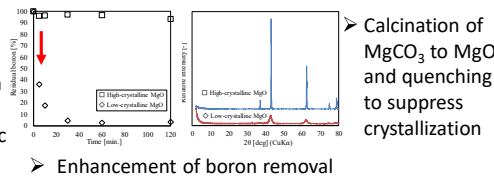


### Advanced Technologies for Environment Remediation

#### As removal by surface precipitation



#### Removal enhancement by amorphization



### Process optimization by combination of geochemical modeling and fluid analysis

