

# OWADA LAB.

## [Environment Friendly Recycling]

International Research Centre for Sustainable Materials

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

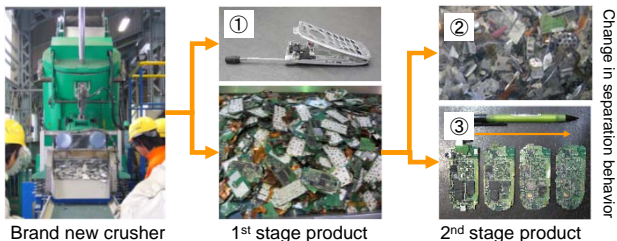
Resources Processing and Recycling

### Concentration of Rare Metals from E-wastes

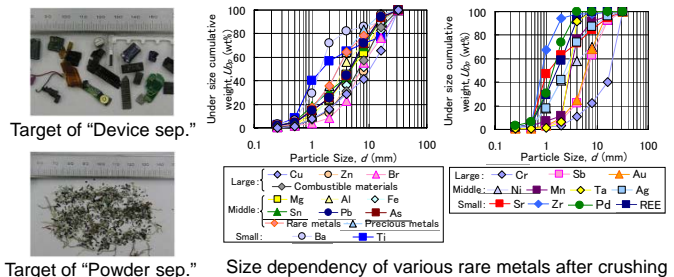
We succeeded to concentrate rare metals from e-wastes of cell phones, PCs, Industrial appliances by combining brand new comminution and physical separation methods. In the process, we applied two kinds of categories, "device separation" and "powder separation", then, the separation mechanisms were clarified.

#### Separation of installed devices from PWBs

- Two stages comminution by brand new crusher
  - ① Utilization of magnets and plastics
  - ② Feed to "device sep." and "powder sep."
  - ③ Recovery of Cu, Au by smelting
- Clarifying the mechanism of device separation from PWB by experiments and DEM simulation.



#### "Device separation" and "Powder separation"

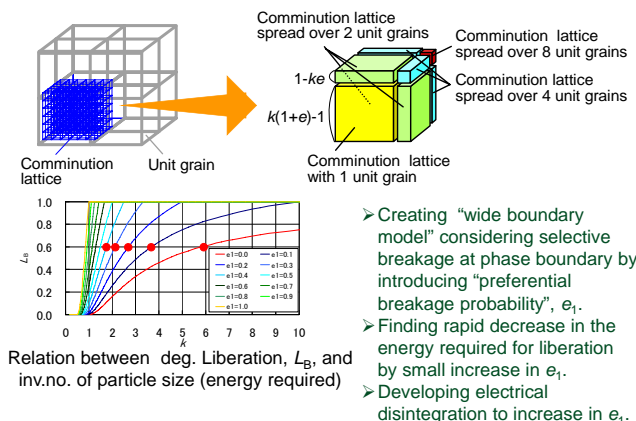


"Device sep.": Color, Eddy current, X-ray trans. Sorting, etc. ➔ Proposal of best flow  
 "Powder sep.": Mag.sep., Tabling, Electrostatic sep., etc.

### Improvement of "Soft Separation" Tech.

We intend to sophisticate "Soft (energy saving) separation" technologies, such as comminution and physical separation, to achieve environment friendly separation process for the purpose of establishing sustainable society.

#### Liberation analysis in comminution



#### Improvement of physical separation by utilizing bulk and surface properties of solids

