

# OWADA LAB.

## [Smart Recycling]

Integrated Research Center for Sustainable Energy and Materials

Materials Separation and Recycling Engineering

<http://susmat.iis.u-tokyo.ac.jp/english/members.html#oowada>

## Smart Recycling

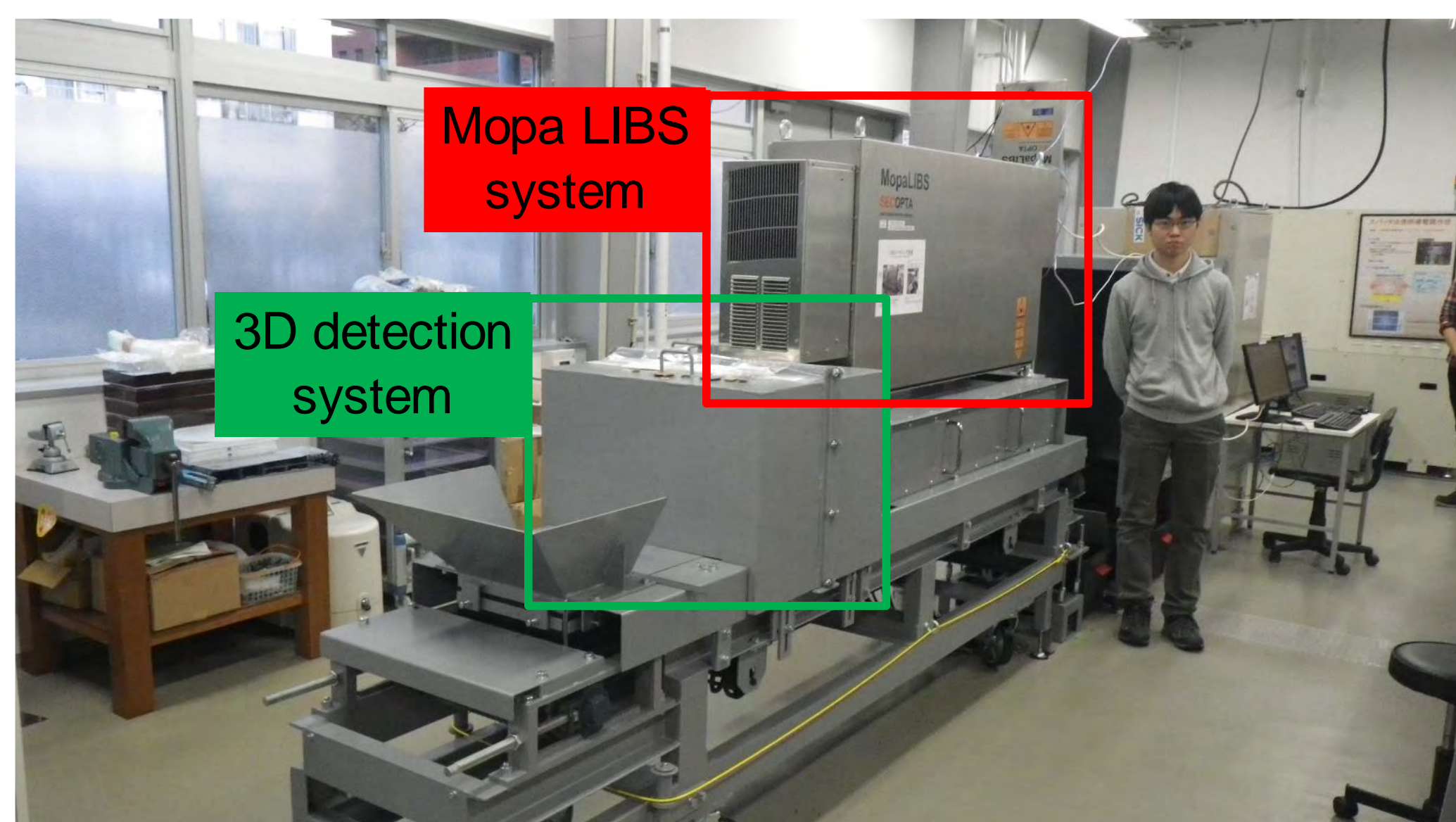
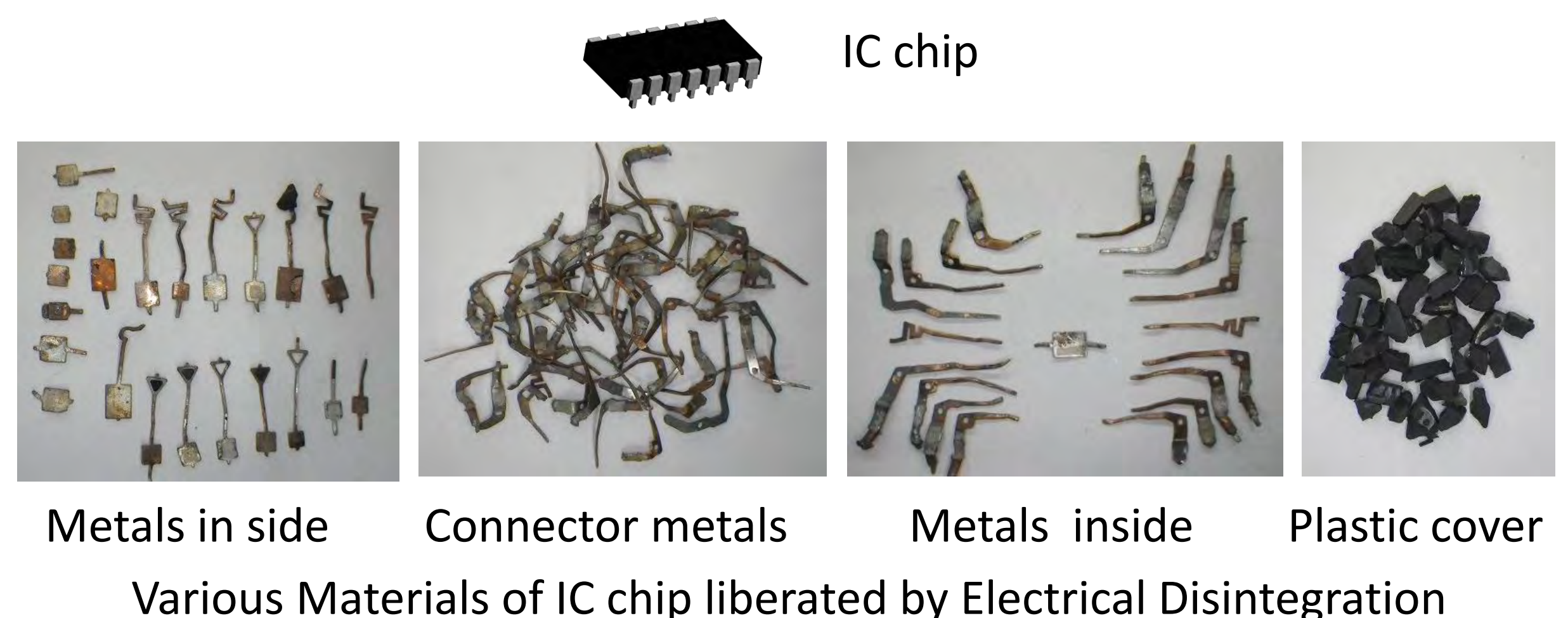
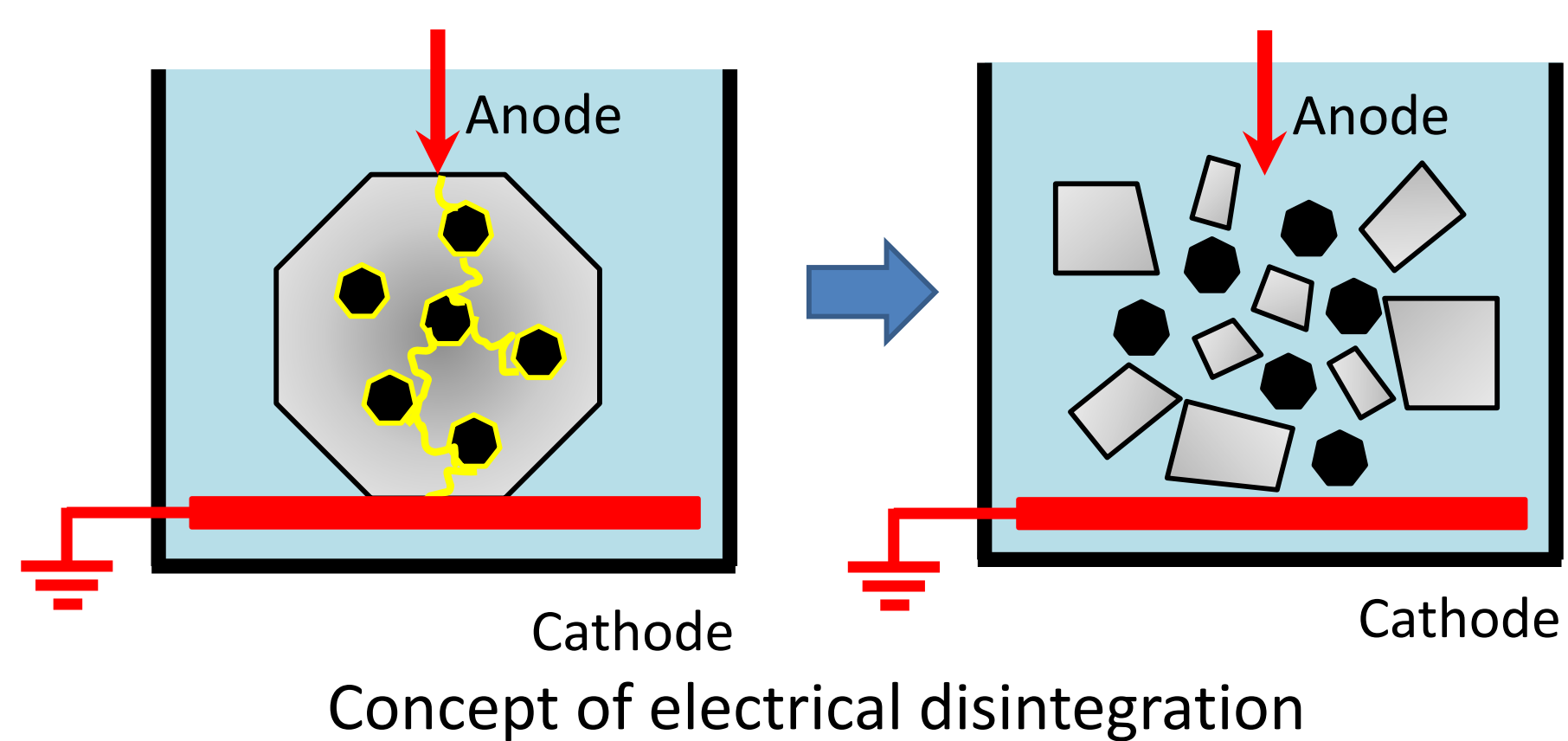
### Smart Comminution and Separation

Since valuable and useless components are mixed in natural and artificial (waste) resources, it is necessary to recover the former elements and to reject or appropriately treat the latter ones. Key technology of solid–solid separation, in other words **“SOFT SEPARATION”**, should be applied with high efficiency and high reliability. In order to achieve the above separation, the following two kinds of technological development is essential.

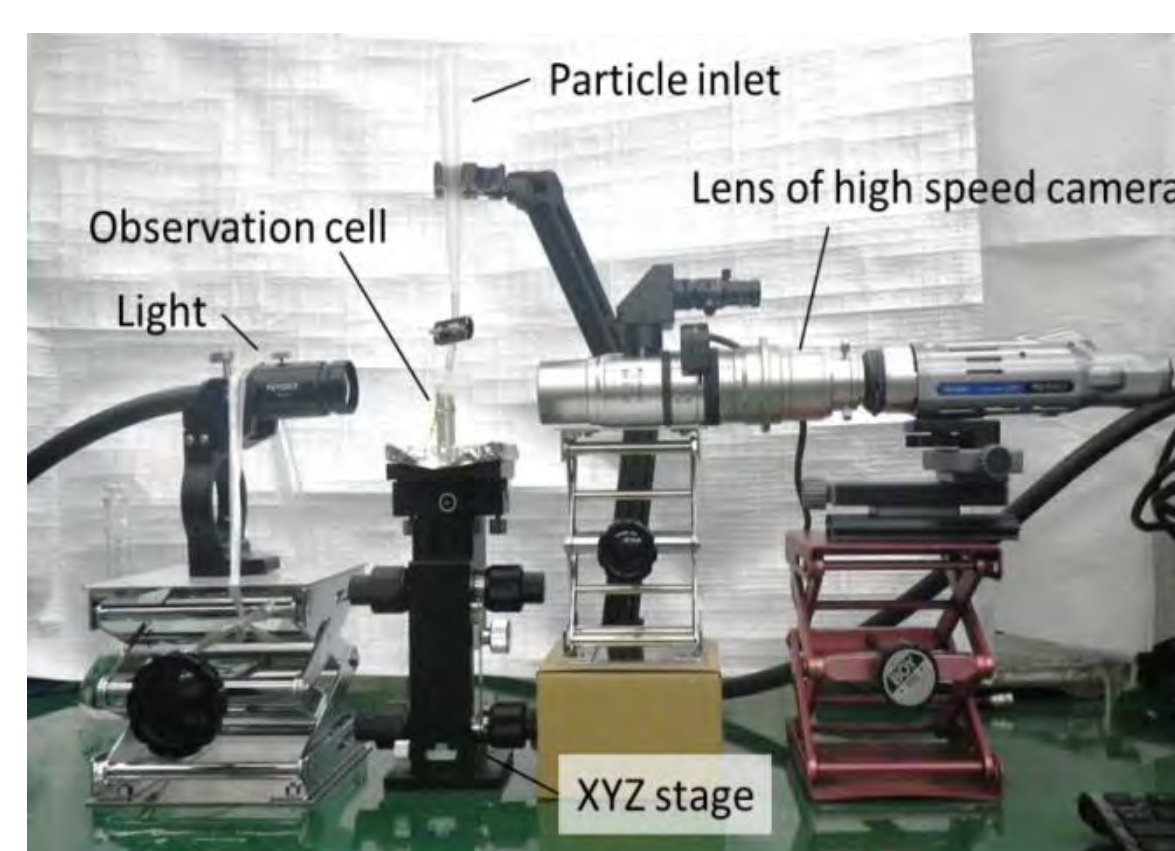
1. **Smart Comminution** to make good liberation of componential elements
2. **Smart Sorting** of compositional elements with high energy efficiency

Followings are examples of research topics.

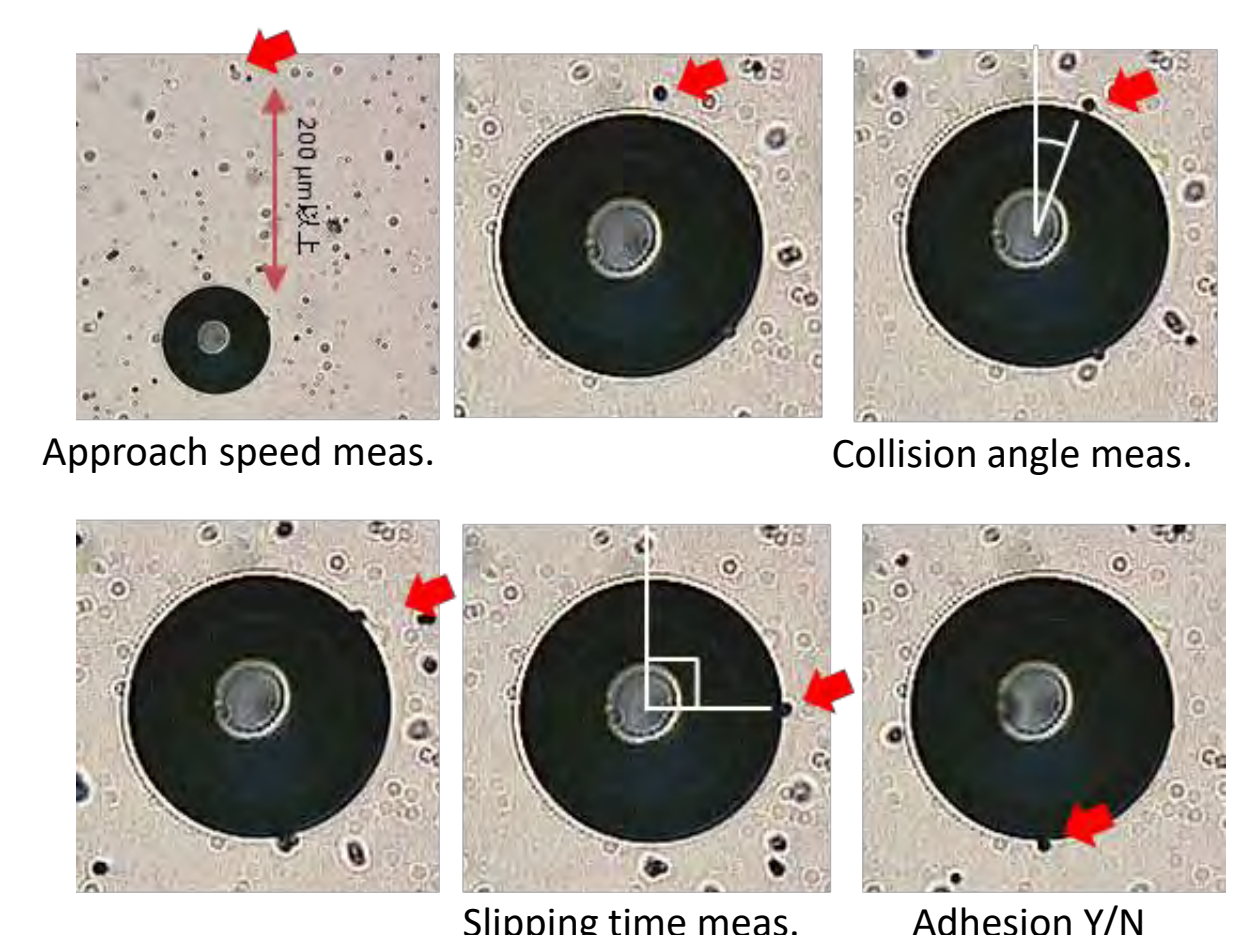
- ◆ **Mechanical comminution** to achieve high liberation
- ◆ Clarification of mechanism of the **electrical disintegration**
- ◆ Development of high performance **sensor based sorting (LIBS · XRF · XRT etc.)** and the process optimization
- ◆ Stochastic and rheological study on **flotation**
- ◆ Production of high purity glass materials from spent PV panels
- ◆ Recovery of **precious (heavy) metals** from **incineration bottom ash**



The first developed LIBS sorter in the world, Feb, 2015



Equipment for measuring bubble-particle adhesion



Measuring process of bubble-particle adhesion