METHODS AND APPARATUSES FOR FACILITATING HEAVY METAL AND RARE EARTH ELEMENTS RECOVERED FROM WEEE (Waste Electrical and Electronic Equipment), SLUDGE,AND TAILING

Enhanced Microbial Screening Method

for Recovering Heavy Metal
for Recovering Rare Earth Elements
for Reducing Pollution
for Reducing Health Risks
for Soil Remediation

The Problems of current recover methods

i. Environmental pollution (such as dust, sulfide, cyanide residues, and waste water)
ii. Labor health hazards
iii. Consumes excessive energy and water
iv. Difficult to fully recover the low-grade input materials
v. Consumables or chemical agents requested
vi. Screen Speed Slowly

Applied theory

ROYAL BIOTECH adopts microbial screening methods for solving these problems using extracellular and intracellular digestion. Our pending patents can speed up the cultivation and screening of microorganisms (50 times faster than current efficiencies). This invention, using two cross-applied designs to complete the screening efficiency, is based on microbial metabolism, following adsorption of specific microbes (A) to specific heavy metals (X) and aversion of alternative microbes (B) to specific heavy metals (X)

For more ...

This product & service will adopt technology licensing and cooperation methods to develop the global market. If you have any questions, please do not hesitate to email: Royal Ecosystem, Royal Biotech -- environmental protection section

Application

WEEE recyclers, ICT manufacturers, miners.

Compared with other methods and facilities

i. This innovative method will save 9/10 of energy/water consumption.
ii. No consumables or chemical agents requested.
iii. Manufacturers may save tens of thousands to millions of dollars in daily electricity, water, or chemical reagents.
iv. Safety for labor Health
v. No pollution problems, such as wastewater or air pollution, and more. No health hazard concerns about sulfide, cyanide residues, etc.
vi. Related microbial vectors can be automatically generated repeatedly.
vii. Increase the recovery rate of specific elements and reduce impurity content, it can generate 2% to 200% increased income. Reduce the initial screening base construction cost (for example, the required land area is reduced by 2/3, eliminating investment in flotation equipment and gravity table).
viii. Suitable for the screening and purification of low-grade mines, tailings, rare earth, silt and specific elements of Waste Electrical and Electronic Equipment (WEEE)