Sustainable Mining: Recovery of CM from Waste Materials

Mining and Metallurgical Wastes

- Metallurgical Wastes
- Phosphogypsum
- Red Mud

Acid Mine Drainage

Mine Tailings

Coal Combustion Residue

Fly Ash

Metallurgical Wastes

Phosphogypsum

Red Mud

Consumer end product

- LED lamps
- CRT
- Batteries
- LCD
- Magnet
- Fluorescent lamps
Environmental Biotechnology for Recovery of CM from Wastes

Mobilization

Biosorption

Bioprecipitation

Bioreactor set-up

Bioprocess mechanism
Review

Mechanisms of biological recovery of rare-earth elements from industrial and electronic wastes: A review

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