"Extraction material and powder technology"

1- Introduction to extraction metallurgy

1- Source of metal
2- Flow sheet of process
3- Method of beneficiation
   o Comminution
   o Classification and concentration
   o Sizing and sorting equipment
     • Magnetic separation
     • Electrostatic separation
     • Flotation (froth flotation)

2- General method of extraction

   o Pyrometallurgy
   o Electrometallurgy
   o Hydrometallurgy

3- Extraction of metals from oxides

   o Extraction of Magnesium, Aluminum, Tin
   o Ferroalloying element (Chromium, Manganese, Silicon)
   o Extraction of metals from Sulphide ores
   o Extraction of Copper, Lead, Zinc
   o Extraction of Nickel, Cobalt, Cadmium

4- Extraction of metals from Halides

   o Extraction of nuclear reaction metals (Uranium, Plutonium, Thorium)
   o Extraction of Zirconium, Beryllium, Titanium

5- Precious metals

   o Extraction of Gold, Silver, Platinum
6-Powder technology

- Atomization
- Milling of brittle and ductile material
- Powder metallurgy
- Coating powder