

Supporting Materials

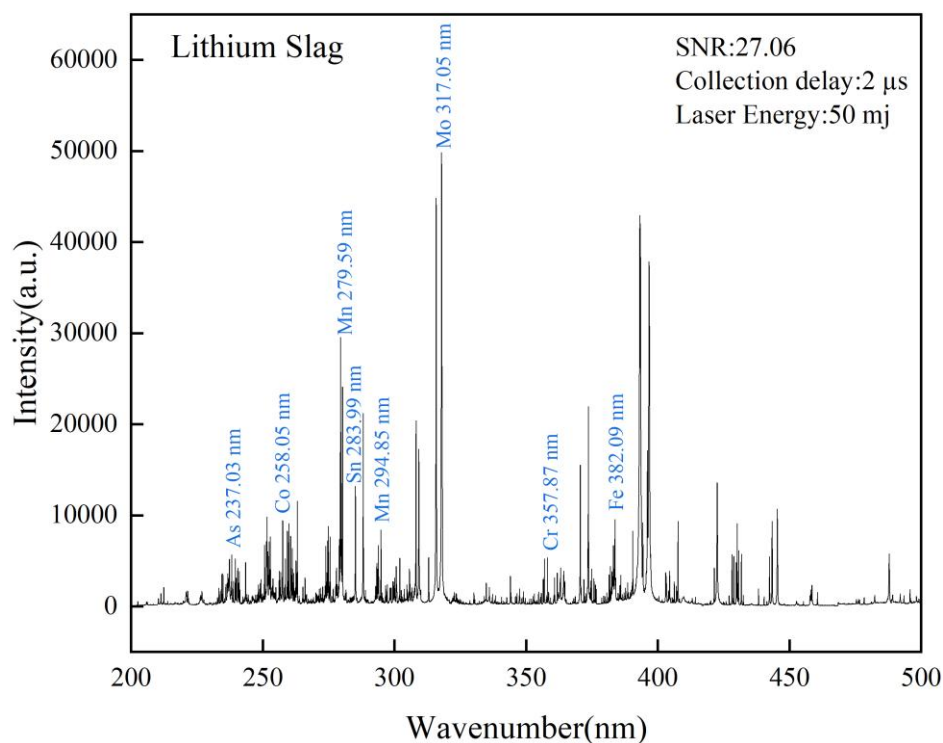


Figure S1. LIBS spectra of typical lithium slag samples.

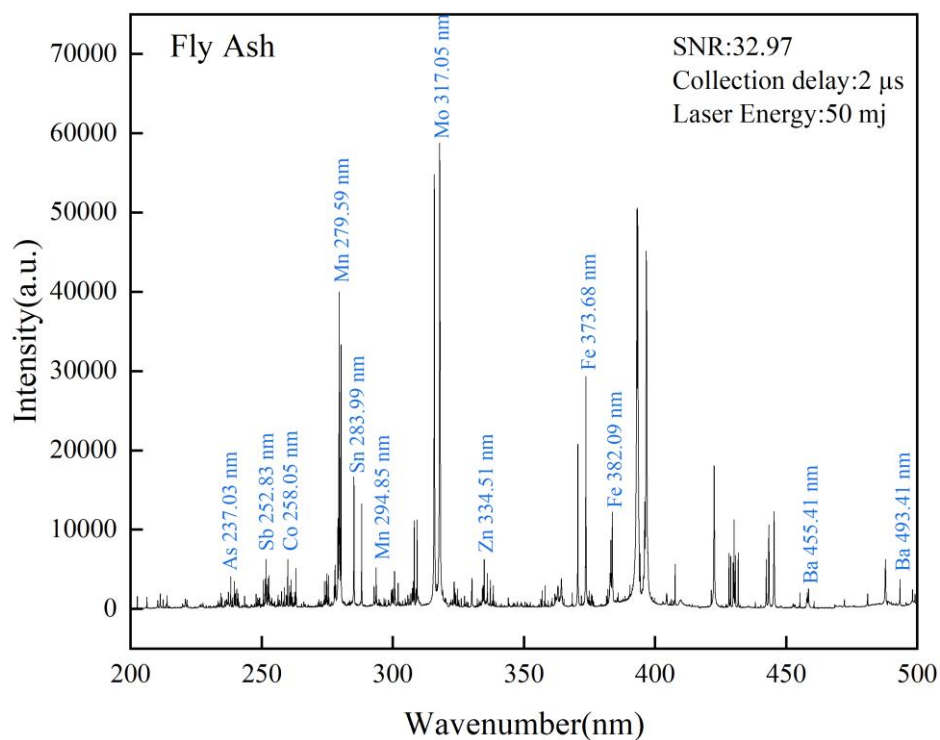


Figure S2. LIBS spectra of typical fly ash samples.

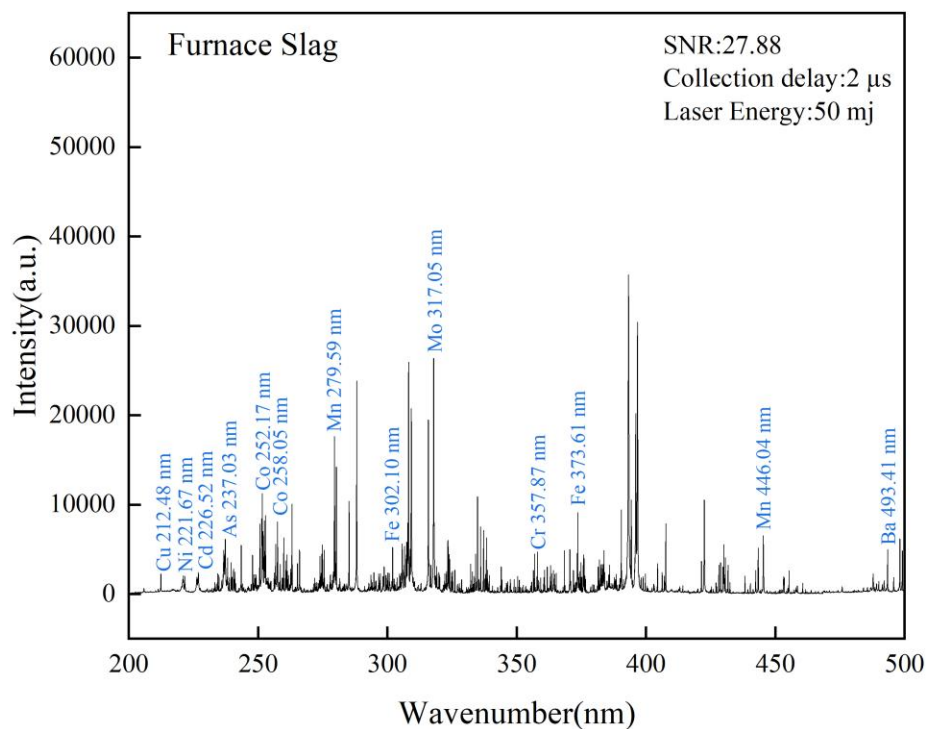


Figure S3. LIBS spectra of typical furnace slag samples.

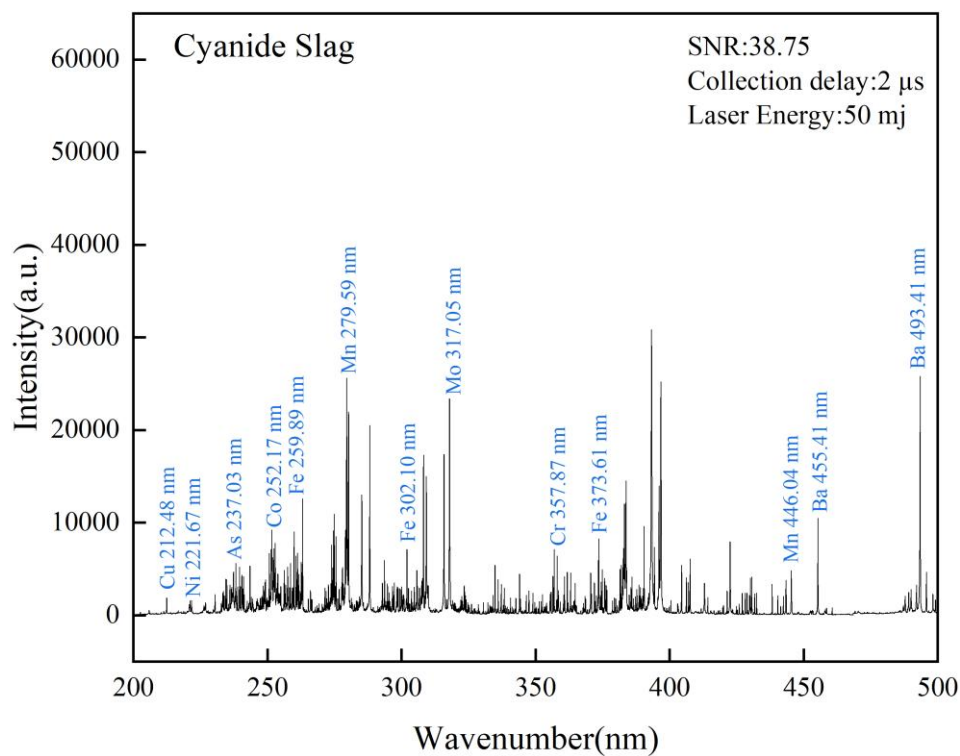


Figure S 4. LIBS spectra of typical cyanide slag samples.

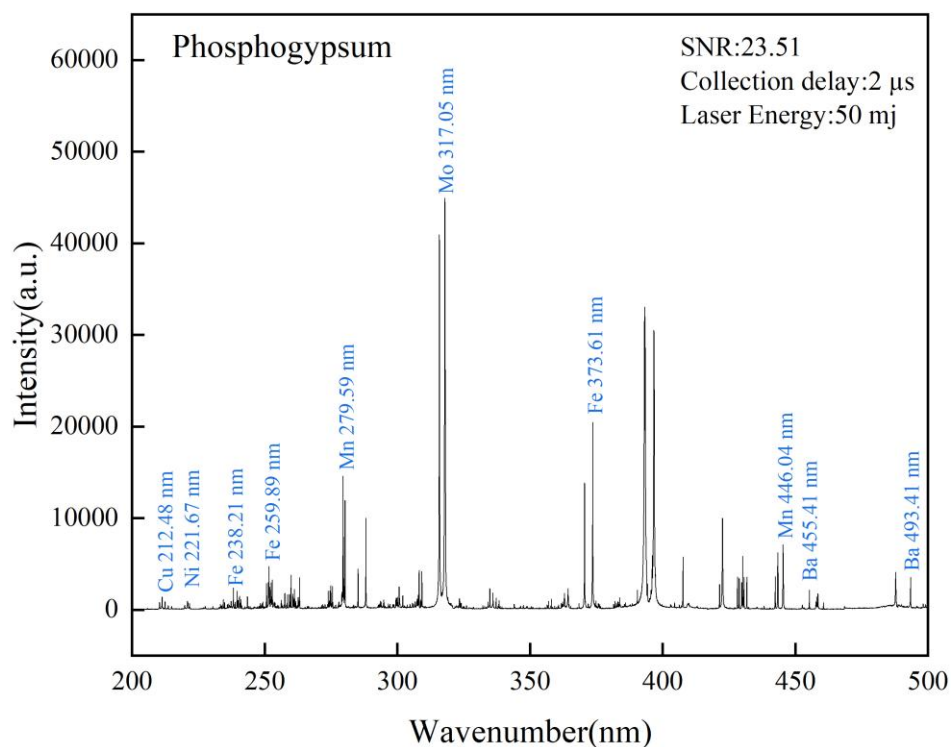


Figure S5. LIBS spectra of typical phosphogypsum samples.

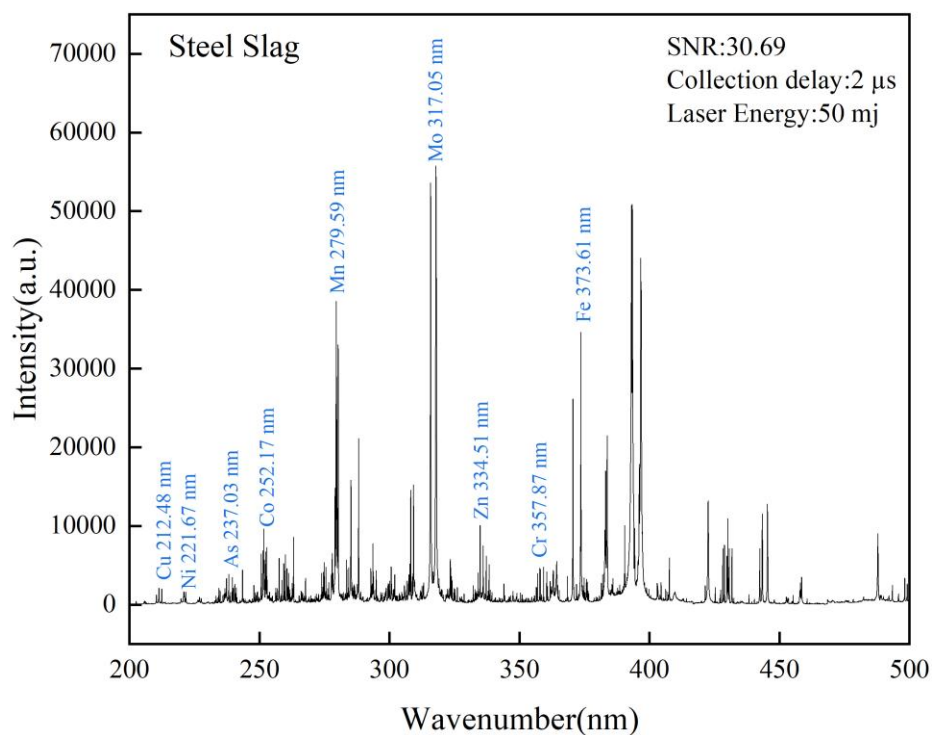


Figure S6. LIBS spectra of typical steel slag samples.

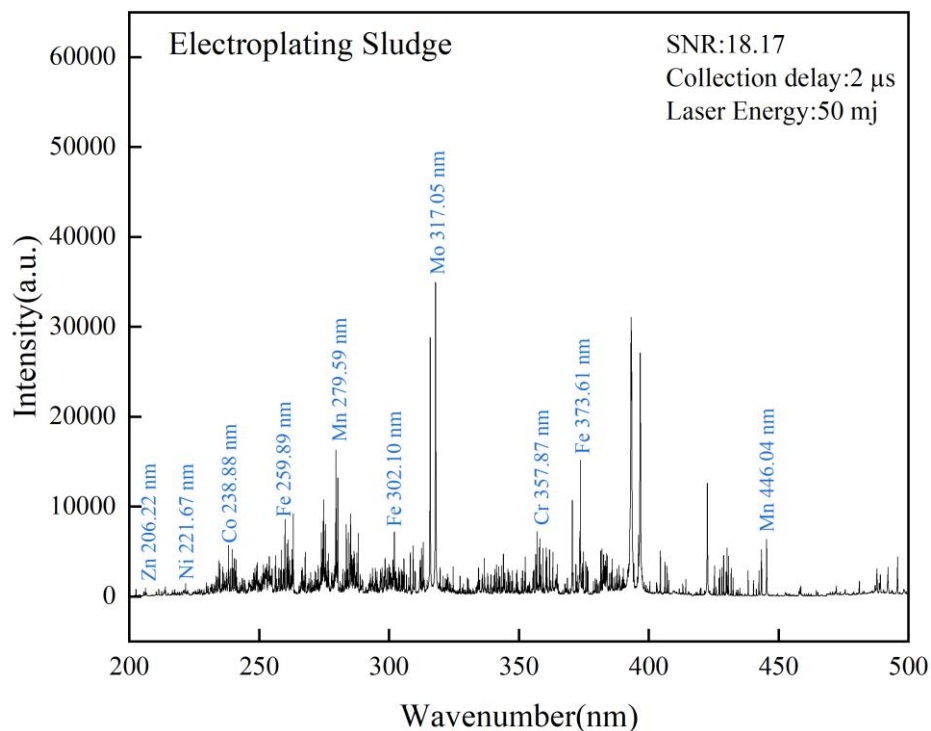


Figure S7. LIBS spectra of typical electroplating sludge samples.

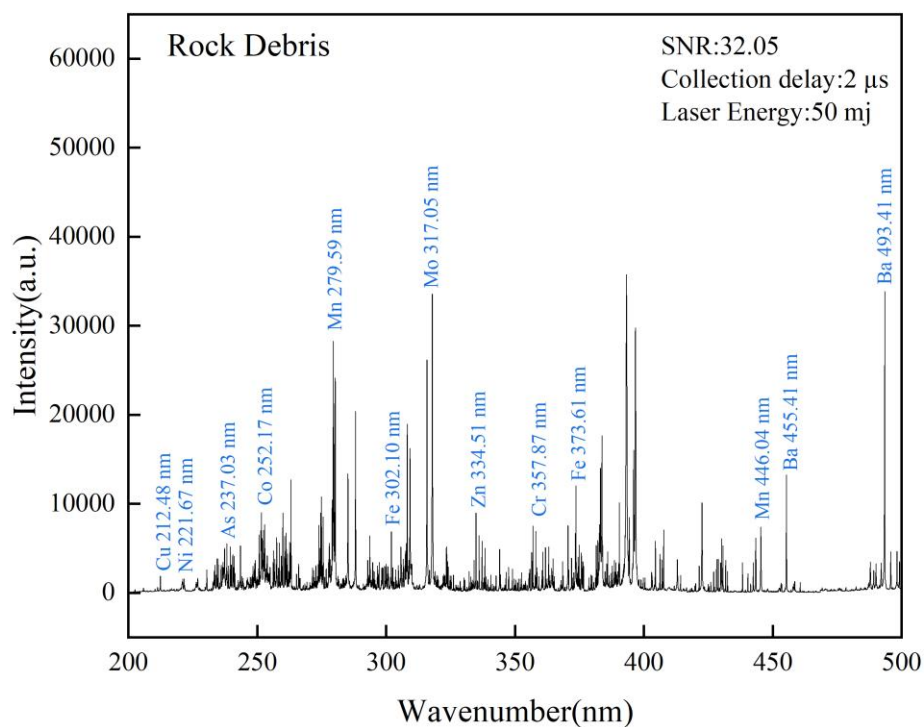


Figure S8. LIBS spectra of typical rock debris samples.

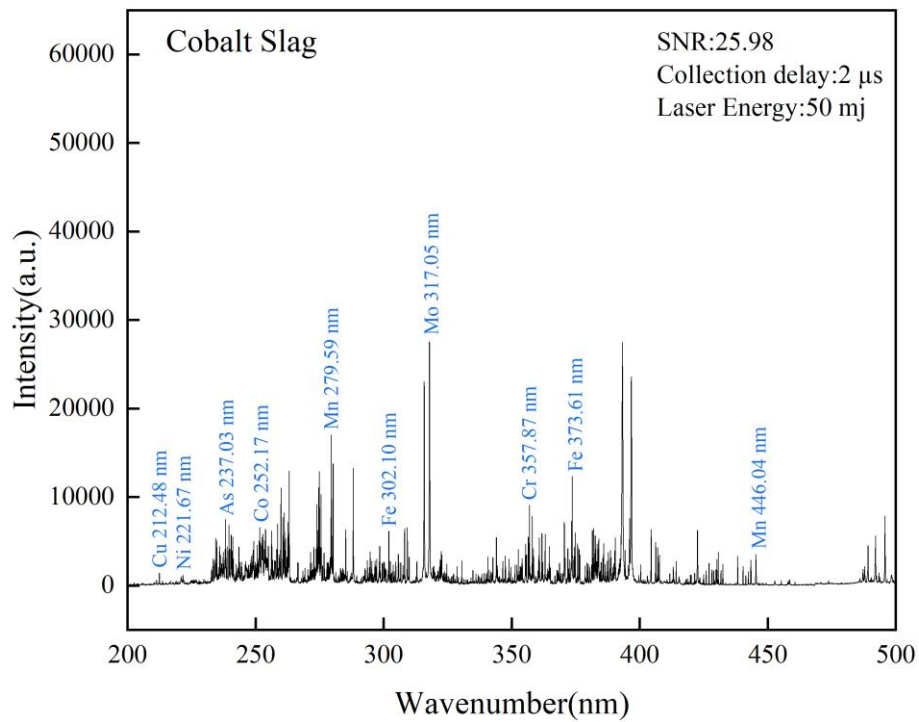


Figure S9. LIBS spectra of typical cobalt slag samples.

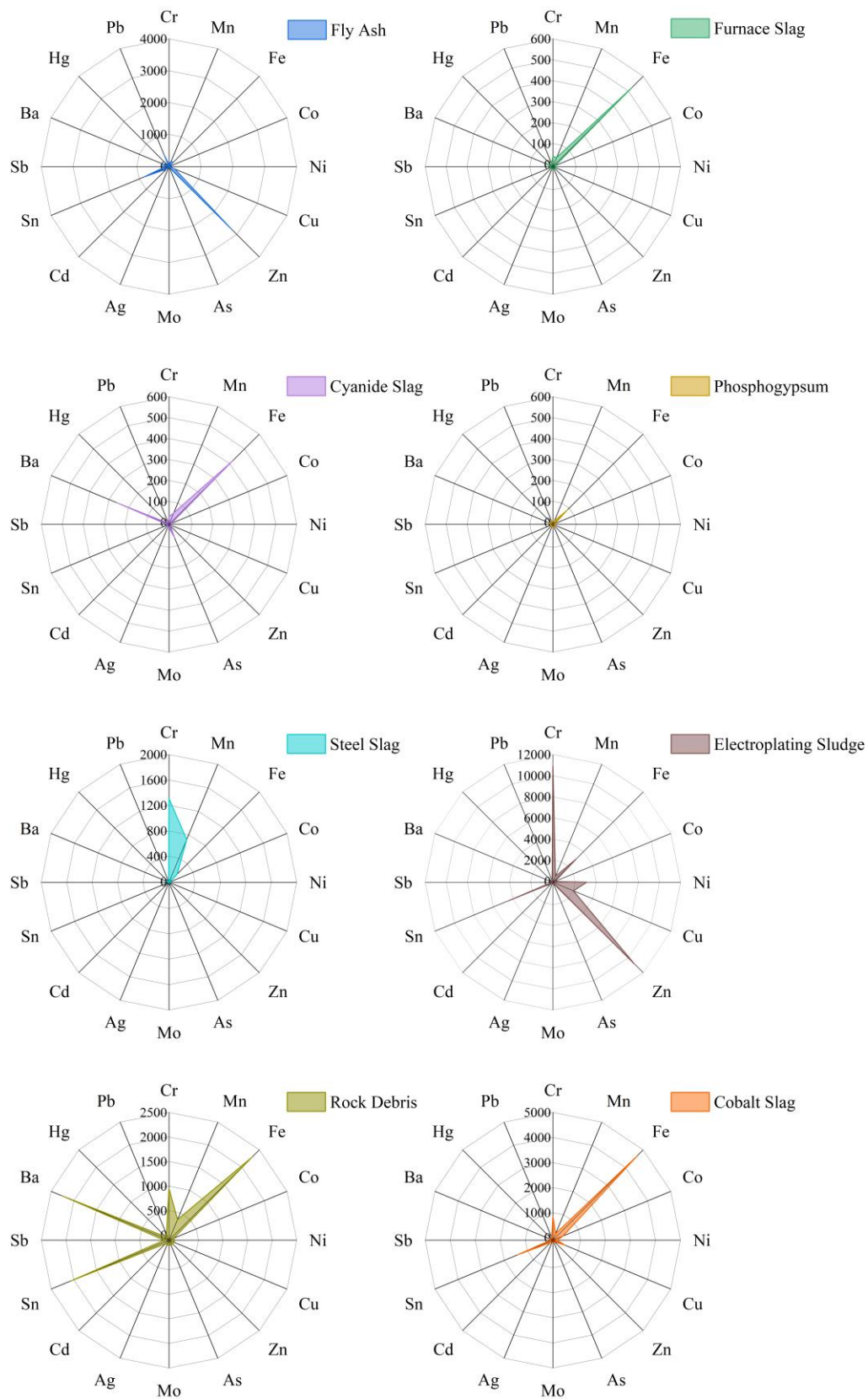


Figure S10. Radar image of fingerprint features of other solid waste.

Table S1. Model and origin of instruments used in the experiment.

| Instrument name | Model | Place of origin | Company |
|--|--|------------------------------|---|
| Electrically heated constant temperature drying oven | 101-2A | China | Beijing keweiyongxing instrument co., ltd |
| Manual isostatic pressing machine | NL-12J | China | Tianjin nuolei xinda technology co., ltd |
| Inductively coupled plasma mass spectrometer | Agilent 7500a | USA | Agilent technologies |
| Microwave digestion instrument | Touchvin2.0 | China | Auple technology group co., ltd |
| Graphite digestion apparatus | YT-GS04 | China | Tang intelligent technology co., ltd |
| Laser-induced breakdown spectrometer | AvaSpec- ULS2048-6- USB2 laser: Nimma- 400 | Netherlands China | Avantes BV Beamtech china |

Table S2. Purity and origin of reagents.

| Reagent | Purity | Place of origin | Company |
|-------------------|--------------------|-----------------|---|
| Nitric acid | Analytical reagent | China | Beijing tongguang fine chemical company |
| Hydrochloric acid | Analytical reagent | China | Beijing tongguang fine chemical company |
| Hydrofluoric acid | Analytical reagent | China | Beijing tongguang fine chemical company |
| Hydrogen peroxide | Analytical reagent | China | Beijing tongguang fine chemical company |