

**Supplementary Information**

**Effect of tartrate on the mild leaching of low-grade polymetallic complex  
chalcopyrite ore in acidic ferric chloride solution**

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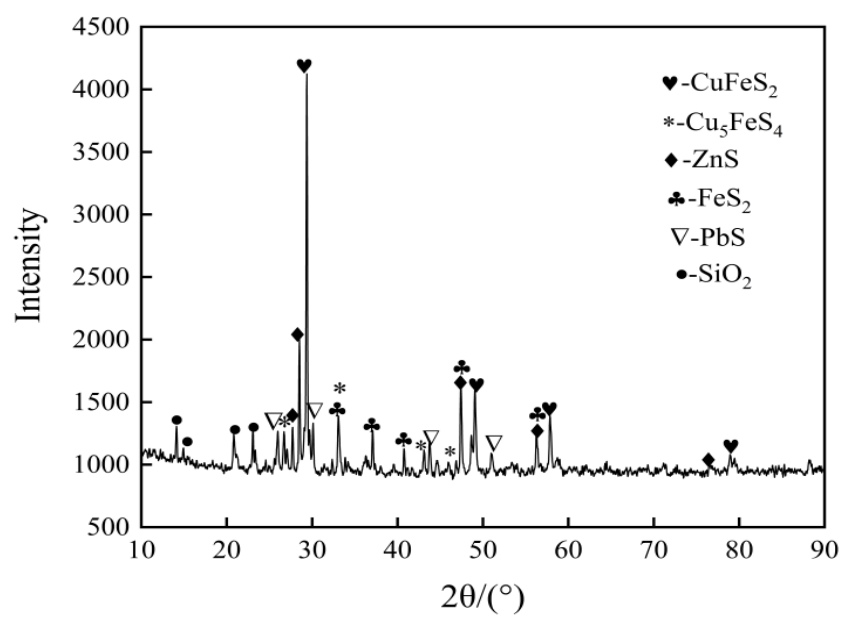
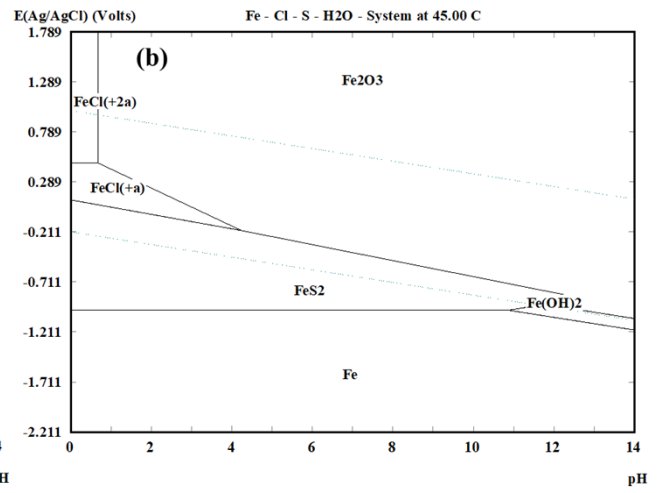
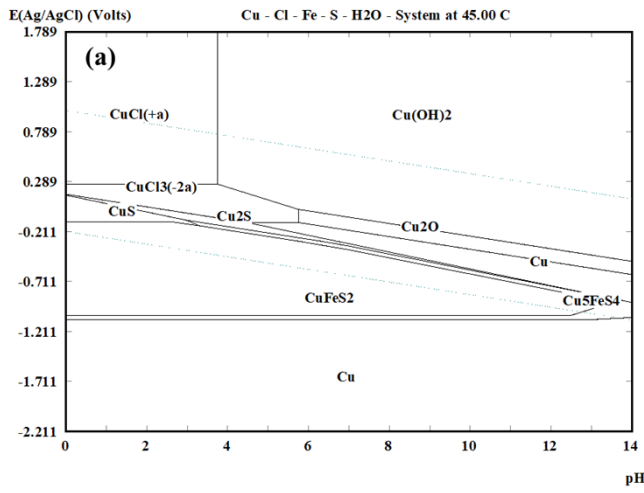


Fig.S1 XRD pattern of raw materials



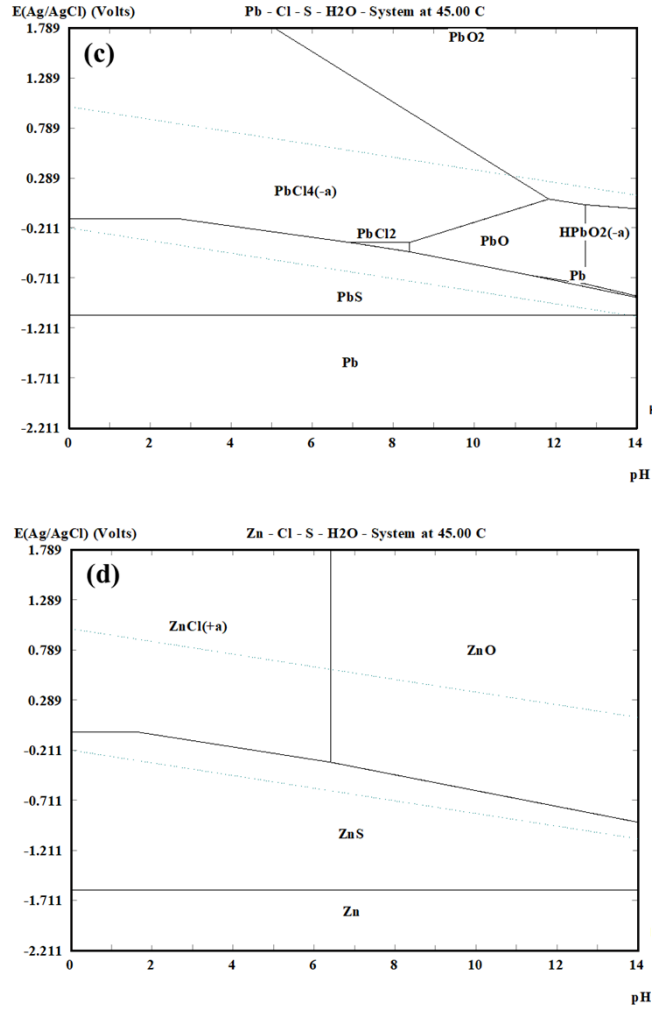


Fig.S2. Calculated Pourbaix diagrams (vs Ag/AgCl) in software of HSC Chemistry for (a) Cu-Fe-S-Cl-H<sub>2</sub>O, (b) Fe-S-Cl-H<sub>2</sub>O, (c) Pb-S-Cl-H<sub>2</sub>O and (d) Zn-S-Cl-H<sub>2</sub>O systems at 318 K by using the value of  $\alpha(\text{Cl})=1.3 \text{ M}$ ,  $\alpha(\text{Cu})=0.07 \text{ M}$ ,  $\alpha(\text{Fe})=0.3 \text{ M}$ ,  $\alpha(\text{Pb})=\alpha(\text{Zn})=0.017 \text{ M}$ , and  $\alpha(\text{S})=0.001\text{M}$ .