

Figure S1. SEM images and energy spectra of RE minerals. (a) hingganite; (b) monazite; (c) bastnaesite.

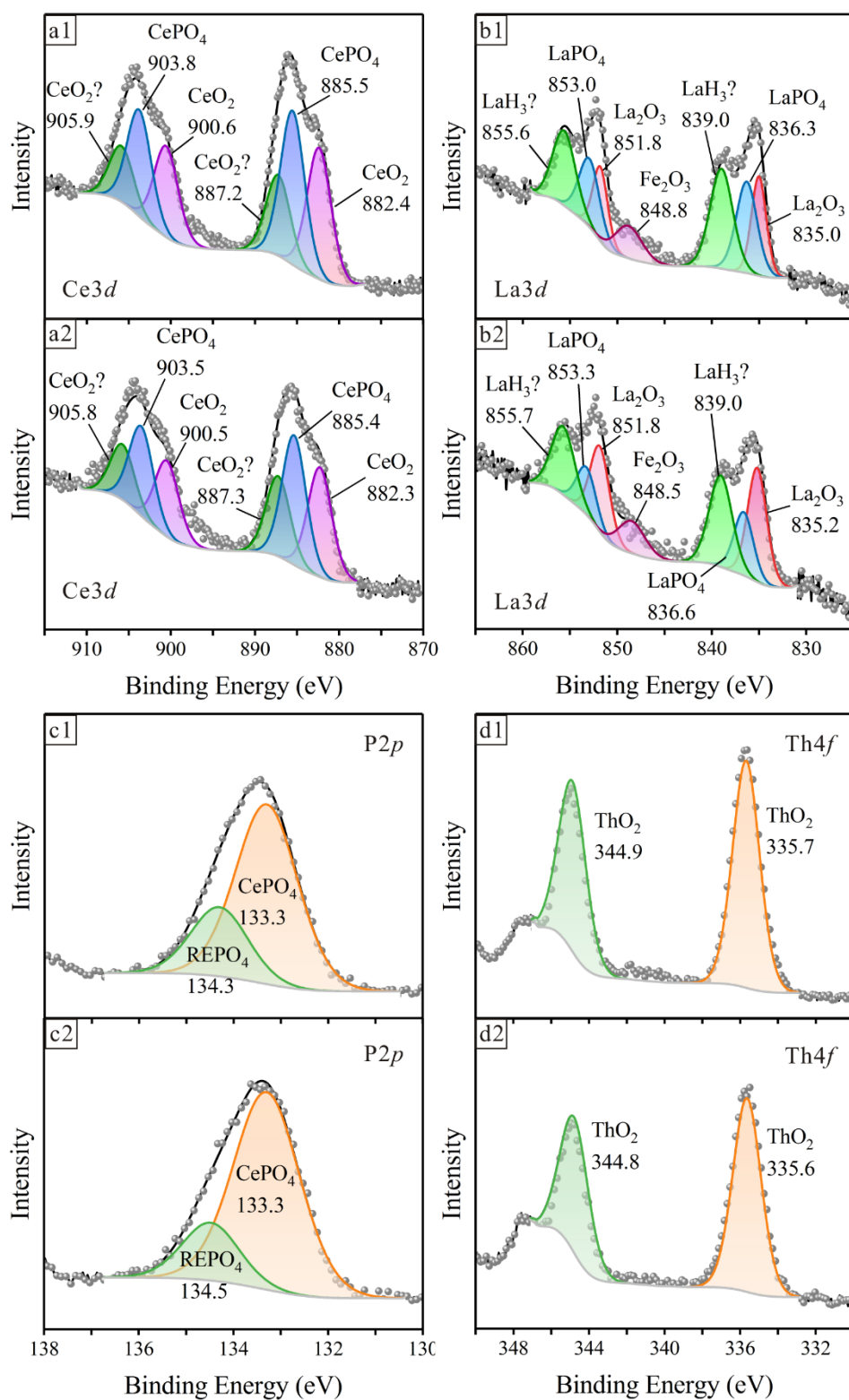


Figure S2. Comparison of XPS characteristics of monazite before and after flotation. (a) Ce3d; (b) La3d; (c) P2p; (d) Th4f.

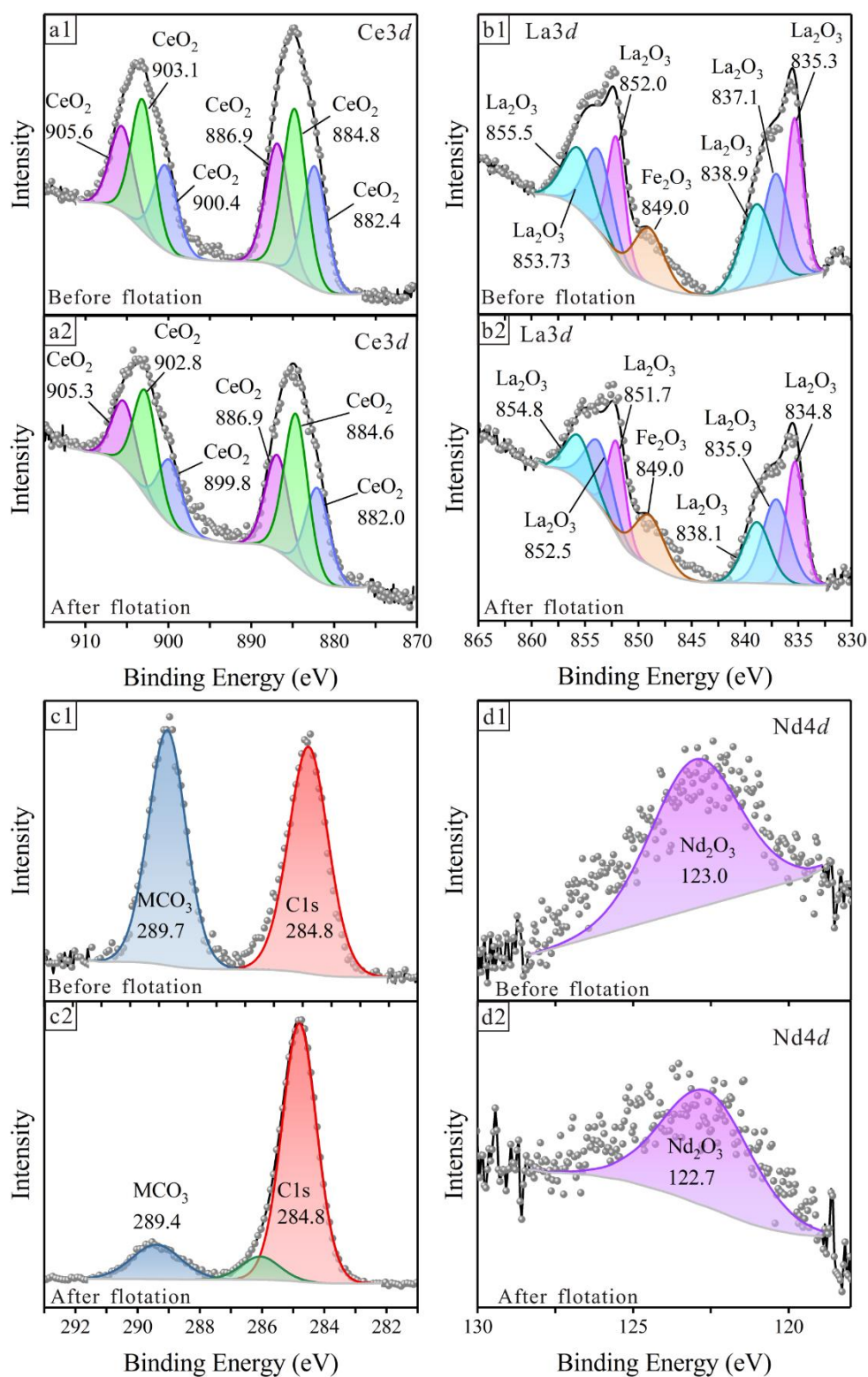


Figure S3. Comparison of XPS characteristics of bastnaesite before and after flotation. (a) $\text{Ce}3d$; (b) $\text{La}3d$; (c) $\text{C}1s$; (d) $\text{Nd}4d$.