

## Supplementary data

### 1. Tables

**Table S1.** Characteristics of simulated acid mine drainage.

pH	Cu(mg/L)	Mn(mg/L)	Cd(mg/L)	Zn(mg/L)
4	10.0	10.0	1.6	16.0

**Table S2.** Characteristics of real acid mine drainage from Qibao Shan.

pH	Cd(mg/L)	Cu(mg/L)	Mn(mg/L)	Pb(mg/L)	Zn(mg/L)
4.8	1.0	35.2	3.1	0.3	3.2

**Table S3.** Characteristics of effluent at different times. <LD indicates that value is below the detection limit.

Days	Cd	Cu	Mn	Pb	Zn
1	<LD	0.01	0.01	<LD	<LD
5	<LD	0.03	0.01	<LD	<LD
10	<LD	0.02	0.02	<LD	<LD
15	<LD	0.02	0.03	<LD	<LD

### 3. Figures

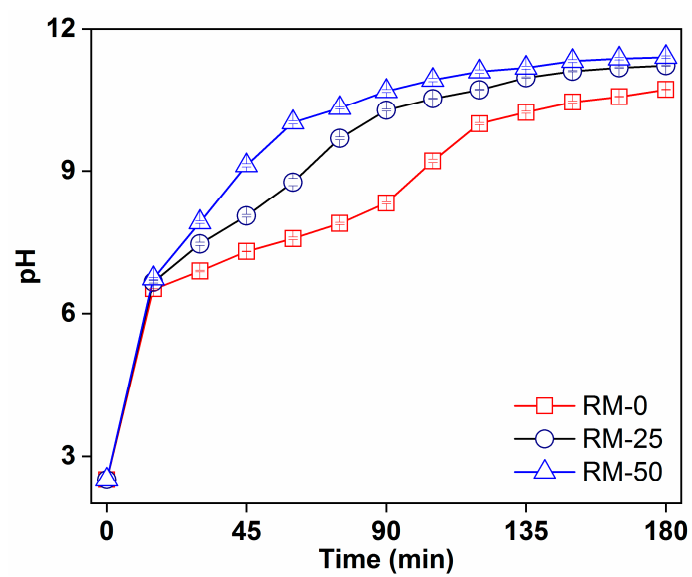
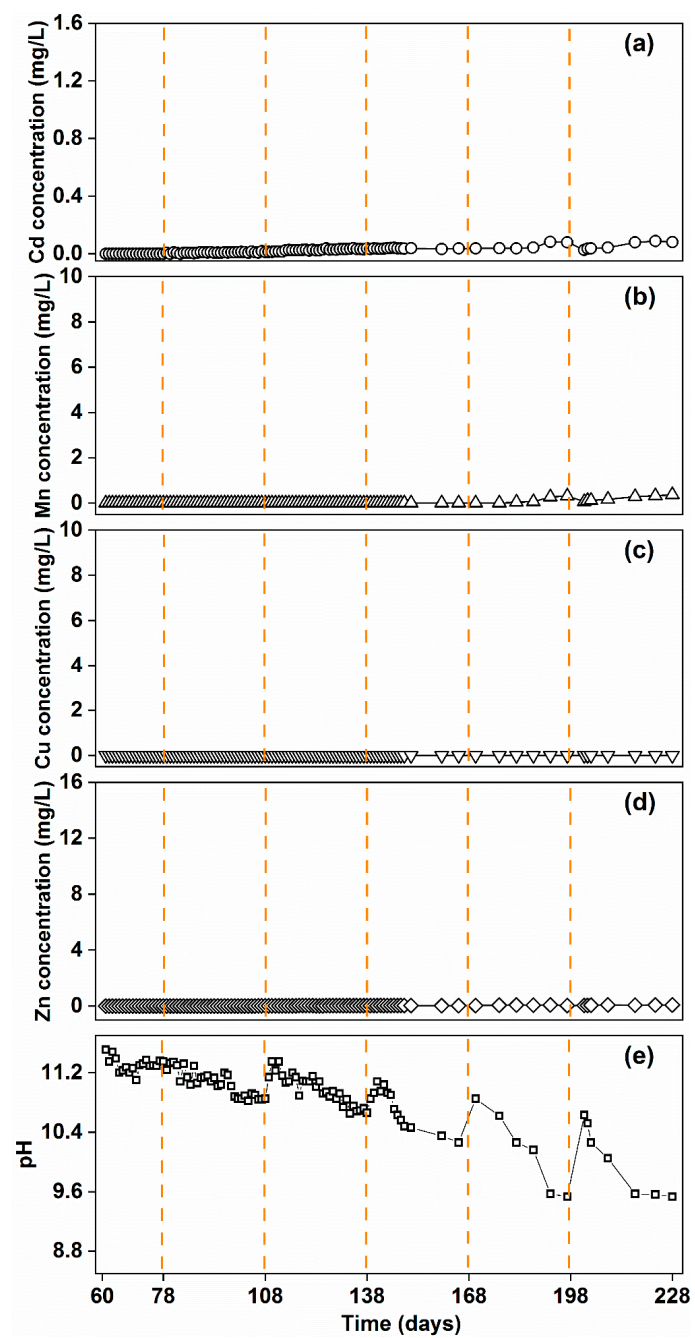
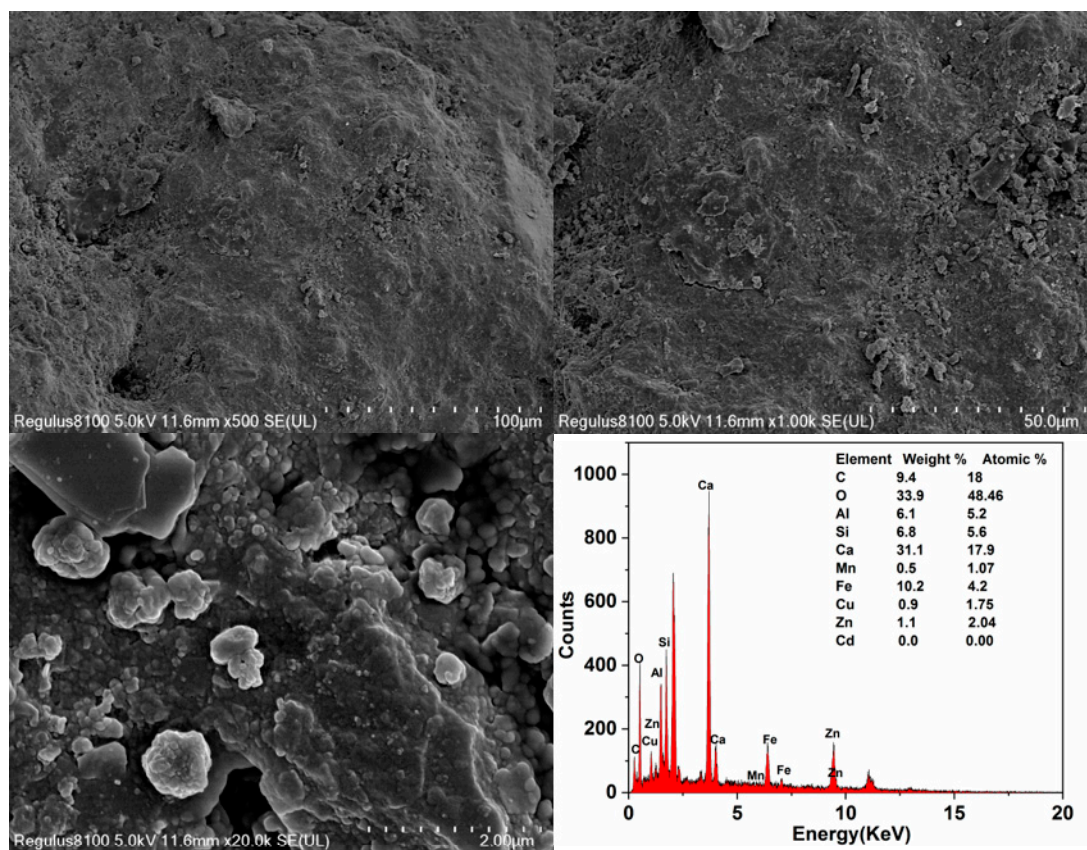


Figure S1. Variation of pH value in heavy metals removal experiment.



**Figure S2.** Changes in (a) Cd , (b) Mn, (c) Cu and (d) Zn concentrations, and (e) pH with time during long-term operation.



**Figure S3.** SEM photo of raw RMPC before reaction.