

Research on the Adsorption Behavior of Heavy Metal Ions by Porous Material Prepared with Silicate Tailings

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Received: 14 March 2019; Accepted: 8 May 2019; Published: 11 May 2019



Figure S1. Photographs of SPM.

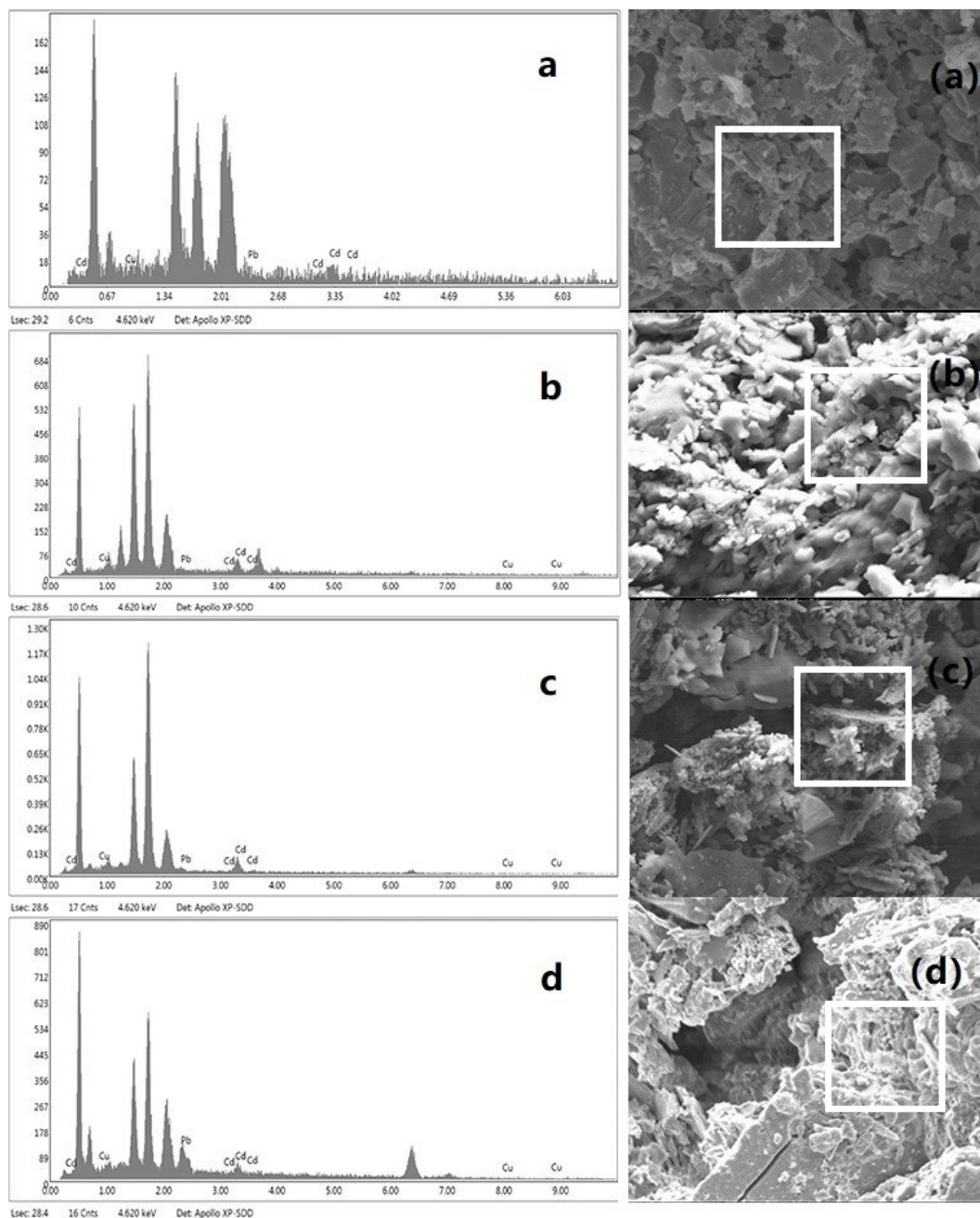


Figure S2. EDS spectra of SPM after adsorb heavy metal ions (a-Pb, b-Cd, c-Cu, d-blank).

Table S1 and Figure S3: The effect of SPM on the initial pH value of the solution.

Adding adsorbent will affect the initial pH value of the solution, so we measured the pH change of different single metal ion solutions after adding SPM (Table. S1). After added SPM, the final pH value of Pb^{2+} and Cd^{2+} solution is slightly rising at initial pH value of 2-5, and there is a downward trend at initial pH value of 6-7. The upward trend occurred at initial pH value of 2-4, and the downward trend occurred at initial pH value of 5-7 for Cu^{2+} solution. The Pb^{2+} and Cd^{2+} main remove way is adsorption at the initial pH=2-7, because Pb^{2+} and Cd^{2+} precipitation occurs when the pH > 7[1]. But Cu^{2+} copper begins to precipitate at pH > 4 and total precipitation occurs at pH 6[2, 3], and large amount of Cu^{2+} precipitate at pH=7 (Fig. S3), which indicates that adsorption and precipitation are occurred together at pH=7.

Table S1. The effect of SPM on the initial concentration of the solution.

Initial pH Value	2	3	4	5	6	7
Pb ²⁺	2.19	3.30	4.35	5.35	5.76	6.09
Cu ²⁺	2.24	3.18	4.35	4.72	5.49	5.77
Cd ²⁺	2.05	3.39	4.16	5.25	5.73	6.28

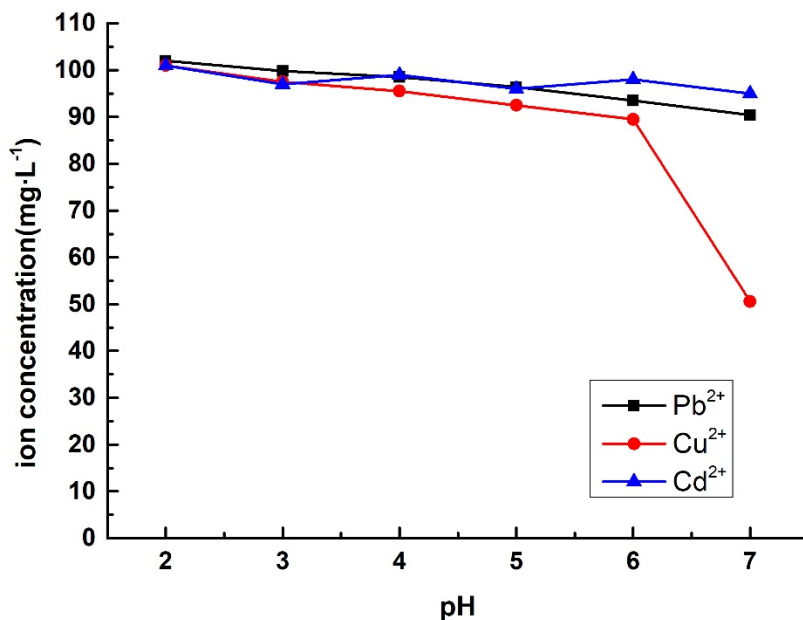


Figure S3. Effect of pH value on the ion concentration.

Reference

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