Novel covalently crosslinked attapulgite/poly(acrylic acid-co-acrylamide) hybrid hydrogels via inverse suspension polymerization: Synthesis optimization and evaluation as toxic heavy metal adsorbents

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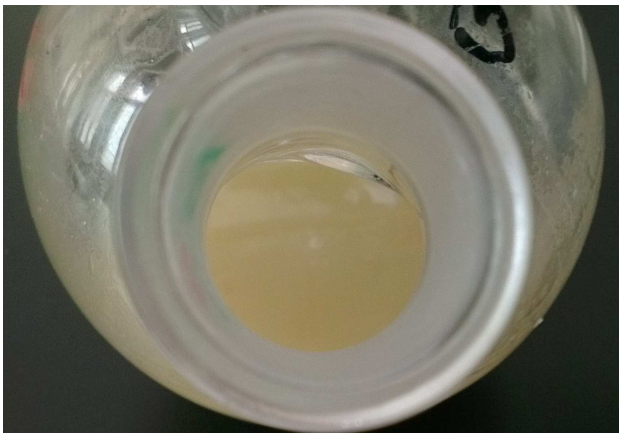
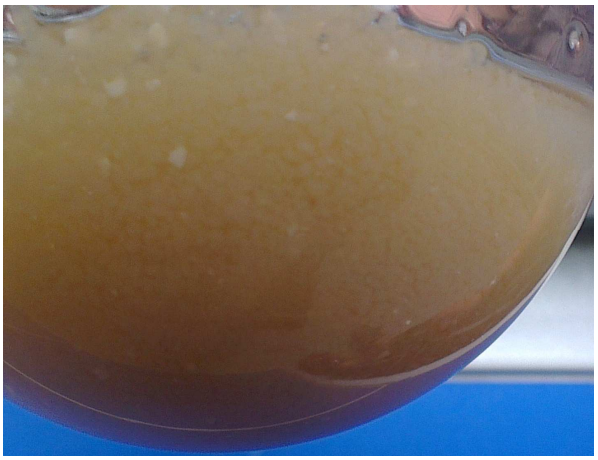
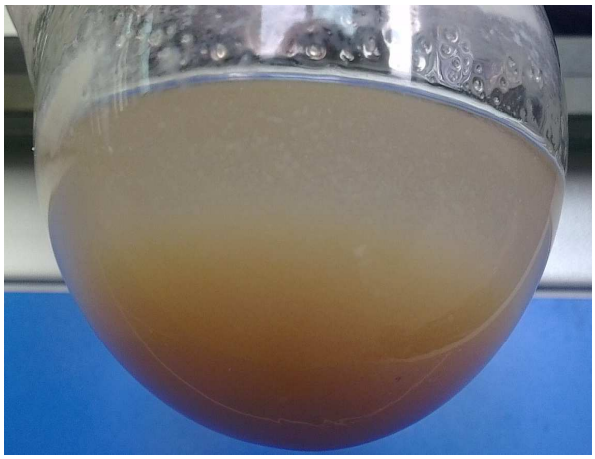


Figure S1. Products from the continuous drop feeding process.



(a)



(b)

Figure S2. Products with the neutralized AA as comonomer by the pre-emulsification process immediately after the stirring was stopped (a), and 24 hours after the stirring was stopped (b).

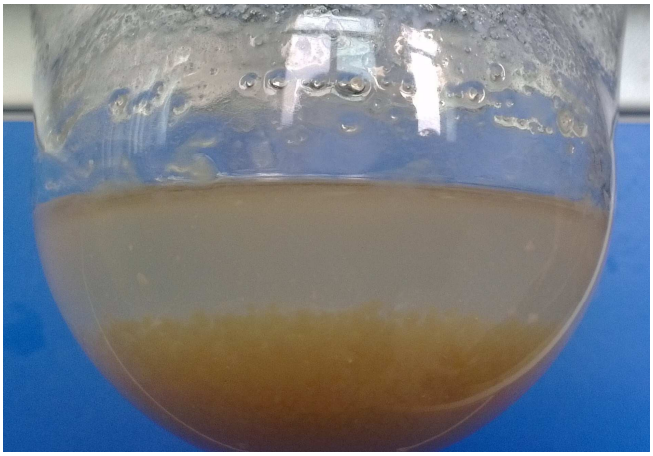


Figure S3. Products with the none-neutralized AA as comonomer by the pre-emulsification process immediately after the stirring was stopped.

Figure S4. Digital photos of the final hybrid hydrogels from formulas 5 to 10.

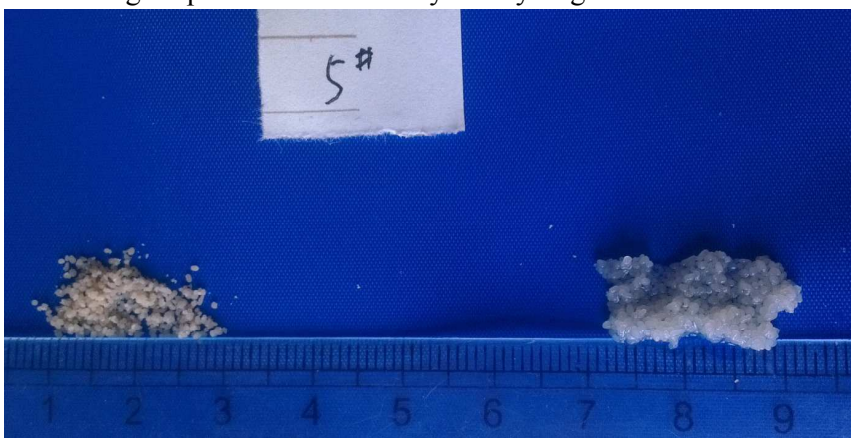


Figure S5. Comparison between the dried and the swelled hybrid hydrogel (sample 5).

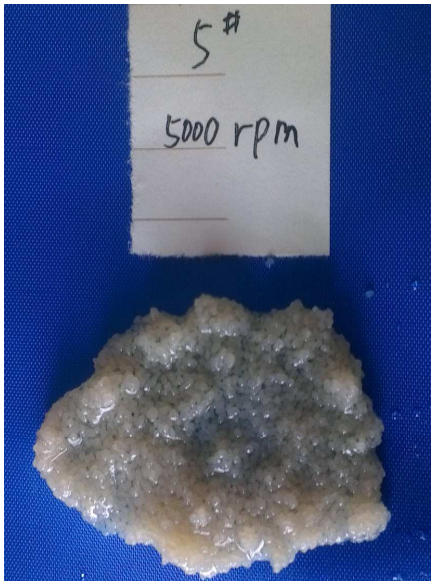


Figure S6. Digital photo of the hybrid hydrogel (sample 5) after being stirred at 5000 rpm for 2 h.

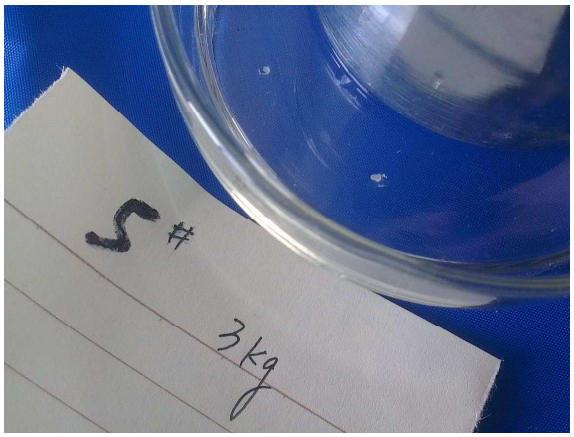
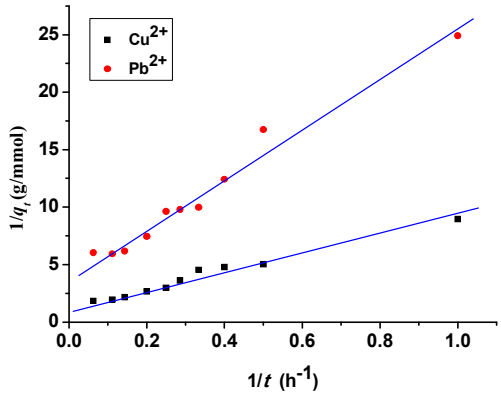
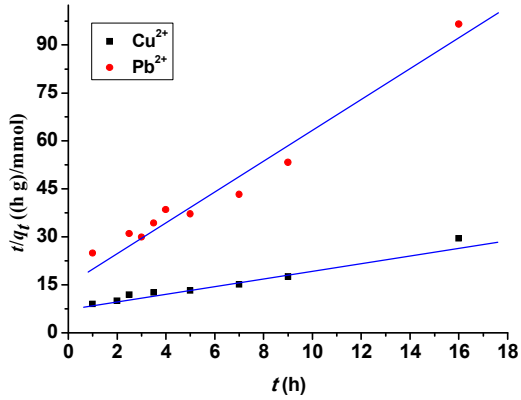


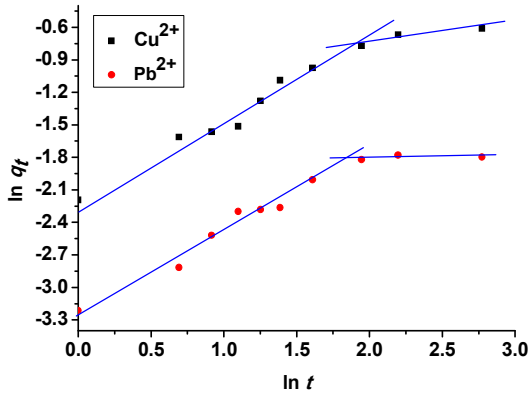
Figure S7. Digital photo of four particles of the hybrid hydrogel (sample 5) under 3 kg load.



(a) Pseudo-first-order model

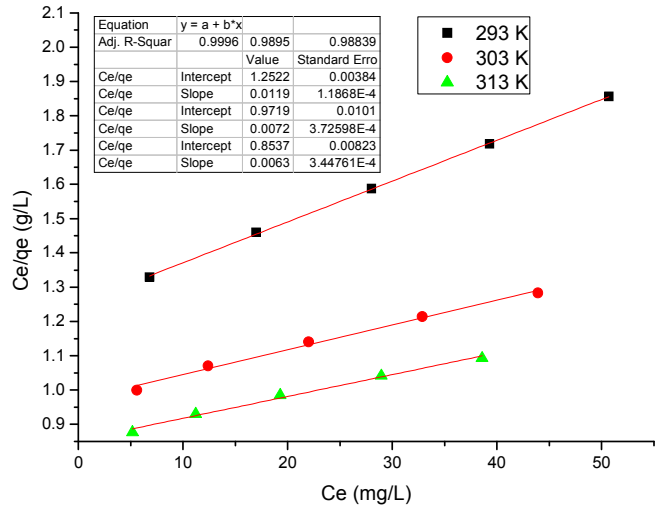


(b) Pseudo-second-order model

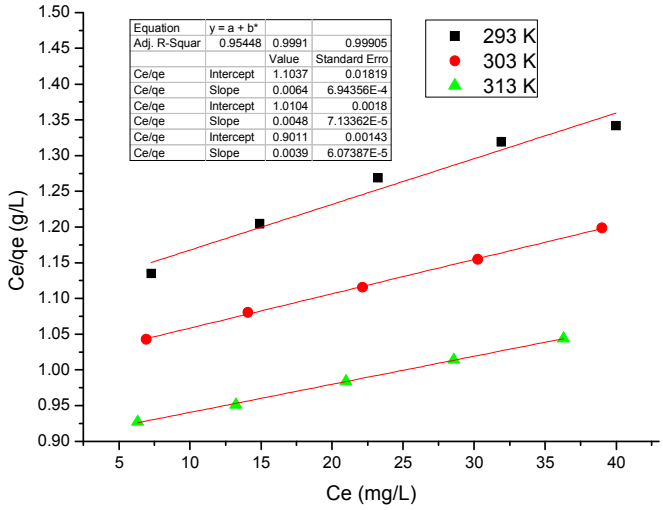


(c) Intraparticle diffusion kinetics

Figure S8. Adsorption kinetics models for the adsorption of 0.10 g accurately weighed ATP/P(AA-AM) hybrid hydrogel sample 5 in a 50 mL solution of 100 mg/L Pb^{2+} or Cu^{2+} ions.

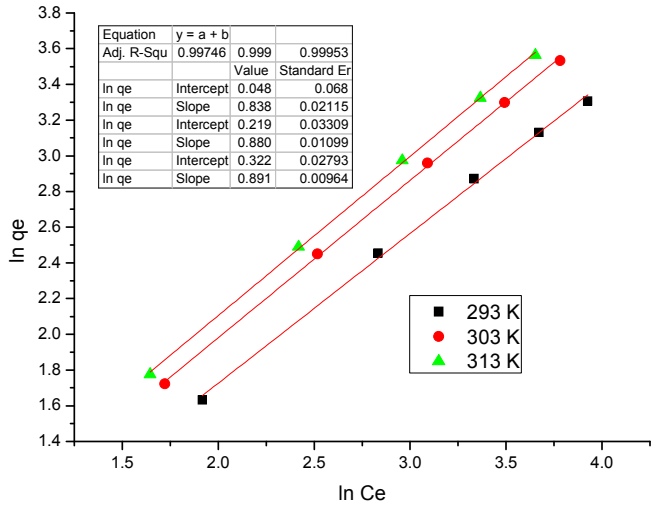


(a) Pb^{2+}

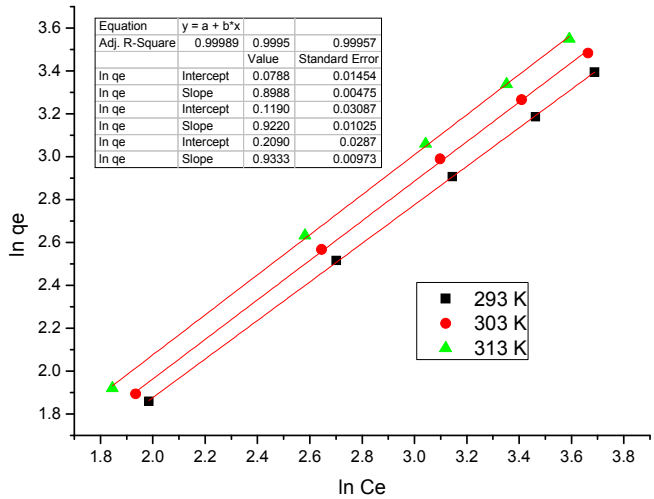


(b) Cu^{2+}

Figure S9. Langmuir isotherm of sample 5 towards the heavy metal ions at different temperatures.



(a) Pb^{2+}



(b) Cu^{2+}

Figure S10. Freundlich isotherm of sample 5 towards the heavy metal ions at different temperatures.