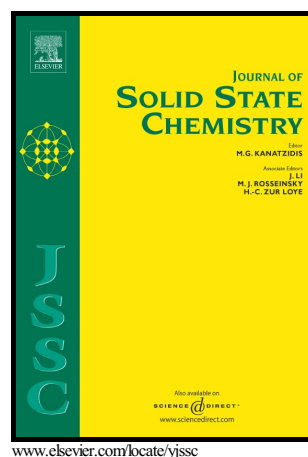


## Author's Accepted Manuscript

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# A novel highly efficient adsorbent $\{[\text{Co}_4(\text{L})_2(\mu_3\text{-OH})_2(\text{H}_2\text{O})_3(4,4'\text{-bipy})_2]\cdot(\text{H}_2\text{O})_2\}_n$ : synthesis, crystal structure, magnetic and arsenic (V) absorption capacity

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## Abstract

A novel highly efficient adsorbent-microporous tetranuclear Co(II)-based polymer,  $\{[\text{Co}_4(\text{L})_2(\mu_3\text{-OH})_2(\text{H}_2\text{O})_3(4,4'\text{-bipy})_2]\cdot(\text{H}_2\text{O})_2\}_n$  (**1**,  $\text{H}_3\text{L} = 4\text{-(N,N'-bis(4-carboxybenzyl)amino) benzenesulfonic acid, } 4,4'\text{-bipy} = 4,4'\text{-bipyridine}$ ), was hydrothermally synthesized. The complex **1** is a metal-organic framework (MOF) material which was characterized by single-crystal X-ray diffraction, BET and platon software. **Co-MOF** (complex **1**) reveals excellent adsorption property. The capacity of **Co-MOF** to remove arsenic As(V) from sodium arsenate aqueous solutions was investigated (The form of As(V) is  $\text{AsO}_4^{3-}$ ). The experimental results showed that **Co-MOF** had a higher stable and relatively high As(V) removal rate (>98%) at pH 4–10. The adsorption kinetics followed a pseudo-second-order kinetic model, and the adsorption isotherm followed the Langmuir equation. **Co-MOF** exhibits a very high adsorption capacity of As(V) in aqueous solution ( $Q_{\text{max}}$  of 96.08 mg/g). Finally, the optimal adsorption conditions for the model were obtained through a Box–Behnken response surface experiment which

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