

عنوان مقاله:

Synthesis of Piperdinomethylcalix[4]arene Attached Silica Resin for the Removal of Metal Ions from Water: Equilibrium, Thermodynamic and Kinetic Modelling Studies

محل انتشار:

نشریه پیشرفته شیمی، دوره 3، شماره 5 (سال: 1399)

تعداد صفحات اصل مقاله: 12

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خلاصه مقاله:

Toxic metal pollution is one of the most persistent environmental problems globally. This study deals with the synthesis of the p -piperdinomethyl calix[4]arene attached silica (PAS) resin and to investigate their metal ions removal efficiency from water. In batch adsorption experiment PAS resin shows good adsorption efficacy for the Cu²⁺ and Pb²⁺ metal ions. To examine the adsorption mechanism and validate the experimental adsorption data the isotherm models were applied and adsorption of the Cu²⁺ and Pb²⁺ metal ions follow Freundlich isotherm model very well with good correlation coefficient. However, the adsorption energy calculated from the D-R isotherm was at the range of 9-14 KJ/mole which describes the ion exchange nature of resin. Furthermore, breakthrough capacity of column was calculated from online adsorption as 0.027 and 0.041 mmol/g-1 for Cu²⁺ and Pb²⁺, respectively. Furthermore, thermodynamics and kinetic study revealed that, the adsorption process spontaneity and endothermic .that follows the pseudo 2nd order kinetic equation with good regression coefficient

کلمات کلیدی:

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