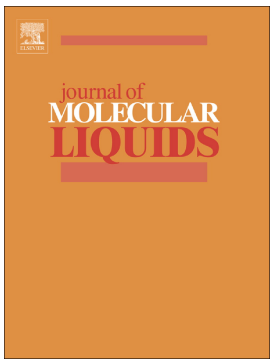


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# Study of Pb (II) adsorption from aqueous solutions by $TiO_2$ functionalized with hydroxide ethyl aniline (PHEA/n-$TiO_2$)

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## Abstract

In this study, the crystalline Nanoparticles of $TiO_2$ were modified with hydroxide ethyl aniline and were used for the elimination of Pb (II) ions from the liquid solutions. The adsorbent was synthesized via chemical oxidization method and characterized by FTIR, SEM and XRD analysis. Variations in pH, adsorbent dosage, initial metal ion concentration, contact time, temperature and ionic strength were considered as the effective parameters on the adsorbent performance in batch mode adsorption. Optimum condition was cleared through the batch experiments as follow: pH= 5.5, adsorbent dosage = 2 g $L^{-1}$, initial concentration of Pb (II) ions = 100 mg $L^{-1}$, temperature = 328 k, contact time = 3 hr and agitation speed = 150 rpm. The maximum adsorption capacity under the optimum conditions was obtained 26.05 mg $g^{-1}$. Webber-Morris model and Langmuir isotherm were the best mathematical models for prediction of kinetic and equilibrium behavior, respectively. Thermodynamic studies demonstrate that the adsorption of Pb (II) ions is spontaneous and endothermic.

Key words: Adsorption, $TiO_2$, Pb(II), Adsorption capacity, Isotherm



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