Abstract

In this work, zinc oxid/chitosan nanoparticles based solid phase extraction has been developed for separation and preconcentration of trace amount of methyl orange from water samples. Artificial neural network-cuckoo optimization algorithm has been employed to develop the model for simulation and optimization of this method. The pH, volume of elution solvent, mass of zinc oxide nanoparticles-chitosan, flow rate of sample and elution solvent were the input variables, while recovery of methyl orange was the output. The optimum conditions were obtained by cuckoo optimization algorithm. At the optimum conditions, the limit of detectionsof 0.7 μgL^{-1} was obtained for the methyl orange. The developed procedure was then applied to the separation and preconcentration of methyl orange from water samples.

Keywords: Methyl orange; Zinc oxide/chitosan nanoparticles; Artificial neural network-cuckoo optimization algorithm; Water samples.

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Solid phase extraction of methyl orange using zinc/chitosan oxide nanoparticles from water samples

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