Abstract

In this study, A modeling based on ant-colony optimization – artificial neural network have been employed to develop the model for simulation and optimization of nanometer SiO_2 for the extraction of manganese from water samples. The pH, time, amount of SiO_2 nanoparticles and concentration of 1-(2-pyridylazo)-2-naphthol (PAN) were the input variables, while the extraction% of analytes was the output. The optimized conditions were as follows: the pH of solution 10.5, the extraction time 30 min, the amount of nanoparticles adsorbent 0.1 g and the concentration of PAN 0.5 mgL^{-1}. Under the optimum conditions, the detection limits were 0.52 for manganese. The method was applied to the extraction of manganese from water samples.

Keywords: Manganese, SiO_2 nanoparticles, Artificial Neural Network, Ant Colony Optimization.

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Solid phase extraction of manganese using silica nanoparticles from water samples

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