



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Interaction of Mefenamic Acid with Cobalt(II) Ions in Aqueous Media: Evaluation via Classic and Response Surface Methods

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Abstract: Mefenamic acid reacts with cobalt(II) ions in aqueous alkaline medium to form a highly stable deep brown complex at ambient temperature. The complexation process was optimized in terms of pH, temperature, agitation rate, and contact time using classical studies. A response surface method based on Box-Behnken design was used to statistically model the complexation reaction and investigate factor effects along with their interactions. A quadratic model was developed using experimental data with a correlation coefficient of 0.9609. Numerical optimization was performed to achieve the optimum solutions of factor combinations. The results of the classical investigation and statistical method were in close agreement with each other, while the advantages of the modern experimental design method over conventional one-factor-at-a-time studies were revealed.

Key Words: Mefenamic acid; cobalt; Box-Behnken; complexation; classical method

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