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Reliability Study of Response Surface Method and Taguchi Method Based Empirical Model for the Removal of Naphthol Green B from Aqueous Solution using Surfactant Modified Coal Fly Ash

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Cationic surfactant modified coal fly ash was used to remove Naphthol Green B from aqueous solution. Response surface methodology - central composite face center design (RSM – CCFD), response surface methodology - Box–Behnken design (RSM – BBD) and Taguchi method based empirical model was developed for the removal of Naphthol Green B and the model prediction was compared with the experimental result. The role of the numerical value and the sign of each parameter present in the modeling equations were identified. ANOVA table identified the significant term in the all modeling equation. Optimization performance of RSM – CCFD, RSM – BBD and Taguchi method was evaluated by comparing them with contour response of the experimental result. The overall result showed that RSM – CCFD and RSM – BBD performances were better than the Taguchi method.

Biography

Sneha Tomar is currently a Ph.D scholar under the supervision of Dr. V. K. Singh in the Department of Chemical Engineering, at National Institute of Technology, Raipur, Chhattisgarh, India.