عنوان مقاله:

Removal of colored pollutants from aqueous solutions with a poly Schiff-base based on melamine-modified MWCNT

محل انتشار:

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نویسندگان:

Somayeh Farajzadeh - *Department of Organic Chemistry, Faculty of Chemistry, Urmia University, Urmia, Iran*

Peyman Najafi Moghadam - *Department of Organic Chemistry, Faculty of Chemistry, Urmia University, Urmia, Iran*

Jabbar Khalafy - *Department of Organic Chemistry, Faculty of Chemistry, Urmia University, Urmia, Iran*

خلاصه مقاله:

Carbon nanotubes (CNTs) have been extensively explored for adsorption applications due to their well-defined cylindrical hollow structure, large surface area, high aspect ratios, hydrophobic wall, and easily modified surfaces. In the present work, a poly Schiff-base was synthesized with capability to remove the dye pollutant from aqueous solutions. For this propose, firstly, multi-walled carbon nanotube (MWCNT) was modified with melamine, then the melamine-modified MWCNT was further reacted with 3-pyridinecarboxaldehyde to synthesize the final poly Schiff-base. The prepared adsorbent was employed to assess the removal of the dye pollutants from aqueous solutions and Congo red (CR) was selected as typical dye. Different adsorption parameters such as pH, adsorbent amount, initial concentration of the dye, and contact time were investigated and optimized. By adjusting these parameters, the adsorption percentage reached to the value of 92%. Moreover, the adsorption isotherms were studied and fitted with the Langmuir, Freundlich, and Dubinin-Radushkevich (D-R) models. The kinetic studies were carried out by using the Lagergren pseudo-first-order and the Ho pseudo-second-order equations. The adsorbent was also characterized by .FT-IR, TGA, and SEM techniques

کلمات کلیدی:

MWCNT, Melamine, Schiff-base, Congo red, Dye removal