

Activation of peroxymonosulfate by  $\text{CoFe}_2\text{O}_4/\text{Ag-fMWCNTs}$  nanocomposite as an efficient, recyclable catalyst for degradation of synthetic organic dyes

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In this work,  $\text{CoFe}_2\text{O}_4/\text{Ag-fMWCNTs}$  material was synthesized through a facile solvothermal method for the degradation of several synthetic organic dyes via peroxymonosulfate (PMS) activation. The morphological properties of the  $\text{CoFe}_2\text{O}_4/\text{Ag-fMWCNTs}$  catalyst were characterized using XRD, SEM, EDS, TEM, FTIR, XPS and nitrogen adsorption-desorption isotherms. The effects of several experimental parameters on the organic dyes degradation were investigated, including the catalyst loading, initial dye concentrations, PMS dosage, different materials, different dyes and pH. The catalyst exhibited high activity towards PMS activation, resulting in complete decolorized (100%) of organic dyes within the first few minutes of reaction at room temperature. Furthermore, the regeneration and reusability of the catalyst were also examined for 5 consecutive cycles, the catalytic activity of the  $\text{CoFe}_2\text{O}_4/\text{Ag-fMWCNTs}/\text{PMS}$  system remained constant. Our results imply high potential of  $\text{CoFe}_2\text{O}_4/\text{Ag-fMWCNTs}$  for sustainable water treatment and environmental remediation applications.