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Magnetically Separable Graphene Oxide-Fe_3O_4 Nanocomposites for Photocatalytic Degradation of Methylene Blue under UV Irradiation

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Abstract:

The requirement for fresh water has crucial role for human beings, and its availability is a big problem at present. Since dye compounds are extensively used in many important industries such as textile, plastics, paint, leather, andcosmetics,[1] this causes critical environmental problems such as pollution of ground water resources. In this regard, several techniques such as photocatalytic degradation,adsorption, and biological treatment have been employed toremove dyes from industrial wastewaters.The photocatalytic degradation method is the most convenientone considering its efficiency, practicability, and low cost.[2] In the present study, the photocatalytic degradation of Methylene Blue (MB)as pollutant under UV irradiation is studied in the presence of magnetically separable graphene oxide-Fe_3O_4 (GO-Fe_3O_4) nanocomposites. The effects of the amount of GO-Fe_3O_4 nanocomposites, MB concentration, pH, irradiation time and UV wavelength on the photocatalytic degradation of MB are explored. It is determined that the GO-Fe_3O_4 nanocomposites show an excellent photocatalytic activity for the photocatalytic degradation of MB (Fig. 1).

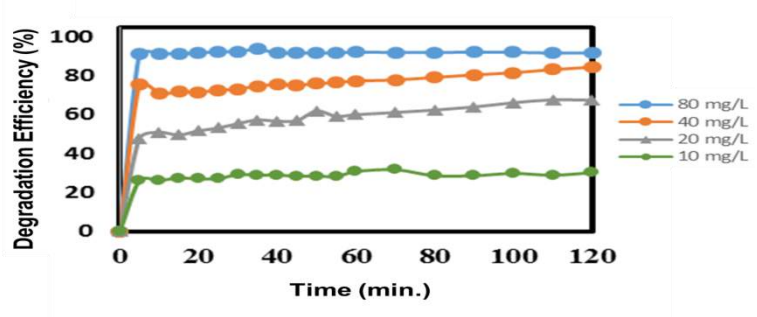

Fig. 1. Degradation efficiency (%) of the GO-Fe_3O_4 nanocomposites

References

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