

Highly efficient visible light active sulphur doped zinc oxide and its composite with graphene oxide for degradation of toxic pollutants.

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Abstract:

With the development of dye manufacturing industries, the level of toxic organic pollutants is increasing very rapidly and causing irreparable damage to environment. Herein, we report Sulphur doped Zinc oxide-graphene oxide composites as simple, efficient and eco-friendly photocatalyst for degradation of toxic dyes. Sulphur doped zinc oxide nanoparticles were prepared by mechano-chemical process followed by synthesis of graphene oxide (GO) by modified hummer's method. The synthesized nanoparticles were decorated on graphene oxide sheets with different weight percentages to obtain various concentrations of dopant in composite and characterized by various like spectroscopic and microscopic techniques such as TEM, SEM, EDXS, FTIR, and UV spectrophotometry. Photocatalytic activity of the composites were evaluated by degradation of methylene blue as a standard pollutant. The enhanced photocatalytic activity can be attributed to synergistic effect between doped nanoparticles and GO which not only promoted effective separation of photogenerated electron and hole pairs but also manage band gap to visible light range. This work not only offers insight into designing cost effective and visible light responsive photocatalyst but also investigates effect of various parameters effecting dye degradation such as catalyst

loading, pH, substrate concentration and the irradiation time for dye degradation.

Biography

Humaira Khan has completed her MS years from Lahore University of Management Sciences (Pakistan) and BS from Hacettepe University (Turkey). She is the Lecturer in Chemistry department- University of Management and Technology. She is also serving as Assistant director international relations in University of Management and Technology.

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