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## Synthesis and characterization of ZnO/g-C<sub>3</sub>N<sub>4</sub> hybrid nanofibers photocatalyst for the removal of organic pollutants from water

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### Abstract

ZnO/g-C<sub>3</sub>N<sub>4</sub> hybrid nanofibers containing different concentrations of g-C<sub>3</sub>N<sub>4</sub> nanosheets were prepared using electrospinning technique; this was followed by annealing at 460 °C for one hour in a box furnace. Based on scanning electron microscopy (SEM) image analysis, the mean diameter of the nanofibers was measured to be ~ 55 nm. Fourier transform infrared (FTIR) spectroscopy confirmed the presence of ZnO and g-C<sub>3</sub>N<sub>4</sub> in the prepared nanofibers. The photocatalytic activity of the nanofibers was examined under UV photoirradiation, showing that the ZCN0.5 nanofibers containing 0.5 wt% of g-C<sub>3</sub>N<sub>4</sub> exhibited the highest performance, as compared to other photocatalysts. The observed improvement in photodegradation over the optimized photocatalyst could be due to retardation in the charge carriers' recombination rate in the ZCN0.5 photocatalyst sample, as compared with the pure ZnO and pure g-C<sub>3</sub>N<sub>4</sub>.

**Keywords:** hybrid ZnO/g-C<sub>3</sub>N<sub>4</sub> nanofiber, electrospinning, photocatalytic activity, UV light

For full article, refer to the Persian section