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## Photocatalytic degradation of organic contaminants by g-C<sub>3</sub>N<sub>4</sub>/EPDM nanocomposite film: Viable, efficient and facile recoverable(Article)

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### Abstract

The original metal free graphitic carbon nitride/ethylene propylene diene monomer nanocomposite film (g-C<sub>3</sub>N<sub>4</sub>/EPDM NCF) was fabricated by facile solution cast method. g-C<sub>3</sub>N<sub>4</sub>/EPDM NCF with diameter (50 mm) and thickness (4 mm) was investigated towards the photocatalytic degradation of methylene blue (MB) and methyl orange (MO) dye solution under visible light irradiation. The as synthesized g-C<sub>3</sub>N<sub>4</sub>/EPDM NCF was exhibited high crystalline nature with the crystalline size of 21.53 nm, the smooth surface nature and the particle size was observed from the TEM analysis is 20 nm. Furthermore, the influence of operational parameters was carried out which demonstrated that 100 mg photocatalyst and 25 μM of dye concentration were obtained as an optimized condition for the best photocatalytic degradation results. As a result of scavenger experiment, it was concluded that the hydroxyl radical ([rad]OH) was actively involved in the photocatalytic degradation. The g-C<sub>3</sub>N<sub>4</sub>/EPDM NCF were recoverable from the photocatalytic reaction system and the present find findings may open up a new platform for the simple handpicked photocatalyst. © 2017 Elsevier B.V.

### Author keywords

100% recoverability Dye contaminant g-C<sub>3</sub>N<sub>4</sub>/EPDM Handpicking method Photocatalytic degradation Polymer

### Indexed keywords

Engineering controlled terms:

Aromatic compounds Azo dyes Carbon Crystalline materials Dyes Impurities  
Nanocomposites Particle size Particle size analysis Photodegradation Polymers

Engineering uncontrolled terms

g-C<sub>3</sub>N<sub>4</sub>/EPDM Graphitic carbon nitrides Handpicking method Operational parameters  
Photo catalytic degradation Photocatalytic reactions Recoverability Visible-light irradiation

Engineering main heading:

Nanocomposite films

EMTREE drug terms:

azo compound cyanogen elastomer ethylene derivative  
ethylene-propylene-diene-monomer graphite hydroxyl radical methyl orange  
methylene blue nanocomposite nitrile

EMTREE medical terms:

catalysis chemistry infrared spectroscopy light particle size photolysis  
radiation response transmission electron microscopy water pollutant X ray diffraction

### Cited by 10 documents

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Synergetic effect of photocatalysis and peroxymonosulfate activation by MIL-53Fe@TiO<sub>2</sub> on efficient degradation of tetracycline hydrochloride under visible light irradiation

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Methylene Blue   Microscopy, Electron, Transmission   Nanocomposites   Nitriles   Particle Size  
Photolysis   Spectroscopy, Fourier Transform Infrared   Water Pollutants, Chemical  
X-Ray Diffraction

### Chemicals and CAS Registry Numbers:

graphite, 7782-42-5; hydroxyl radical, 3352-57-6; methyl orange, 547-58-0; methylene blue, 61-73-4;

Azo Compounds; cyanogen; Elastomers; ethylene-propylene-diene-monomer; Ethylenes; Graphite; Hydroxyl Radical; methyl orange; Methylene Blue; Nitriles; Water Pollutants, Chemical

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