

Summary and future scope

1. Summary of the work

In the current work, various modification techniques are discussed. Metal doping is one such method to tune the band gap of photocatalyst. Graphitic carbon nitride is synthesized with melamine as precursor by thermal polymerization method at 600°C for 6h at heating rate 10°C/min. Graphitic carbon nitride is doped with three different transition metals and compared with undoped graphitic carbon nitride. For doping purpose, we mix corresponding metal source with precursor. Various characterization techniques were adopted to confirm the successful doping and doping improved the degradation.

The degradation experiments were performed on congo red dye. Optimization of catalyst synthesis temperature and synthesis time were performed. Further the effect of various operating parameters like catalyst dose, light intensity and concentration of dye is monitored All experiments were performed at 7 pH dye solution. The optimum conditions were:

- Synthesis temperature: 600°C
- Synthesis time: 6h
- Catalyst dose: 2mg/L
- Light illuminance: 7.200 lx or 20 W
- Dye concentration: 10 ppm (water base)

2. Future scope

- ❖ How this study can be used to scale up for large scale applications.
- ❖ To fabricate photocatalysts which are active under IR region.
- ❖ To examine the structural stability of g-C₃