

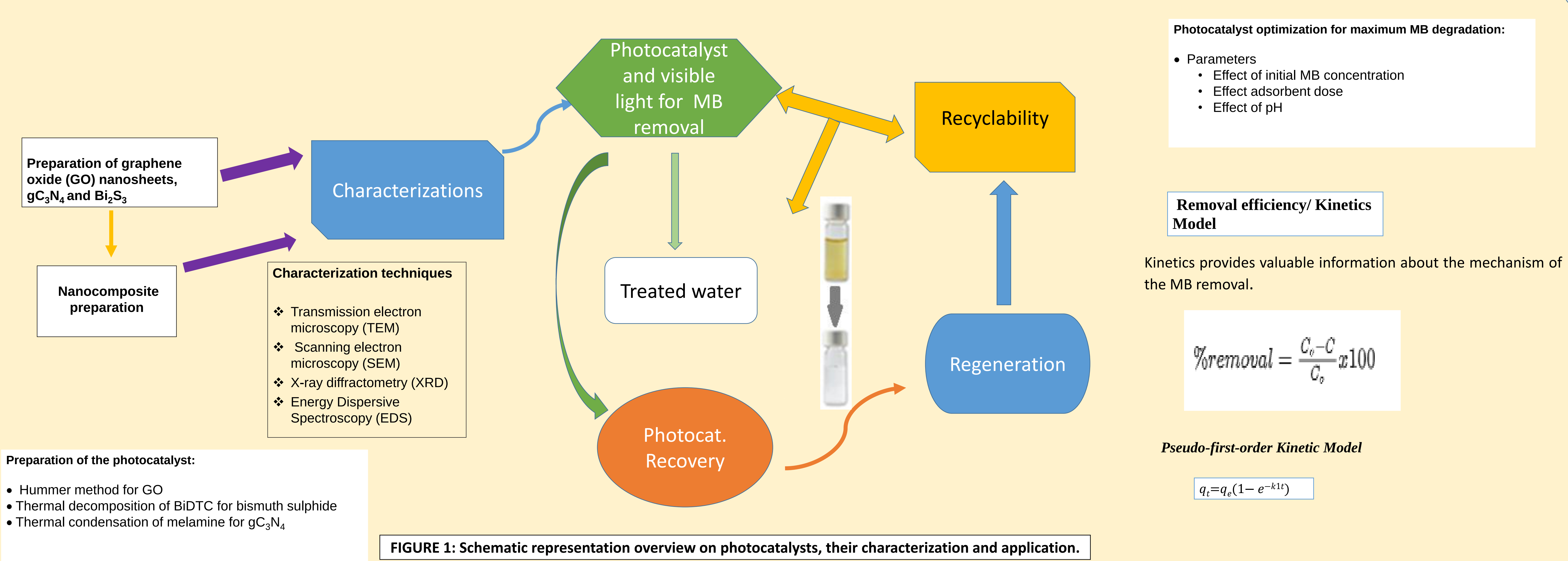
Investigating the performance of rGO/Bi₂S₃ and gC₃N₄//Bi₂S₃ as methylene blue-degrading photocatalyst in water

Background

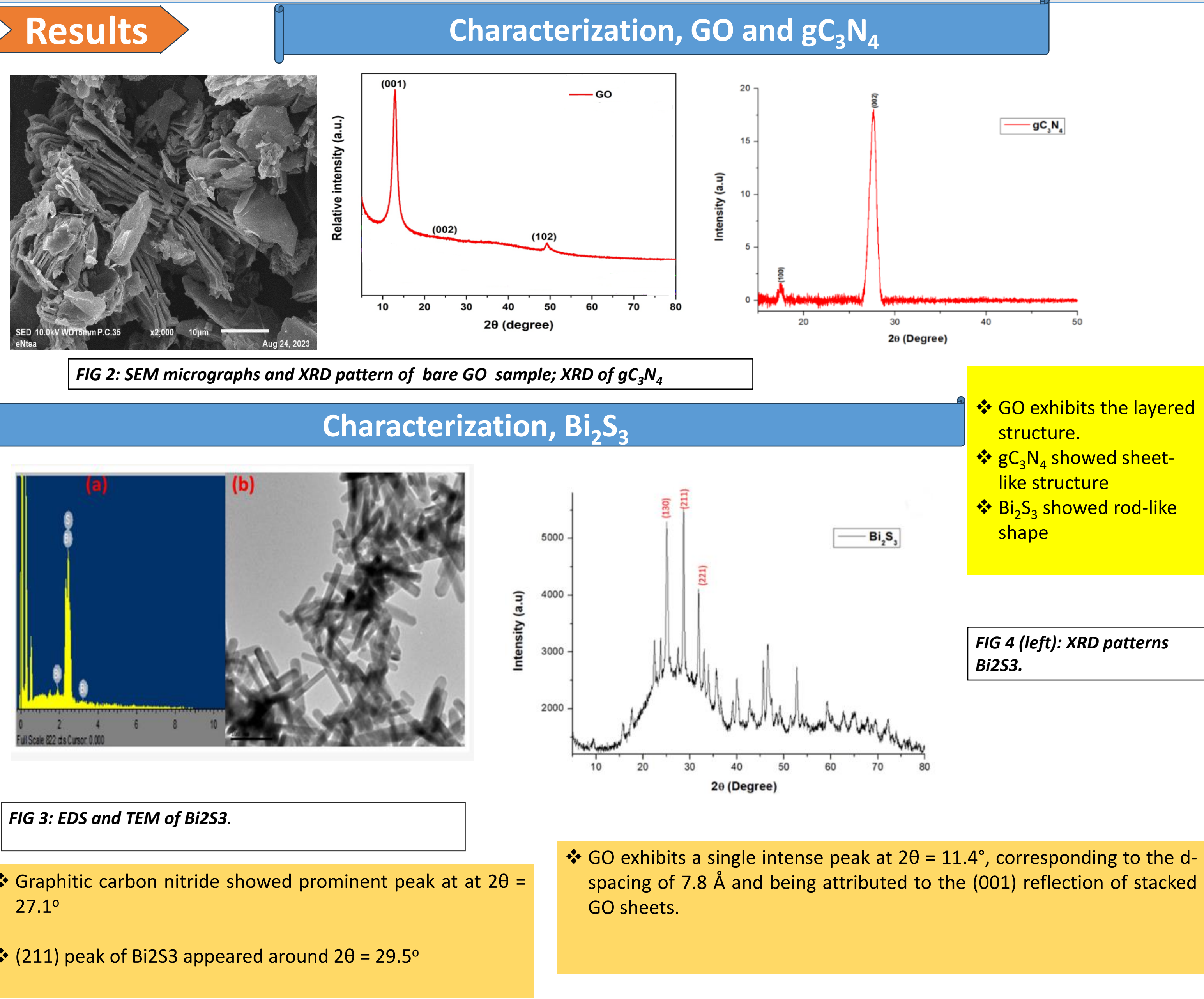
Methylene blue (MB) is a refractory pollutant in textile wastewater. To remove it from wastewater, several methods have been used but these methods have limitations, hence, there is need for alternative methods of removal. Photocatalysis is an alternative method that degrades MB and other organic pollutants rather than transferring it from one medium to another. To achieve an efficient photocatalytic process, several photocatalysts have been investigated. Various polymeric carbon-based materials have been used as the support for nanoparticles to form nanocomposites. This is expected to enhance the adsorption and photocatalytic performance of nanocomposite materials. In the present studies, graphitic carbon nitride (gC₃N₄) and graphene oxide (GO) were used as the base carrier for bismuth sulfide nanoparticles. Their performance for MB degradation are studied.



Overview of experimental methodologies: Photocatalysts' synthesis, their characterization and MB removal process in water



Results



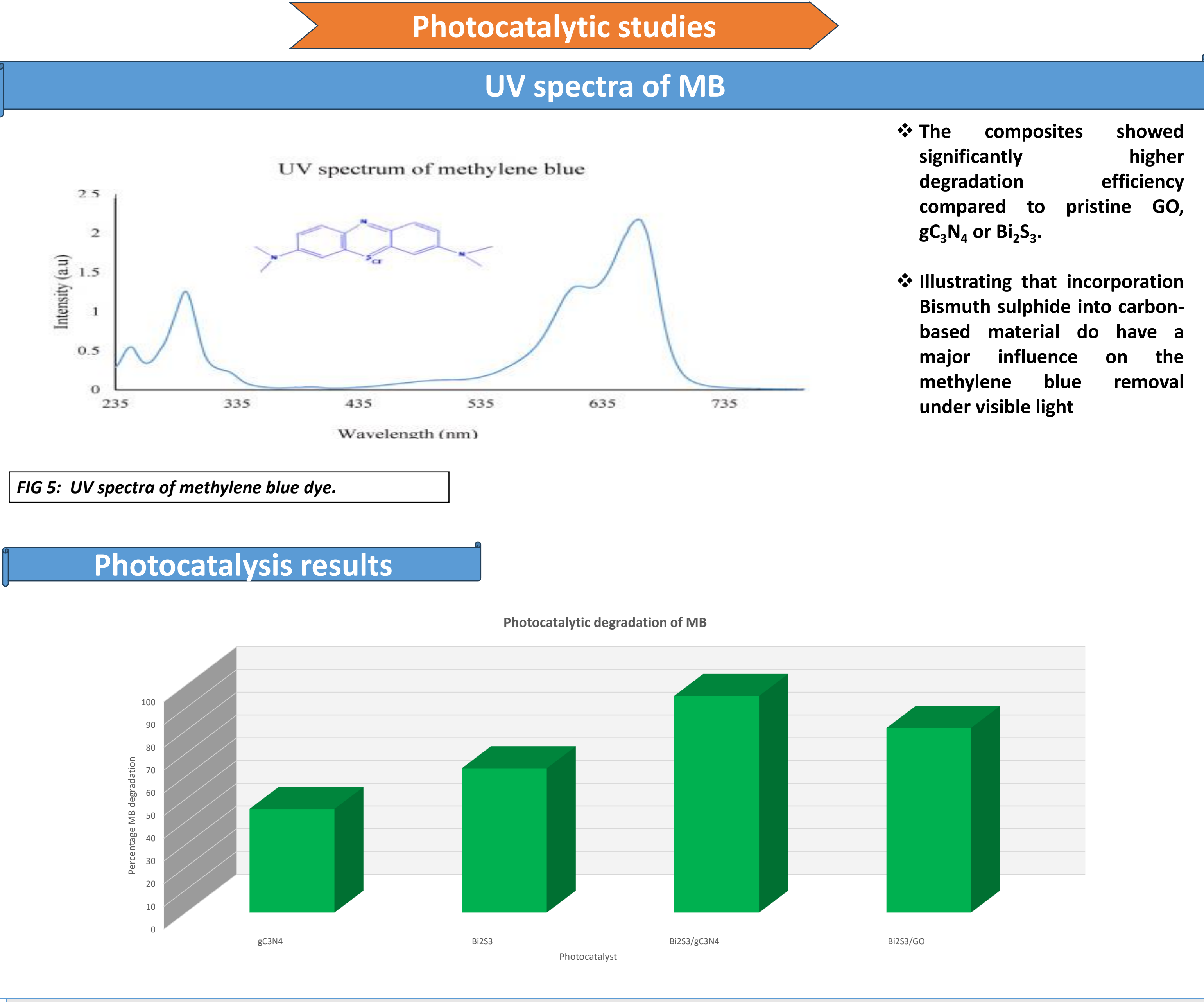
Acknowledgment

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References

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Photocatalytic studies



Conclusion and future work

- ❖ The optimum condition used is 20 mg/L of MB, 50 mg of the photocatalyst at pH 2 using visible light.
- ❖ The maximum MB removal observed is 95.3% when Bi₂S₃/gC₃N₄ was used as the photocatalyst compared to 81.2 and 63.5% obtained respectively for Bi₂S₃/GO and pristine Bi₂S₃.
- ❖ Scavenger trapping experiments will be carried out to identify the radicals/ions contributing to the degradation.
- ❖ Further characterization such as XPS and Zeta potential will be carried out on the nanocomposite
- ❖ Other adsorption parameters such as effect of temperature