

UV-Induced Photodegradation of Rhodamine B Dye using TiO₂-Based Nanocomposites

¹Sara Dervishi

¹Arjan Korpa, ¹Silvana Gjyli, ²Rita Branquinho

¹University of Tirana, Faculty of Natural Sciences, Department of Chemistry, Tirana, Albania

²CENIMAT, FCT-UNL Campus da Caparica 2829-516 Caparica, Portugal

sara.dervishi@fshn.edu.al; arjan.korpa@fshn.edu.al; vanagjyli@yahoo.com; ritasba@fct.unl.pt

In this study, an investigation is conducted to compare the photocatalytic efficacy of of Copper (Cu) and Silver (Ag) doped TiO₂ supported on Graphene oxide sheets, wherein TiO₂ is synthesized in both anatase and rutile crystal structures. Pure anatase and rutile TiO₂ are effectively obtained during the synthesis process. The capability of the synthesized materials to degrade the organic pollutant Rhodamine B is evaluated under UV light. The findings demonstrate a significantly improved photocatalytic activity of Ag-TiO₂/GO composite, achieving up to 100% degradation within duration of 40 minutes. Additionally, SEM-EDX and XRD analyses are performed to characterize the samples.

References

- [1] Utami, Maisari, Shaobin Wang, Febi Indah Fajarwati, Siva Nur Salsabilla, Tania Amara Dewi, and Melinda Fitri. *Crystals* 13, no. 4 (2023): 588.
- [2] Lee, Seong Youl, Doocho Kang, Sehee Jeong, Hoang Tung Do, and Joon Heon Kim. *ACS omega* 5, no. 8 (2020): 4233-4241.
- [3] Ali, Mohamed HH, Afify D. Al-Afify, and Mohamed E. Goher. *The Egyptian Journal of Aquatic Research* 44, no. 4 (2018): 263-270.
- [4] Authors, Journal, Issue (Year) page

Figures

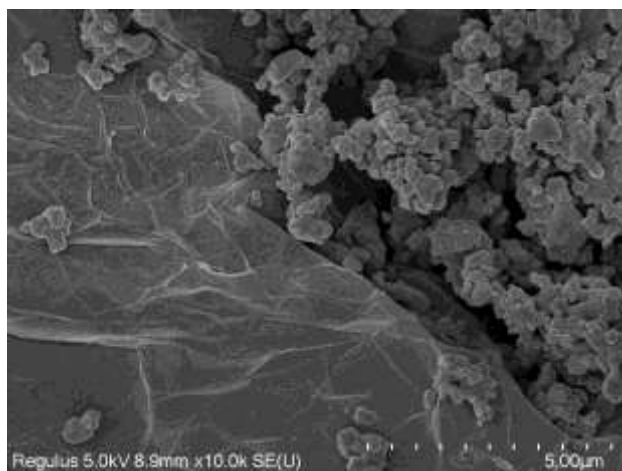


Figure 1: Rutile TiO₂/GO SEM image