

Photocatalytic Degradation of Methylene Blue Dye using TiO₂ Nanoparticles

Sutar RS, Kurund SB, Morale AM, Kurund SD, Chavan RA, *Patil MK

Department of Chemistry, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Sub-campus, Osmanabad -413 501 (M.S.) India.

*Corresponding author Email: mkpatil05@gmail.com

Manuscript Details

Available online on <http://www.irjse.in>
ISSN: 2322-0015

Editor: Dr. Arvind Chavhan

Cite this article as:

Sutar RS, Kurund SB, Morale AM, Kurund SD, Chavan RA, Patil MK. Photocatalytic Degradation of Methylene Blue Dye using TiO₂ Nanoparticles, *Int. Res. Journal of Science & Engineering*, 2018; Special Issue A5: 127-130.

© The Author(s). 2018 Open Access

This article is distributed under the terms of the Creative Commons Attribution 4.0 International License

(<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

ABSTRACT

TiO₂ nanomaterials were prepared by using sol-gel, hydrothermal and dispersion method. These nanomaterials were characterised by XRD. The photocatalytic activity of all three prepared samples were demonstrated for the degradation of methylene blue dye under sun light irradiation. The degradation rate of methylene blue dye degradation has been significantly enhanced with TiO₂ prepared by hydrothermal method.

Key words: TiO₂, Hydrothermal, Sol-gel, Titanium tetra-isobutoxide, Urea, Methylene blue

INTRODUCTION

Titanium dioxide (TiO₂) is an important semiconductor, having properties such as non-toxicity, photo and chemical stability, water insolubility under most conditions and low production cost [1-5]. TiO₂ is highly promising agent to be used in electronic, photo catalysis, water purification, as well as antibacterial and self-cleaning materials [6-11]. The history of TiO₂ started in 1972 from the discovery Fujishima and co-worker [1-3].

Different preparation procedure can change the morphology of TiO₂ catalyst. This can results in change in photocatalytic activity of TiO₂. In this study, we have prepared three TiO₂ catalysts by different methods and compare the photocatalytic activity for degradation of methylene blue.

National Seminar on "Recent Advances in Green Chemistry and Physics -2018

© 2018 | All right reserved

| 127