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# PHOTOCATALYTIC DEGRADATION OF RHODAMINE B POLLUTANT USING A BISMUTH FERRITE CATALYST.

Water pollution is generated by the discharge of effluents from different sectors of industry, containing heavy metals, organic toxins, lubricants, solid dyes and chemicals. Research shows that, between 2007 and 2021 the presence of emerging organic pollutants (EOCs) and endocrine disruptors (ED) has significantly increased, becoming a serious health risk to humans and ecosystems [1]. In Mexico, compounds like Rhodamine B, are known to be present in various water sources, as a result of inclusive use in the textile industry. Various water treatment strategies like Advanced oxidation process (AOPs), have been explored and aimed at removing dyes and pollutants present in water. Each of these methodologies offers different approaches and levels of efficiency in the removal of dyes present in polluted water, with photocatalysis being one of the most applied methods in recent years. This technology requires, the development use of heterogeneous catalysts, such as bismuth ferrite (BiFeO<sub>3</sub>), a non-stoichiometric substance belonging to the family of perovskites (ABX3), exhibits promising photocatalytic properties, thanks to its suitable bandgap (~2.2 eV). In this work, the green synthesis by combustion method, of a BiFeO3 catalysts and its removal efficiency and kinetics, were evaluated using Rhodamine B as a test molecule. As a result, a catalyst was obtained and characterized via xray difration, scanning electron microscopy and N2 adsorption-desorption. The Rhodamine B solution exhibited a degradation of 60% within a period of 60 minutes, indicating a substantial degradation of the Rhodamine B dye under the given experimental conditions. This suggests that the catalyst and method used were effective in reducing the concentration of Rh-B in a relatively short amount of time.

# Keywords

Rhodamine B, Bismuth ferrite, Photocatalysis.

#### Reference

J. Halder and N. Islam, "Water Pollution and its Impact on the Human Health," J. Environ. Hum., vol. 2, no. 1, pp. 36–46, 2015, doi: 10.15764/EH.2015.01005.

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