



**ICONSAD'22**

# **2nd International Congress on Scientific Advances**

## **2. Uluslararası Bilimsel Gelişmeler Kongresi**

**21-24 Aralık / December 2022**

**PROCEEDINGS BOOK**

**BİLDİRİLER KİTABI**

**ISBN: 978-605-73639-5-4**

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# The Photocatalytic Performance of Fe and Co Doped ZnO Nanoparticles

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## ABSTRACT

Organic contaminants, toxic substances, synthetic compounds, and various complex substances have been found in the ground, sewage, and drinkable water supplies over the previous few decades because of population growth and fast industrialization. The textile industry is one of the biggest global emitters of contaminated wastewater, which contains huge amounts of nonbiodegradable dyes and other reagents. The organic dyes in textile industries' wastewater harm mammals and the aquatic environment when discharged into the water without treatment. The pollutants in textile wastewater are transferred from one phase to another with conventional treatment procedures. The photocatalytic degradation process almost converted organic contaminants into less harmful or non-toxic components, which operate at low cost at room temperature and atmospheric pressure

Ternary nanocomposite has improved the visible light absorption capacity and transfer of photogenerated charges on the surface. Here, the visible light-induced ternary Fe and Co-doped ZnO (ZFC) synthesized via hydrothermal method. The characterization of ZFC has been completed via X-Ray diffraction (XRD), scanning electron microscope (SEM), energy dispersive spectroscopy (EDX) and elemental mapping methods. The photocatalytic efficiency of ZFC was investigated with the degradation of rhodamine B (RdB) under visible light irradiation. Then the influence of dye concentration and photocatalyst amount on the photocatalytic degradation of RdB dye in the presence of ZFC photocatalyst. Also, the recycling performance of the ZFC nanocomposite examine.

**Keywords-** photocatalysis, ternary nanocomposite, ZnO, rhodamine B, visible light