

ABSTRACT

In this research, zinc oxide (ZnO)-based photocatalyst degradation was carried out to reduce water pollution due to dangerous textile dye waste. The rapidly growing textile industry produces dangerous dye waste such as Rhodamine B, Auramine, and Brilliant Blue. This waste has the potential to damage the environment and human health. ZnO, which has been proven to be effective in reducing pigment intensity in water, is one of the recommended solutions. Zinc oxide can be made from various zinc waste such as filter dust used to make steel or zinc plates from zinc roofing waste which is widely available in Indonesia. The use of zinc oxide as a photocatalyst aims to reduce the risk of textile dye waste and prevent water pollution by the heavy metal zinc. In this research, ZnO was synthesized from electrode waste and zinc galvalume. The synthesized ZnO is used for a water purification system that combines Internet of Things (IoT) technology with the ESP8266 device, pH sensor and TCS3200 to monitor water quality in real-time by looking at color, pH and turbidity. Results from FT-IR, the application of IoT devices in an Internet of Things (IoT) based water purification system can help the process of controlling river water contaminated with textile dyes.

Keywords: ZnO, Rhodamine B, Auramine, Brilliant Blue, and IoT.