

## **ABSTRACT**

*Eliminating pathogenic bacteria in water is very important in the process for the use of water for both sanitation and drinking water. The development of nanoscience and nanotechnology in the last decade provided an opportunity to overcome this problem. This study aims to prepare polyurethane sponge media coated with AgGO used as disinfection media and characterization as well as media performance on a pilot scale. In this study AgGO preparation was carried out by synthesizing GO with Hummers method and then AgNP synthesis was carried out in GO solution using sodium citrate reducing agent. Characterization was carried out using SEM and UV-Vis Spectrophotometer with a wavelength of 230 nm for GO and a wavelength of 420 nm for AgNP. Media resistance test carried out by soaking in distilled water showed the release of Ag by 0.006% or 0.05 ug / ml within 2 days. The total coliform test results for each flowrate of 4 ml / minute, 8 ml / minute, and 16 ml / minute showed the presence of total coliform removal with different removal efficiency. The average coliform test results showed an efficiency of 90% with a LRV value of up to 2.3. The highest removal efficiency was obtained at a flowrate of 4 mL / minute and the effective time of bacterial reduction occurred in the initial 30 minutes.*

*Keyword :Waste Water, Coliform, Silver Nanoparticles (AgNPs), Graphene Oxide (GO)*