# Abstract

Clean water is expensive to obtain, hence the need for cheaper and effective ways of treating water. This study investigated the preparation and application/performance of affordable and effective ceramic/silver nanocomposites in the purification of water. Ceramic filters were manufactured by combining clay, flour, and broken clay pots on a weight basis. The dry mix was combined with deionized water, molded, fired, and treated with either silver nanoparticles or silver nitrate solution. Both treatments were done by submerging disks in their respective solutions. Analysis of treated water has shown that the pH of raw water was reduced by 1.08% with clay only filter, 5.20% with silver nitrate/clay filter, and finally 12% with silver nanoparticle/clay composite. Hardness decreased by 67% with nanoparticle composite while water from clay had 0.08% decrease in hardness. Biological oxygen demand fell by 50% with the clay only filter while there was 100% decrease with clay/silver composites. Nitrates decreased with clay only filters by 21.5% but increased in water treated with silver nitrate composite (84%) and clay/silver nanoparticle composite (73%). Inductively coupled plasma spectroscopy was used to estimate silver leaching from disks embedded with silver nitrate (0.024 ± 0.002mg/L) and silver nanoparticles (0.013 ± 0.002 mg/L) using 0.001 M dosage. All parameters investigated were dose-dependent.