Green Nanotechnology: Increasing Sewage Water Treatment Efficiency by Using Economical Porcelanite Nanoparticles

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WHO stated that globally 50,000 people die every day due to diseases caused by water pollution. Therefore, water treatment is one of the world scientific research priorities. Most techniques used in purification require high energy or need costly chemicals. The purpose of this study is to identify which size of porcelanite nanoparticles is the most efficient in treating sewage water and reducing the organic pollution by economical green nanotechnology. Practical experimentation started on two experimental samples compared with one controlled sample. Dividing the second sample of porcelanite nanoparticles into three different sizes led to their properties changing and the need to compare their efficiency. A 0.06 mg/liter of porcelanite nanoparticles was synthesized by milling and gradually adding 0.5 mg/liter of CuSo4 to the water. They were mixed for 5 minutes, then passed through activated carbon. The result confirmed that porcelanite nanoparticles are more efficient than chlorinating. The $0.025x10^3$nm sample can remove 98% of colors, can deodorize, remove planktons and kill 100% of bacteria from sewage and eliminate oil, grease and E.Coli. This is an indicator of bacteria and microorganisms' presence in sewage and is due to increase their capacities for absorption where surface area increased when synthesized. However, the biological oxygen demand and the chemical oxygen demand decreased in carbon absorption. In conclusion, the samples were confirmed with international standards and using CuSo4 gets rid of pelagic organism's diseases with treated water. There may also be the benefit of increased production when used in agriculture, thereby supporting local economics.

Awards Won:

King Abdulaziz &amp

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