

Dedication

This work is dedicated to my parents, my husband, my siblings, my friends and my teachers.

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Abstract

In this research TiO_2 nanoparticles have been used for drinking water treatment. Two samples of contaminated water with E.coli have been used for this work. One sample has been treated with TiO_2 nano powder and at the same time exposed to UV from sunlight. The other one has only been exposed to solar radiation.

The results have shown that the disinfection becomes much faster when solar radiation is enhanced with TiO_2 . The bacteria colonies vanished completely within 5 hours when both TiO_2 and UV radiation were used compared to more than 6 hours when only UV radiation was used.

الخلاصة

في هذا البحث تم دراسة جسيمات ثاني اكسيد التيتانيوم النانوي واستخدامه في معالجة مياه الشرب. وقد استخدمت عينتين من المياه الملوثة بالبكتيريا القولونية في هذا العمل. تمت معالجة واحدة بمسحوق ثاني اكسيد التيتانيوم النانوي، وفي الوقت نفسه بتعريضها للأشعة فوق البنفسجية من أشعة الشمس، والأخري تم تعريضها لأشعة الشمس فقط. وقد أظهرت النتائج أن التطهير يصبح أسرع بكثير عندما يتم تعزيز الإشعاع الشمسي مع مسحوق ثاني اكسيد التيتانيوم النانوي. اختفت مستعمرات البكتيريا تماما في غضون خمسة ساعات عند استخدام مسحوق ثاني اكسيد التيتانيوم والأشعة فوق البنفسجية معا مقارنة مع أكثر من ستة ساعات عند استخدام الأشعة فوق البنفسجية فقط.

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