

بيان بالبحث رقم (٧)

<u>Title</u>	Detoxification of Hexavalent Chromium in Wastewater Containing Organic Substances Using Simonkolleite-TiO₂ Photocatalyst
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Abstract:

Innovative simple method for the preparation of simonkolleite-TiO₂ photocatalyst with different Zn contents was achieved. The prepared photocatalysts were characterized by X-ray diffraction (XRD), transmission electron microscopy (TEM), FT-IR, Raman and diffuse reflectance spectroscopy techniques. The photocatalytic activities of the materials were evaluated for the simultaneous detoxification of hexavalent chromium (Cr(VI)) and oxidation of organic compounds commonly present in wastewater under simulated solar light. The best photoreduction efficiency of Cr(VI) has been achieved at 1000 ppm simonkolleite-TiO₂ photocatalyst of 5% Zn/TiO₂ weight ratio, and pH value of 2.5 to enhance the adsorption onto catalyst surface. Photoreduction was significantly improved by using formic acid as holes scavenger owing to its chemical adsorption on the catalyst surface. Finally, 100% photoreduction of Cr(VI) could be achieved using formic/simonkolleite-TiO₂ systems under sunlight.

الملخص بالعربي :

لقد تم في هذا البحث تحضير محفز ضوئي من مادة ثاني أكسيد التيتانيوم المطعم بجزيئات الزنك ، ولقد تم استخدام هذه المادة الجديدة في تنقية عينات من مياه الصرف الصحي ولقد أثبتت هذه المادة فاعلية كبيرة تحت تأثير الضوء. ولقد تم فحص العينات المحضرة بالعديد من الطرق الحديثة لبيان تركيبها الكيميائي والسطحي .