

عنوان مقاله:

Photo-Catalytic Activity of ZnO Supported on H-ZSM-5 Zeolite to Reduce Cr(VI) from Aqueous Solutions

محل انتشار:

نشریه بین المللی علوم بهداشت، دوره 3، شماره 1 (سال: 1395)

تعداد صفحات اصل مقاله: 6

نویسندگان:

M Haghighi - *MSc, Social Determinants of Health (SDH) Research Center and Environmental Health Department, Health Faculty, Kashan University of Medical Sciences, Kashan, Iran*

F Rahmani - *PhD, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Iran*

R Dehghani - *PhD, Social Determinants of Health (SDH) Research Center and Environmental Health Department, Health Faculty, Kashan University of Medical Sciences, Kashan, Iran*

A Mazaheri Tehrani - *MSc, Social Determinants of Health (SDH) Research Center and Environmental Health Department, Health Faculty, Kashan University of Medical Sciences, Kashan, Iran*

خلاصه مقاله:

Aims The application of photocatalytic processes to remove heavy metals in aqueous solutions and industrial wastewater are regarded as extremely effective, clean and without producing waste methods. The goal of the present study was to investigate the photocatalytic activity of ZnO based on H-ZSM-5 zeolite support. **Materials & Methods** ZnO/H-ZSM-5 composite synthesized by impregnation method successfully, and photo-reduction of Cr(VI) was investigated via this composite in presence of UV light irradiation. The prepared composite was characterized by X-ray Diffraction (XRD) and Field Emission Scanning Electron Microscopy (FESEM). Data was analyzed by repeated measurement statistical test. **Findings** ZnO/H-ZSM-5 (79.5%) had better removal photo-reduction activity than pure H-ZSM-5 (8.7%; $p=0.003$) zeolite and ZnO (58.8%; $p=0.003$). The initial concentration of Cr(VI) was a highly influential factor in photo-reduction of Cr(VI); In the way that when the initial concentration increased from 10 to 40 mg/l, the photo-reduction percentage decreased from 92.5 to 57.7% in constant operational conditions ($p=0.001$). **Conclusion** ZnO/H-ZSM-5 composite has higher removal photo-catalytic activity than pure ZnO and H-ZSM-5 zeolite. Photo-reduction of Cr(VI) by ZnO/H-ZSM-5 composite is an efficient technology for the treatment of water and (wastewater containing high concentration of Cr(VI)).

کلمات کلیدی:

Oxidation-Reduction; Hexavalent Chromium; Metals, Heavy

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/487700>



