عنوان مقاله:

Synthesis of nanocomposite based on Semnan natural zeolite for photocatalytic degradation of tetracycline under visible light

محل انتشار:

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خلاصه مقاله:

This study investigated the photocatalytic behaviors for the nanocomposite of TiO2 P25 and Semnan natural zeolite in the decomposition of tetracycline under visible light in an aqueous solution. The structural features of the composite were investigated by a series of complementary techniques that included X-ray diffractometer (XRD), Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), surface area (BET) measurement, and ultraviolet-visible diffuse reflectance spectroscopy (DRS). The surface area measurement disclosed an enhancement of surface area by ~2 times for the synthesized TiO2/Semnan natural zeolite than that of commercial TiO2 P25. The asprepared photocatalyst (TiO2/Semnan natural zeolite) showed pH dependence and more than 87% of the tetracycline could be degraded from the solution under visible irradiation within 90 min at a pH of 6. This excellent catalytic ability was mainly attributed to the hybrid effect of the photocatalyst and adsorbent. The results provided new insight into the performance of active photocatalysts on the treatment of pharmaceutical wastewater. In addition, the immobilization of TiO2 onto Semnan natural zeolite permitted easier separation of the adsorbent from the treated .water

کلمات کلیدی:

Photocatalyst ،P25،Semnan Natural Zeolite ،Tetracycline ،Visible light