عنوان مقاله:

Structure and Photocatalytic Activity Studies of TiO2/CdS@MCM

محل انتشار:

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نویسندگان:

Niloufar Fatemi Payam - *Faculty of Nanotechnology, Semnan University, ۳۵۱۳۱-۱۹۱۱۱, Semnan, Iran*

Narjes Keramati - *Faculty of Nanotechnology, Semnan University, ۳۵۱۳۱-۱۹۱۱۱, Semnan, Iran*

Mohsen Mehdipour Ghazi - *Department of Chemical, Petroleum and Gas Engineering, Semnan University, ۳۵۱۳۱-۱۹۱۱۱, Semnan, Iran*

خلاصه مقاله:

In recent decades, problems such as low surface area, agglomeration in the solution, and low photocatalytic activity in visible light have limited usage of nano-photocatalysts. Therefore, many strategies have been used to increase photocatalytic activity and absorption of Titania as one of the most applicable photocatalysts. In this paper, the immobilization of various percentage of CdS/TiO2 composite on mesoporous MCM-41 was investigated. A series of nano-catalysts were prepared by sol-gel, chemical precipitation and impregnation methods and characterized with small angle X-ray diffraction (SAXS), Fourier transform infrared spectroscopy (FTIR), UV–visible diffuse reflectance spectra (UV-vis DRS) and BET. Their photocatalytic activities have been studied on the degradation of methylene blue under visible light. The modified sample with 25 wt. % CdS/TiO2 has highest activity. But the result shows that by loading more than 15 wt. % CdS/TiO2, the raet of improvment activity of methylene blue will be reduced. It is guessed that when CdS/TiO2 loading was more than 15 wt. %, the adsorption activity reduced significantly due to pore blockage of MCM-41.

کلمات کلیدی:

Nano photocatalyst, Surface modification, Silica mesoporous, Titania