

高效二氧化钛/膨润土复合材料的制备及光催化性能研究

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摘要 提出制备高效二氧化钛/膨润复合光催化的新方法——焦硫酸钾熔融/浸渍法, 并通过改变二氧化钛/膨润土的配比、反应时间、熔融灼烧温度等得到最佳制备条件, 采用XRD和TEM对该材料进行了表征, 证实TiO₂呈高度分散状态, 并已渗入膨润土层间结构, 使层间距扩大, 形成互不干扰的活性反应中心, 在模拟染料废水中, 对复合材料的光催化降解性能进行了研究, 结果发现, 采用焦硫酸钾熔融/浸渍法制备复合材料具有很高的光催化效率, 对活性艳红染料的降解性能进行了研究, 结果发现, 采用焦硫酸钾熔融/浸渍法制备的复合材料具有很高的光催化效率, 对活性艳红染料的降解率达93.6%, 明显优于纯氧化钛和其他类似材料。

关键词 [二氧化钛](#) [膨润土](#) [废水处理](#) [降解](#) [光催化剂](#) [X射线衍射分析](#) [焦硫酸钾](#)

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Preparation of Titanium Dioxide/Bentonite Composite Material with High Activity and Study on Its Photo-catalysis

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Abstract A new melting/calcing method for preparing a titanium dioxide/bentonite composite material with high photo-catalytic activity is presented. The optimal conditions for the preparation are obtained by adjusting the ratio of TiO₂/bentonite, reaction time, the melting and calcing temperature, etc. The composite material is characterized by XRD and TEM. It is found that the TiO₂ particles are highly spreaded and passed into the the lattice layer of bentonite. These particles enlarge the interlayer distance of the lattice and form many independent active centers for photo-catalysis. The photo-catalytic reaction is carried out in wastewater of dyestuff. The composite material prepared by the melting/calcing method is highly active in degrading organic compounds. The decoloring ratio for bright red solution is 93.6%, much higher than pure TiO₂ and other similar materials.

Key words [TITANIUM DIOXIDE](#) [AMALGOSITE](#) [WASTE WATER TREATMENT](#) [DEGRADATION](#) [PHOTOCATALYST](#) [XRD](#) [POTASSIUM PYROSULFATE](#)

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