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高分子网络凝胶法制备TiO₂复合粉体及光催化性能

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摘 要: 以TiCl₃为原料、过硫酸铵为引发剂, 采用高分子网络凝胶法制备TiO₂复合粉体, 利用TEM和XRD对纳米粉体表征。研究表明: 纯TiO₂和掺Sn⁴⁺纳米粉体基本没发生团聚; La³⁺掺杂改性的催化剂为锐钛矿型TiO₂, 掺杂稀土镧会抑制TiO₂晶型的转变, 使晶型转变温度滞后。掺杂Sn⁴⁺和La³⁺能够有效抑制光生电子和空穴的复合, 从而提高催化剂活性。

关键字: 高分子网络凝胶; 二氧化钛; 光催化

Preparation of TiO₂ composite powder by polymer network gel method and their photocatalysis performance

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Abstract: With TiCl₃ and (NH₄)₂S₂O₈ as original material, TiO₂ was produced with polymer network gel method. The characteristics of nanopowder were measured by XRD and TEM. The results show that pure TiO₂ and composite powder with Sn⁴⁺ can not unite, and the TiO₂ catalyzer doped with La³⁺ belongs to anatase type. Doping La³⁺ depresses the crystallographic transformation of TiO₂ and postpones the transformation temperature. Doping with Sn⁴⁺ and La³⁺ metal ions can improve the activity, because ions restrain the combination of photoelectron and cavity.

Key words: polymer network gel; titanium dioxide; photocatalysis

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