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论文

$NiO-MoO_3/SiO_2$光催化剂的结构与光吸收性能

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摘要:

采用表面改性法制备了负载型复合半导体$NiO-MoO_3/SiO_2$, 用程序升温还原、 X射线衍射、 拉曼光谱、 透射电镜、 比表面积测定和紫外-可见光漫反射光谱技术对固体材料的组成结构和光吸收性能进行了表征. 结果表明, $NiO-MoO_3/SiO_2$的平均粒径约为10 nm, 在载体表面存在$xNiO·MoO_3$复合氧化物的微晶, NiO和MoO_3在固体材料表面产生相互修饰作用. NiO的加入有助于提高MoO_3在载体SiO_2表面的分散程度, 抑制MoO_x的聚合, 减小微晶尺寸, 而且可以增强固体材料的光吸收性能, 提高复合半导体对光能的利用率.

关键词: 表面改性法 复合半导体 三氧化钼 氧化镍 光吸收性能

Structure and Light Absorption Ability of Photo-catalytic Material $NiO-MoO_3/SiO_2$

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Abstract:

The supported coupled semiconductor of $NiO-MoO_3/SiO_2$ was prepared by surface modification method. TPR, XRD, Raman, TEM, BET and UV-Vis DRS techniques were used to characterize the structure and light adsorption ability of $NiO-MoO_3/SiO_2$. The results show that, the particle size of $NiO-MoO_3/SiO_2$ is about 10 nm, $xNiO·MoO_3$ coupled oxide exist on the silica surface as crystallite, and NiO and MoO_3 on the support surface can act on each other. On the one hand, NiO can promote the dispersion of MoO_3 on the silica surface, which effectively prevents MoO_x from aggregation and diminishes the size of crystallite, on the other hand, NiO can expand the light absorption ability of the solid material, raise its utilization to the light energy.

Keywords: Surface modification method Coupled semiconductor Molybdenum trioxide Nickel oxide Light adsorption ability

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