·基础与临床研究·

牙科修复用 CuO 掺杂纳米二氧化钛的制备与表征

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【摘要】 **目的** 通过氧化铜掺杂，制备改性氧化铜纳米二氧化钛光催化剂，检测氧化铜掺杂对 CuO/TiO_2 复合光催化剂吸收光谱的影响，为研制口腔临床修复功能性材料提供依据。**方法** 采用共沉淀法制备 CuO/TiO_2（CuO 掺杂纳米二氧化钛），通过 X 射线衍射仪（XRD）、扫描电镜（SEM）和紫外 - 可见光吸收光谱（UV-vis 谱）对其形态、结构、组成和性质进行表征。**结果** 成功制备了 CuO/TiO_2 复合光催化剂，不同 CuO 掺杂比的 TiO_2 的形貌基本不变，CuO 掺杂使 CuO/TiO_2 吸收光谱发生红移，增加了可见光的吸收边界，提高可见光响应。**结论** 掺杂 CuO 后的光催化剂有效地提高其可见光响应能力，减少了空穴和电子复合，提高了可见光响应的性能。本研究对解决口腔临床修复对抗菌抑菌自洁特性材料的需求具有参考意义。

【关键词】 光催化剂 氧化铜掺杂纳米二氧化钛 制备 表征

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Preparation and characterization of CuO doped nano-TiO_2 for dental restoration

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【**Abstract**】 **Objective** In this paper, modified nano CuO/TiO_2 photocatalyst was fabricated by doping CuO, and the absorption spectrum of CuO doping was detected, which provided a basis for the development of functional dental restorative materials. **Methods** A copper oxide/titanium oxide (CuO doped nano-titanium dioxide) catalyst was prepared by coprecipitation method, and its morphology, structure and composition were analyzed by XRD (X-ray diffractometer), SEM (scanning electron microscopy) and ultraviolet-visible spectrum. **Results** The results have shown that the doped CuO made the absorption spectrum of the CuO/TiO_2 red shift, which increases the absorption range and the responcec of visible light. **Conclusions** The photocatalyst doped with CuO effectively improves the visible light response capability, reduces the recombination of holes and electrons, and improves the performance of the photocatalyst. This study has reference significance for the needs of dental restorative materials with antibacterial and self-cleaning properties.

【**Key words**】 Photocatalysis Modified nano CuO/TiO_2 Fabrication Characterization

口腔环境是一个多种微生物共生的环境，正常情况下口腔微生物间处于生态平衡状态[1]。在一定的内外因素影响下，口腔微生物生态平衡会发生改变[2-3]。口腔修复作为保持患者牙列形态，

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