عنوان مقاله:

Photo-catalytic Ni/Co co-doped TiO۲ nanoparticles for glazedCeramic Tiles

محل انتشار:

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خلاصه مقاله:

Self-cleaning and anti-bacterial activities of the photo-catalyst titanium dioxide make it a superiorcompound for use in the ceramics and glass industry. In order to achieve high self-cleaning efficiency forbuilding products, it is important that Titania is present as anatase phase. Moreover, it is desirable that theparticle sizes are in Nano-range, so that a large enough surface area is available for enhanced catalyticperformance. In the present paper, Cobalt and Nickel co-doped (۴%mol Ni and ۴%mol Co doped TiO۲)and un-doped TiO۲ Nano powders have been prepared by sol–gel technique and calcinated at temperaturesranging from ۴۷۵°C to ۱۰۷۵°C. Ni/Co co-doped TiO۲, postponed the anatase to rutile transformation ofTiO۲ by about ۲۰۰ C, such that after calcination at ۷۷۵ C, no rutile was detected for ۴ mol% Ni/Co codopedTiO۲. A systematic decreasing on crystallite size and increasing on specific surface area of Ni/Coco-doped TiO۲ were observed. Photo-catalytic activity of anatase polymorph was measured by thedecomposition rate of methylene blue under sunlight illumination. The results showed enhanced catalysisunder visible light for Ni/Co co-doped TiO۲ as compared to pure TiO۲. The enhanced performance wasattributed to surface chemistry change associated with a slight shift in the band gap.

کلمات کلیدی:

Ni/Co co-doped TiO۲; Anatase; Optical band gap energy; Structural properties

لینک ثابت مقاله در پایگاه سیویلیکا: