

Solvothermal synthesis and photocatalytic properties of chromium-doped SrTiO₃ nanoparticles

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First Author	
Last Author	
Authors	Sulaeman, U; Yin, S; Sato, T;
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Abstract	Chromium (Cr)-doped SrTiO ₃ nanoparticles were synthesized by a microwave-assisted solvothermal reaction using SrCl ₂ center dot 6H ₂ O and Ti(OC ₃ H ₇) ₄ as starting materials in KOH methanol-oleic acid solution. The products were characterized by XRD, TEM, BET surface area, and XPS. The photocatalytic activity was determined by DeNO(x) ability using LED lamps with wavelengths of 627nm (red), 530 nm (green), 445 nm (blue) and 390nm (UV). The nanoparticles of perovskite type Cr-doped SrTiO ₃ with a particle size of 15-20 nm were successfully synthesized. The photocatalytic activity of SrTiO ₃ for DeNO(x) ability under visible light (627 nm) irradiation was able to be improved by doping with a small amount of Cr. The high photocatalytic activity of Cr-doped SrTiO ₃ in the visible region was caused by new absorption in the visible region. (C) 2011 Elsevier B.V. All rights reserved.
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Author	UYI SULAEMAN, S.Si, M.Si, PhD