

Solvothermal synthesis of designed nonstoichiometric strontium titanate for efficient visible-light photocatalysis

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Abstract	SrTiO ₃ powders with various Sr/Ti atomic ratios were synthesized by microwave-assisted solvothermal reactions of SrCl ₂ and Ti(OC(CH ₃)H ₇) ₄ in KOH aqueous solutions. The nanoparticles of perovskite type SrTiO ₃ structure with the particle size of 30-40 nm were synthesized. The photocatalytic activity was determined by deNO(x) ability using light emitting diode lamps of various wavelengths such as 627 nm (red), 530 nm (green), 445 nm (blue), and 390 nm (UV). The photocatalytic activity significantly changed depending on the Sr/Ti atomic ratio, i.e., the strontium rich sample (Sr/Ti atomic ratio >1) showed excellent visible light responsive photocatalytic activity for the oxidative destruction of NO. (C) 2010 American Institute of Physics.[doi: 10.1063/1.3486466]
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