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Ag loading induced visible light photocatalytic activity for perovskite SrTiO<sub>3</sub> nanofibers

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Abstract: The synthesis and photocatalytic activities of Ag-SrTiO<sub>3</sub> nanofibers were reported in this work. The fabricated Ag-SrTiO<sub>3</sub> nanofibers were characterized by TG-DSC, XRD, IR, XPS, SEM, TEM, DRS and ESR techniques. The XRD and IR results show that Ag-SrTiO<sub>3</sub> nanofibers have a perovskite structure after the heat treatment at 700 °C. The XPS result shows that Ag element exists as Ag<sup>0</sup> in the fabricated Ag-SrTiO<sub>3</sub> nanofibers. The SEM and TEM images indicate the obtaining of nanofibers with porous structure. The photocatalytic activity of Ag-SrTiO<sub>3</sub> nanofibers was evaluated by degrading RhB and MB under visible light irradiation. The Ag-SrTiO<sub>3</sub> nanofibers show excellent photocatalytic activity under visible light irradiation because of the surface plasmon resonance effect of Ag<sup>0</sup>. In the photocatalysis process of RhB and MB, lots of hydroxyl radicals were generated, which plays the key role in the decomposition of organic pollutants.

Keywords: Ag-SrTiO<sub>3</sub>; Nanofibers; Surface plasmon resonance; Photocatalysis.

## 1. Introduction

Energy shortage and environmental pollution are two most critical issues facing

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