

Article

Preparation and characterisation of nano-ATO colloid suspension

March 2012 · [Micro & Nano Letters](#) 7(3):248-251 · [Follow journal](#)


DOI: [10.1049/mnl.2012.0052](https://doi.org/10.1049/mnl.2012.0052)

Lijun Chen · Fengqin Wu

Research Interest 

Citations 

Recommendations

Reads 

[See details](#)

 2.9

5

 0

 37

Full-text requested

Share ▾

More ▾

Overview

Stats

Comments

Citations (5)

References (20)

...

Abstract

Colloidal processing has been proved to be an ideal technology for nanopowder dispersion and to be an effective way to disperse nanopowders such as TiO₂, ZnO, CaCO₃, Cu, TiN, and so on. Few reports that are focused on the dispersion of nano-scaled ATO powder in aqueous media. In this Letter, the nano-ATO colloid suspension was prepared with colloidal processing. Nano-ATO powders were treated in aqueous media with ultrasonic wave and γ -methacryloxypropyl trimethoxy silane (MTS) was added as the coupling agent. The plausible modified mechanism of the silane coupling agent involves the hydrolysis of MTS, condensation of hydrolysis product and formation of a covalent bond, which is confirmed by Fourier transform infrared. Factors that affect the stability of nano-ATO colloid suspension were investigated in detail. Results show that the well-dispersed nano-ATO colloid suspension can be obtained under the following optimum conditions: the ultrasonication time is 30 min; pH of the colloid suspension is controlled at 7.0; the amount of MTS is 5.0%; the reaction temperature is 60°C. The particle size of nano-ATO colloid suspension is 65.2 nm and its distribution is unimodal distribution, which is further confirmed with transmission electron microscopy.





We'll let you know when the authors upload this research.

Full-text requested


Similar research



Investigation of Optimum Transparent Conductive Oxides (TCOs) for CdS:O/CdTe Thin Film Solar Cells (TFSCs) from Numerical Analysis

Article [Full-text available](#)

April 2016 · International Journal of Advanced Research

 Samiul Islam

Transparent Conductive Oxides (TCOs) are an increasingly important component of solar cells, where they act as front electrode elements. The structural templates, diffusion barriers and their work function controls the open circuit voltage (Voc). In this paper, various transparent conductive oxide...

52 Reads

[Download](#)

[Recommend](#) [Follow](#) [Share](#)



Densification and Properties of Fluorine Doped Tin Oxide (FTO) Ceramics by Spark Plasma Sintering

Chapter [Full-text available](#)

March 2014



material which is used in a wide range of devices. For the preparation of high quality ITO thin film by magnetron sputtering or pulsed laser deposition (PLD) technique, full doped ETO target materials are
134 Reads · 3 Citations





[Download](#)

[Recommend](#) [Follow](#) [Share](#)

Preferential Orientation and Surface Oxidation Control in Reactively Sputter Deposited Nanocrystalline SnO₂:Sb Films: Electrochemical and Optical Results

Article [Full-text available](#)

September 2014 · ECS Journal of Solid State Science and Technology

 J. Montero ·  Cecilia Guillén ·  Claes Goran Granqvist · [...] ·  Gunnar A. Niklasson

Antimony doped tin oxide is a versatile transparent electrical conductor. Many of its properties depend on the electronic band structure at the surface of a thin film—such as the position of the Fermi level, ionization potential I_p , optical gap energy, etc.—which in its turn is related to the surfac...

97 Reads · 12 Citations

[Download](#)

[Recommend](#) [Follow](#) [Share](#)

Antimony-doped tin oxide nanocrystallites prepared by a combustion process

Article [Full-text available](#)

May 2004 · Materials Letters

 Jianrong Zhang

Nanocrystalline antimony-doped tin oxide (ATO) has been successfully synthesized for the first time by the combustion process, using nitrate as an oxidizer and citrate as a fuel, and the starting metal sources are granulated tin and Sb₂O₃. The ATO crystallites are characterized by means of...

54 Reads





[Download](#)

[Recommend](#) [Follow](#) [Share](#)

Lithium intercalation in sputter deposited antimony-doped tin oxide thin films: Evidence from electrochemical and optical measurements

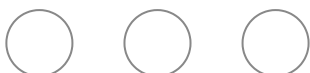
Article [Full-text available](#)

April 2014 · Journal of Applied Physics

 J. Montero ·  Cecilia Guillén ·  Claes Goran Granqvist · [...] ·  Gunnar A. Niklasson

Transparent conducting oxides are used as transparent electrical contacts in a variety of applications, including in electrochromic smart windows. In the present work, we performed a study of transparent conducting antimony-doped tin oxide (ATO) thin films by chronopotentiometry in a L...

208 Reads · 7 Citations



[View more related research](#)

