

ECHAHID HAMMA LAKHDAR UNIVERSITY - EL-OUED
Under the Supervision of the DGRSDT and in collaboration with the CRTI
International Pluridisciplinary PhD Meeting (IPPM'20)
23-26, 2020 1st Edition, February
Theme: Modern Technology and Fineness Life

IPPM templat (En/Fr) – 02 pages Max

Synthesis of Co, Fe co-doped SnO₂ : Characterization and applications

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1- Abstract

The latest research was based on the developing of new materials based on transparent conductor oxides (TCOs) used in several applications as environmental protection and detection. The nanostructures of metal oxides such as SnO₂, ZnO, CuO and NiO are widely used in various optoelectronic devices such as photocatalysis, photodiodes, gas sensors and solar cells.

SnO₂

is a very unique material with its important properties such as low operating properties, high thermal stability, and a high degree of transparency in the visible region of the spectrum. Also, this material shows good antibacterial properties. For obtaining desirable properties of the synthesized nanoparticles, controlled synthesis and synthesis method play an important role such as preparation conditions and doped elements.

The principal aim of this work programmed for realizing this thesis is synthesis and characterization of un-doped, doped and co-doped SnO₂ thin films by spray pyrolysis method, using Co and Fe as doped elements. In this work, the candidate will be required to carry out scientific experiments for the preparation and characterization of prepared samples, Also some applications will be realized.

2- Keywords: SnO₂; Co; Fe; Transparent conducting oxides (TCO); Thin films.

3- Thesis plan

The student work plan for the second year is as follows

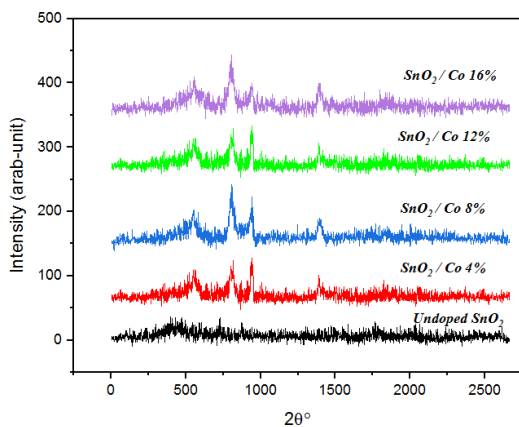
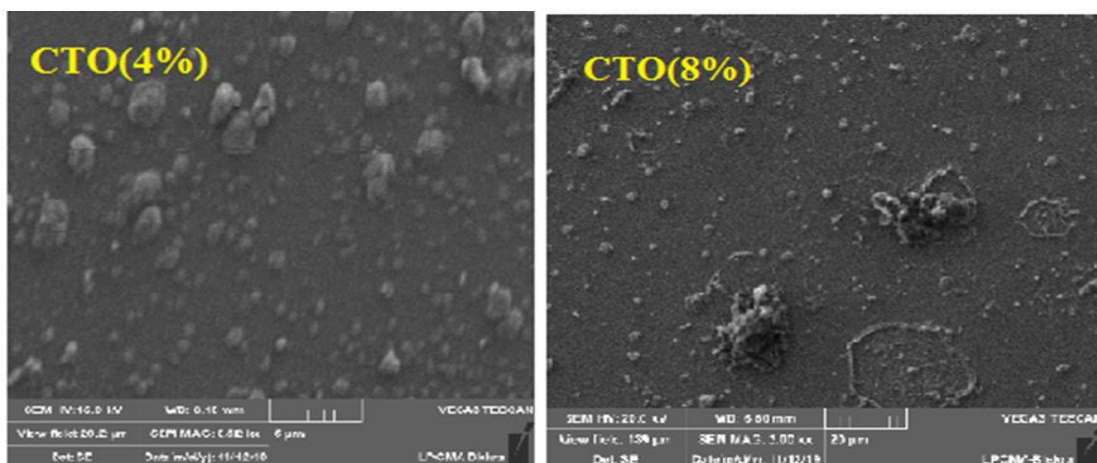
- 1 / Selection of experiment conditions
- 2 / Elaboration of undoped and doped SnO₂ thin films.
- 3 / Structural and optical characterization (X-ray diffraction, UV...)
- 5 / Characterizations.
- 6/ Applications

4- Obstacles

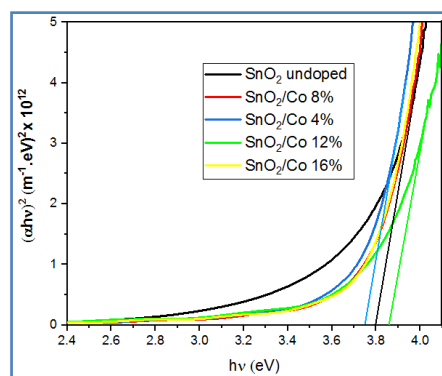
- Lack of spectroscopy devices.
- weakness in formation.
- Unavailability of products.

5- Abstract Graphic

SEM images



X-ray diffraction spectra



Optical band gap

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6- Bibliographic references

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