

Undoped and Cr-doped TiO₂ thin films obtained by spray pyrolysis

Submitted by Emmanuel Lemoine on Wed, 10/29/2014 - 11:46

Titre	Undoped and Cr-doped TiO ₂ thin films obtained by spray pyrolysis
Type de publication	Article de revue
Auteur	Mardare, Diana [1], Iacomi, Felicia [2], Cornei, Nicoleta [3], Girtan, Mihaela [4], Luca, Dumitru [5]
Editeur	Elsevier
Type	Article scientifique dans une revue � comit� de lecture
Ann�e	2010
Langue	Anglais
Date	2010/06/01
Num�ro	16
Pagination	4586 - 4589
Volume	518
Titre de la revue	Thin Solid Films
ISSN	0040-6090
Mots-cl�s	Chromium-doped titanium oxide [6], Contact angle [7], EPR [8], Spray pyrolysis [9], Thin films [10], XPS [11], XRD [12]
R�sum� en anglais	<p>Undoped and chromium doped titanium oxide thin films were fabricated by spray pyrolysis by using a solution of titanium tetrachloride and ethyl alcohol. The films have been deposited on heated glass substrates at 373 K. After annealing for 90 min at 723 K, the initially amorphous films became polycrystalline with a predominant anatase structure and average crystallite sizes depending on dopant (Cr) concentration. The repartition of chromium impurities in the matrix of titanium oxide films, analyzed by electron paramagnetic resonance and X-ray photoelectron spectroscopy showed that the entrance of chromium into the anatase structure is mainly achieved by substitution. A decrease in unit cell parameters ratio (c/a) with the increase of chromium content sustains this assertion. The wetting properties of the titanium oxide films were evaluated from contact angle measurements between de-ionized water and films surface during- and post-irradiation with UV light. The correlation between the concentration of the dopant, film structure, surface morphology and wettability characteristics is discussed.</p>
URL de la notice	http://okina.univ-angers.fr/publications/ua5197 [13]
DOI	10.1016/j.tsf.2009.12.037 [14]
Lien vers le document	http://dx.doi.org/10.1016/j.tsf.2009.12.037 [14]

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Publié sur *Okina* (<http://okina.univ-angers.fr>)