文献

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Effects of Co doping on the phase transformation and optical properties of TiO 2 thin films by solgel method
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抄録 (Abstract)
The influences of Co doping on the anatase-to-rutile transformation of TiO 2 thin films have been investigated by Raman spectroscopy and X-ray diffraction. Raman spectra and XRD patterns for the samples of various Co concentrations present a clear evolution of TiO 2 with different anatase-to-rutile ratios. The fraction of rutile phase increases gradually with increasing Co contents. When Co content exceeds 7 mol%, anatase phase is not detected in the samples. The results may be related to the oxygen vacancies, which are introduced by Co doping. According to the Adachi model, optical constant was extracted by spectroscopic ellipsometry. It is found that the refractive index n increases with increasing Co content from 2.29 to 2.4, and that the optical band gap decreases and varies with increment of Co content between 3.6 and 3.38 eV. This may be related to the changes in film density and band gap tailed due to the Co doping. © 2011 Elsevier B.V.

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