PO1003

INFLUENCE OF SUBSTRATE ON STRUCTURAL AND OPTICAL PROPERTIES OF CaTiO3:Pr3+ DEPOSED BY RADIOFREQUENCY REACTIVE MAGNETRON SPUTTERING IN ELECTROLUMINESCENCE STRUCTURE

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Flexible electroluminescent (EL) structures are very attractive devices for displays or lighting. These devices are typically composed of a luminescent active layer sandwiched between two high dielectric constant materials and two electrical contacts. An alternative voltage applied to these contacts accelerates electrons into the active layer that impact the emitting species contained and raise light. The aim of our work is to make such kinds of multilayered structures by Physical Vapor Deposition (PVD), using the red emitting phosphor $CaTiO_3:Pr^{3+}$ as the active layer and tantalum oxide as the dielectric layers.
In the present work, we investigate the effects induced by the morphology and by the crystallization of Ta_2O_5 layers on the structure and the optical properties of $CaTiO_3:Pr^{3+}$ films deposited on them. The $CaTiO_3:Pr^{3+}$ films were deposited in pure argon plasma from a home-made target while the Ta_2O_5 dielectric layers were obtained by reactive sputtering of a tantalum target in argon-oxygen atmosphere, both in a radiofrequency magnetron sputtering reactor. The effects of the deposition pressure and of the annealing temperature in either tubular or RTA (Rapid Thermal Annealing) furnace are reported. Morphology and crystallization of both Ta_2O_5 and $CaTiO_3:Pr^{3+}$ films are studied by Scanning Electron Microscopy and X-Ray Diffraction. Their influences on the active layer optical properties are investigated using UV-Visible absorption measurements, spectroscopic ellipsometry and recording excitation and emission spectra at 293 K

Keywords
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