TT-009

Fabrication of carbon nanotube electron beam (C-beam) for thin film modification

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Carbon nanotube emitters is very promising electron emitter for electron beam applications. We introduced the carbon nanotube electron beam (C-beam) exposure technic using triode structure. As a source, the electron beam emit from CNT emitters placed at the cathode by high electric field. Through the gate mesh, with high accelerating energy, the electron can be extracted easily and impact at the anode plate. For thin film modification, after the C-beam exposure on the amorphous silicon thin film, we found phase changes and it showed a high crystallinity from the Raman measurement. We expect that this crystallized film will be a good candidate as a new active layer of TFT.

Keywords: carbon nanotube, electron beam

TT-010

Synthesis and luminescence properties of lanthanum oxides/hydroxides nanorod bundles

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Nowadays, trivalent rare-earth (RE^{3+}) ions activated metal oxides have been proved to be excellent host materials due to their various applications. Facile wet-chemical technique have been considered as the best synthetic route due its intensive interest in the preparation of nanostructures. Europium ion doped lanthanum hydroxide ($La(OH)_3:Eu^{3+}$) phosphors were synthesized by the facile wet chemical method using the hexamethylenetetramine (HMTA) as a mediated surfactant. The thermal behavior for the $La(OH)_3:Eu^{3+}$ phosphors was investigated by thermogravimetric and differential thermal analysis method. The morphological studies were measured by scanning electron microscope and transmission electron microscope measurements, indicating three-dimensional (3D) flower-like $La(OH)_3:Eu^{3+}$ nanorod bundles. After subsequent annealing process, the lanthanum oxide ($La_2O_3:Eu^{3+}$) phosphor exhibited similar kind of morphology. The synthesized $La(OH)_3:Eu^{3+}$ and $La_2O_3:Eu^{3+}$ samples were characterized by X-ray powder diffraction and Fourier transform infrared spectroscopy. Furthermore, photoluminescence and cathodoluminescence properties were studied in details.

Keywords: $La(OH)_3:Eu^{3+}$, $La_2O_3:Eu^{3+}$, nanorod bundles