

Effect of $12\text{CaO}\cdot 7\text{Al}_2\text{O}_3$ thin film in reactive gasses by RF magnetron sputtering system

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Recently, transparent conductive oxides (TCO) are attractive due to their promising application advantages such as flat panel display, solar cells, optoelectronic device. In top emission organic light-emitting diodes (TEOLEDs), preparation of OLED cathodes using sputtering is challenging due to damage of organic thin films. However, there have been attempts to prevent the degradation of organic films due to the sputtering damage by inserting of a buffer layer between the organic layer and the top metal cathode. In this study, we have investigated $12\text{CaO}\cdot 7\text{Al}_2\text{O}_3$ (C12A7) thin film using a buffer layer deposited by RF magnetron sputtering system. C12A7 is a typical insulator and has a nano-porous structure consisting of positively charged cage frame work and free oxygen ionic cage. C12A7 thin film shows highly transparent and stable properties in the air. We have reported optical, electrical properties of C12A7 thin film and crystal structure of thin film before and after annealing. Crystal structure of C12A7 thin film is determined by X-ray diffraction (XRD). The roughness and optical properties are analyzed by atomic force microscopy (AFM), UV-Vis spectrophotometer, respectively. The electrical property is analyzed by four-point probe method and hall measurement.