Characteristics of AlW thin film for TFT-LCD bus line

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Recently low resistance of bus line is required for large screen size TFT-LCD panels. As a result, lower resistance Al-alloy is currently reviewed extensively. The resistivity is required smaller than 10 $\mu\Omega\text{cm}$ and high resistance of chemical attack is required. In this paper, Al-W thin film were deposited on glass substrates by D.C. magnetron sputtering system under various condition for high chemical resistance. Its properties were characterized by SEM, AFM, XRD, 4-point-probe, and cyclic voltammetry. The optimal condition of Al-W was 100°C, 100W, 0.4Pa, 23 sccm(Ar) and 350°C, 20 min. annealing. At that condition the resistivity of Al-W(3 wt.%) was about 11 $\mu\Omega\text{cm}$. And when wt.% of W in Al-W alloy was higher than about 3%, Al-W alloy thin film has high chemical resistance.