ABSTARCT

Zirconium nitride as a diffusion barrier between copper and silicon was prepared by using Pulsed DC plasma system. Effect of deposition for zirconium nitride was studied by varying the treatment time from 2 hour to 8 hour. Other parameters like power and pressure were kept constant throughout the experiment for ZrN. Copper was deposited on the top layer of zirconium nitride by keeping the entire parameters constant (operating power, pressure and treatment time). Copper and zirconium nitride layer deposition was confirmed from XRD. The surface morphology of the deposited films was studied using scanning electron microscopy and electrical resistivity of the films measured by four point probe. Surface morphology was found to improve with increasing deposition time of ZrN because it moves towards smoothness and four point probe showed that electrical resistivity decreased by the deposition of copper on ZrN.