A METHOD TO IMPROVE ADHESION OF DIELECTRIC FILMS IN DAMASCENE INTERCONNECTS

ABSTRACT

Method of improving adhesion of low dielectric constant films to other dielectric films and barrier metals in a damascene process are achieved. In one method, a low dielectric constant material layer is deposited on a substrate. Silicon ions are implanted into the low dielectric constant material layer. Thereafter, a TEOS-based silicon oxide layer is deposited overlying the low dielectric constant material whereby there is good adhesion between low dielectric constant material layer and the TEOS-based silicon oxide layer. In another method, a low dielectric constant material layer is deposited on a substrate. A silicon-based dielectric layer is deposited overlying the low dielectric constant material wherein the silicon-based dielectric layer is not silicon oxide whereby there is good adhesion between the low dielectric constant material layer and the silicon-based dielectric layer.

FIG. 13