HIGH QUALITY SILICON OXIDE FILMS BY REMOTE PLASMA CVD FROM DISILANE PRECURSORS

ABSTRACT OF THE DISCLOSURE

A method of depositing a silicon and nitrogen containing film on a substrate. The method includes introducing silicon-containing precursor to a deposition chamber that contains the substrate, wherein the silicon-containing precursor comprises at least two silicon atoms. The method further includes generating at least one radical nitrogen precursor with a remote plasma system located outside the deposition chamber. Moreover, the method includes introducing the radical nitrogen precursor to the deposition chamber, wherein the radical nitrogen and silicon-containing precursors react and deposit the silicon and nitrogen containing film on the substrate. Furthermore, the method includes annealing the silicon and nitrogen containing film in a steam environment to form a silicon oxide film, wherein the steam environment includes water and acidic vapor.

Figure 1