LOW k DIELECTRIC MATERIALS WITH INHERENT COPPER ION MIGRATION BARRIER

ABSTRACT

An interlayer dielectric (12) for preventing copper (Cu) ion migration in a semiconductor structure containing a copper (Cu) region (14) is provided. The interlayer dielectric (12) of the present invention comprises a dielectric material that has a dielectric constant of 3.0 or less and an additive which is highly-capable of binding copper (Cu) ions, yet is soluble in the dielectric material. The presence of the additive in the low k dielectric allows for the elimination of conventional inorganic barrier materials such as SiO_2 or Si_3N_4.

FIG 1a