ABSTRACT

METHOD OF USING SILICON RICH CARBIDE AS A BARRIER MATERIAL FOR FLUORINATED MATERIALS

A method of forming interconnect structures in a semiconductor device, comprising the following steps. A semiconductor structure is provided. In the first embodiment, at least one metal line is formed over the semiconductor structure. A silicon-rich carbide barrier layer is formed over the metal line and semiconductor structure. Finally, a dielectric layer, that may be fluorinated, is formed over the silicon-rich carbide layer. In the second embodiment, at least one fluorinated dielectric layer, that may be fluorinated, is formed over the semiconductor structure. The dielectric layer is patterned to form an opening therein. A silicon-rich carbide barrier layer is formed within the opening. A metallization layer is deposited over the structure, filling the silicon-rich carbide barrier layer lined opening. Finally, the metallization layer may be planarized to form a planarized metal structure within the silicon-rich carbide barrier layer lined opening.

Figure 2