ABSTRACT

DEPOSITION OF BARRIER METAL IN DAMASCENE INTERCONNECTS USING METAL CARBONYL

This invention relates to a method of fabrication used for semiconductor integrated circuit devices, and more specifically to the formation of single or dual damascene interconnects using a barrier metal layer of WN_x or TaN_x, deposited by plasma enhanced chemical vapor deposition (PECVD) using metal carbonyl precursors. By using a chemical vapor deposition (CVD) process with these alternate carbonyl precursors, many of the problems are solved, i.e., conformal coverage, gas phase particle generation, and incorporation of halogens or carbon into the film.

FIGURE 4