ABSTRACT

COPPER RECESS FORMATION USING CHEMICAL PROCESS FOR FABRICATING BARRIER CAP FOR LINES AND VIAS

A method of fabricating a planarized barrier cap layer over a metal structure comprising the following steps. A substrate having an opening formed therein is provided. The substrate having an upper surface. A planarized metal structure is formed within the opening. The planarized metal structure being substantially planar with the upper surface of the substrate. A portion of the planarized metal structure is removed using a reverse-electrochemical plating process to recess the metal structure from the upper surface of the substrate. A barrier cap layer is formed over the substrate and the recessed metal structure. The excess of the barrier cap layer is removed from over the substrate by a planarization process to form the planarized barrier cap layer over the metal structure.

FIGURE 8